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THE ENGLISH FLOWER GARDEN
AND HOME GROUNDS.

First Edition, *November* 1883.

Second ,, *February* 1889.

Third ,, *May* 1893.

Fourth ,, *June* 1895.

Fifth ,, *June* 1896.

Reprinted, February 1897.

Sixth Edition, *May* 1898.

Reprinted, November 1898.

Seventh Edition, *May* 1899.

Eighth ,, *June* 1900.

Reprinted, December 1900.

,, *May* 1901.

,, *June* 1902.

,, *June* 1903.

Ninth Edition, 1905.

Tenth Edition, 1906.

711. 11/5

THE ENGLISH FLOWER GARDEN AND HOME GROUNDS

Design and Arrangement shown by existing
examples of Gardens in Great Britain and Ireland
followed by a Description of the Plants
Shrubs and Trees for the Open-air Garden
and their Culture By W. ROBINSON

Author of 'The Wild Garden'

Illustrated with many Engravings on Wood
Tenth Edition

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"You see, sweet maid, we marry
A gentler scion to the wildest stock,
And make conceive a bark of baser kind
By bud of nobler race: this is an art
Which does mend nature, change it rather, but
The art itself is nature."—*Shakespeare*.

London John Murray Albemarle Street

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BREAD STREET HILL, E.C., AND
BUNGAY, SUFFOLK.

Billings
Apr 17. 1907
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Other eds. 3844.79; 3844.71
4.32.19

125.10

“ Laying out grounds, as it is called, may be considered as a liberal art, in some sort like poetry and painting; and its object, like that of all the liberal arts, is, or ought to be, to move the affections under the control of good sense. If this be so when we are merely putting together words or colours, how much more ought the feeling to prevail when we are in the midst of the realities of things ; of the beauty and harmony, of the joy and happiness of living creatures ; of men and children, of birds and beasts, of hills and streams, and trees and flowers, with the changes of night and day, evening and morning, summer and winter, and all their unwearied actions and energies.”—WORDSWORTH.

FOREWORDS TO NEW EDITION.

THIS book is the muster of various once forlorn hopes and skirmishing parties now united with better arms and larger aims, and its beginnings may have an interest for others. I came to London just when the Royal Horticultural Society's garden at Kensington was being laid out, a series of elaborate patterns set at different levels, and the Crystal Palace, in its glory, was described by the Press of the day to be the most wonderful instance of modern gardening—water-temples, water-paths, vast stone basins and all the theatrical gardening of Versailles reproduced in Surrey.

There was little or no reason admitted into garden design: the same poor imitation of the Italian garden being set down in all sorts of positions. If the place did not suit the style, the ground had to be bolstered up in some way so that the plan might be carried out—a costly way to get an often ridiculous result. The great writers of the past had laughed the carpenter's rule out of the parks of England, and pictures arose where they were once impossible; but the ugliness of the garden about the house was assumed to be an essential part of the thing itself, removing that for ever from the sympathies of artistic people.

The flower garden planting was made up of a few kinds of flowers which people were proud to put out in thousands and tens of thousands, and with these, patterns, more or less elaborate, were carried out in every garden save the very poorest cottage garden. It was not easy to get away from all this false and hideous "art," but I was then in the Botanic Gardens, Regent's Park, where there was at that time a small garden of British plants, which had to be kept up, and this led me into the varied country round London, from the orchid-flecked meadows of Bucks to the tumbled down undercliffs on the Essex coast, untroubled by the plough; and so I

began to get an idea (which should be taught to every boy at school) that there was (for gardens even) much beauty in our native flowers and trees, and then came the thought that if there was so much in our own island flora, what might we not look for from the hills and valleys of the countries of the northern and temperate world?

From thoughts of this kind if I turned to actual things, I saw the flower-gardener meanly trying to rival the tile or wall-paper men, and throwing aside with contempt all the lovely things that through their height or form did not conform to this idea (so stupid as to life), and this too the rule, not only in the villa garden, but in our great public and private gardens. There was, happily, always the beauty of the woods and lanes and the lovely cottage gardens in the country round London, and here and there, though rare, a quiet garden with things as the great mother made them and grouped them. And so I began to see clearly that the common way was a great error and the greatest obstacle to true gardening or artistic effects of any kind in the flower-garden or home landscape, and then made up my mind to fight the thing out in any way open to me.

The English Flower Garden consists of two parts: the first dealing with the question of design—the aim being to make the garden a reflex of the beauty of the great garden of the world itself, and to prove that the true way to happiest design is not to have any stereotyped style for all flower gardens, but that the best kind of garden should arise out of its site and conditions as happily as a primrose out of a cool bank.

The second part includes most of the trees and plants, hardy and half-hardy, for our flower gardens and pleasure grounds, and it is illustrated with a view to show the beauty of the things spoken of, as few know the many shrubs and trees worth a place in our open-air gardens, and it is of little use to discuss arrangement if the beauty of the flowers is hidden from us. No stereotyped garden of half-a-dozen kinds of plants will satisfy any one who knows that many beautiful aspects of vegetation are possible in a garden in spring, summer, and autumn.

This is not a botanical book, as should be clear from its title; but some may expect in the book technical terms which I wish to keep out of it. Although the debt of the gardener to Botany is great, the subordination of the garden to Botany has been

fruitful of the greatest evil to artistic gardening. The way of arranging a garden like a book, and a very ugly book, as in the French botanic gardens (Caen, Angers, Rouen), in which one sees a sea of showy labels, where one might look for the life and peace of a garden, is a blinding obstacle to beautiful gardening, and the Garden of Plants, in Paris, may be cited as one having had for ages a disastrous effect in the gardening of France. It is the spirit of natural beauty we should seek to win into the garden, and so get away from the set patterns on the one hand, and labelled "dots" on the other.

English names are given where possible—as it is best to speak of things growing about our doors in our own tongue, and the practice of using in conversation long Latin names, a growth of our own century, has done infinite harm to gardening in shutting out people who have a heart for a garden, but none for the Latin of the gardener. There is no more need to speak of the plants in our gardens by their Latin names than to speak of the dove or the rabbit by Latin names, and where we introduce plants that have no good English names we must make them as well as we may. Old English books like Gerard were rich in English names, and we should follow their ways and be ashamed to use for things in the garden a strange tongue—dog Latin, or as it may be. Every plant grown in gardens should have an English name, among the many reasons for this being the frequent changes that Latin names undergo in the breaking down of the characters which are supposed to separate genera. For instance, Azalea and Rhododendron are now one genus; such changes are even more troublesome when they occur in less well-known plants; and one of the most beautiful plants of our gardens, the Irish Heath (*Daboecia*, now *Boretta*), will not be found now by its hitherto recorded name in the London Catalogue of British Plants. But if we have a good English name, these ceaseless botanical changes are of less consequence. It is impossible for gardeners and nurserymen to keep up with such changes, not always indeed accepted even by botanists themselves. The fact that in speaking of plants we use English names does not in the least prevent us from using the Latin name in its right place, when we have need to do so. The systematic nomenclature followed is that of the Kew list, wherever use does not compel us to adhere to old names like Azalea.

For the second part of this book the storehouse of information in *The Garden* has been taken advantage of, but articles have been

specially written where necessary, and the following are the names of the writers whose contributions are embodied in the second part of the book, and frequently marked by their initials:—

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THE ENGLISH FLOWER GARDEN

PART I

ART IN THE GARDEN. GARDEN DESIGN AND RECENT WRITINGS UPON IT. DESIGN AND PLANS IN RELATION TO THE HOUSE AND HOME LANDSCAPE. VARIOUS KINDS OF FLOWER GARDENS WITH A VIEW TO ARTISTIC EFFECT AND GOOD CULTIVATION. ARTISTIC USE OF THE GREAT GROUPS OF PLANTS FOR THE OPEN AIR GARDENS IN THE BRITISH ISLES. ALPINE, ROCK AND BORDER PLANTS, CLIMBERS, ANNUALS AND BIENNIALS, FLOWERING TREES, SHRUBS, AND EVERGREENS; WATER AND BOG PLANTS, HARDY FERNS, FINE-LEAVED, BEDDING AND HALF-HARDY PLANTS, ROSES, SPRING, SUMMER, AUTUMN AND WINTER GARDENS, HARDY BULBS; ORCHARD BEAUTIFUL. THE WILD GARDEN, FLOWERS FOR CUTTING, COLOUR AND FRAGRANCE. LABOURS FOR GOOD OR EVIL. LAWNS AND PLEASURE GROUNDS. ILLUSTRATED FROM EXISTING EXAMPLES OF BRITISH GARDENS ENGRAVED ON WOOD.

“An unerring perception told the Greeks that the beautiful must also be the true, and recalled them back into the way. As in conduct they insisted on an energy which was rational, so in art and in literature they required of beauty that it too should be before all things rational.”

—SOME ASPECTS OF THE GREEK GENIUS.

THE ENGLISH FLOWER GARDEN.

CHAPTER I.

ART IN RELATION TO FLOWER-GARDENING AND GARDEN DESIGN.

THERE is no reason why we should not have true art in the garden, but much why we should have it, and no reason why a garden should be ugly, bare, or conventional. The word "art" being used in its highest sense here, it may perhaps be well to justify its use, and as good a definition of the word as any perhaps is "power to see and give form to beautiful things," which we see shown in some of its finest forms in Greek sculpture and in the works of the great masters of painting.

But art is of many kinds, and owing to the loose, "critical" talk of the day, it is not easy to see that true art is based on clear-eyed study of and love for Nature, rather than invention and the bringing of the "personality" of the artist into the work, of which we hear so much. The work of the artist is always marked by its fidelity to Nature, and proof of this may be seen in the greatest art galleries now open to all, so that there is little to hide evidence as to what is said here about art in its highest expression. But as a number of people write much about art in the magazines and papers, while blind as bats to its simple law, there is infinite confusion in many minds about it, and we may read essay after essay about art without being brought a bit nearer to the simple truth, but on the other hand get the false idea that it is not by observing, but by inventing and supplementing, that good work is done. The strong man must be there, but his work is to see the whole beauty of the subject, and to help us to see it, not to distort it in any way for the sake of making it "original." This is often a way to popularity, but in the end it means bad work. It may be the fashion for

a season, owing to some one quality ; but it is soon found out, and we have to return to the great masters of all ages, who are always distinguished for truth to Nature, and who show their strength by getting nearer to her.

The actual beauty of a thing in all its fulness and subtlety is almost the whole of the question, but the critics of the day will not take the trouble to see this, and write essays on art in which many long words occur, but in which we do not once meet with the word *truth*. "Realism" and "idealism" are words freely used, and bad pictures are shown us as examples of "realism," which leave out all the refinement, subtlety, truth of tone, and perhaps even the very light and shade in which all the real things we see are set.

There are men so blind to the beauty of the things set before their eyes in sky, sea, or earth, that they would seek to idealise the eyes of a beautiful child or the clouds of heaven ; while all who see natural beauty in landscape know that no imagining can come near to the beauty of things seen, art being often powerless to seize their full beauty, and the artist has often to let the brush fall in despair. There are more pictures round the year in many a parish in England than all the landscape painters of Europe could paint in a century. Only a little, indeed, of the beauty that concerns us most—that of the landscape—can be seized for us except by the very greatest masters. Of things visible—flower, tree, landscape, sky, or sea—to see the full and every varied beauty is to be saved for ever from any will-o'-the-wisp of the imaginary.

But many people do not judge pictures by Nature, but by pictures, and therefore they miss her subtleties and delicate realities on which all true work depends. Some sneer at those who "copy Nature," but the answer to such critics is for ever there in the work of the great men, be they Greeks, Dutchmen, Italians, French, or English.

It is part of the work of the artist to select beautiful or memorable things, not the first that come in his way. The Venus of Milo is from a noble type of woman—not a mean Greek. The horses of the Parthenon show the best of Eastern breed, full of life and beauty. Great landscape painters like Crome, Corot, and Turner seek not things only because they are natural, but also beautiful ; selecting views and waiting for the light that suits the chosen subject best, they give us pictures, working always from faithful study of Nature and from stores of knowledge gathered from her, and that is the only true path for the gardener, all true art being based on her eternal laws. All deviation from the truth of Nature, whether it be at the hands of Greek, Italian, or other artist, though it may pass for a time, is in the end—it may be ages after the artist is dead—classed as *debased* art.

A Devonshire Cottage Garden, Cockington, Torquay. Engraved from a photograph
by S. W. Fitzherbert.

Why say so much here about art? Because when we see the meaning of true "art" we cannot endure what is ugly and false in art and we cannot have the foregrounds of beautiful English scenery daubed with flower gardens like coloured advertisements. Many see the right way from their own sense being true, but others may wish for proof of what is urged here as to the true source of lasting work in art in the work of the great artists of all time. And we may be as true artists in the garden and home landscape as anywhere else.

There is no good picture which does not image for us the beauty of natural things, and why not begin with these and be artists in their growth and grouping?—for one reason among others that we are privileged to have the living things about us, and not merely representations of them.

So far we have spoken of the work of the true artist, which is always marked by respect for Nature and by keen study of her. But apart from this we have a great many men who do what is called "decorative" work, useful, but still not art in the sense of delight in, and study of, things as they are—the whole class of decorators, who make our carpets, tiles, curtains, and who adapt conventional or geometric forms mostly to flat surfaces. Skill in this way may be considerable without any attention whatever being paid to the greater art that is concerned with life in all its fulness.

This it is well to see clearly; as for the flower gardener it matters much on which side he stands. Unhappily, our gardeners for ages have suffered at the hands of the decorative artist, when applying his "designs" to the garden, and designs which may be quite right on a surface like a carpet or panel have been applied a thousand times to the surface of the much enduring earth. It is this adapting of absurd "knots" and patterns from old books to any surface where a flower garden has to be made that leads to bad and frivolous design—wrong in plan and hopeless for the life of plants. It is so easy for any one asked for a plan to furnish one of this sort without the slightest knowledge of the life of a garden.

For ages the flower-garden has been marred by absurdities of this kind of work as regards plan, though the flowers were in simple and natural ways. But in our own time the same "decorative" idea has come to be carried out in the planting of the flowers under the name of "bedding out," "carpet bedding," or "mosaic culture." In this the beautiful forms of flowers are degraded to the level of crude colour to make a design, and without reference to the natural form or beauty of the plants, clipping being freely done to get the carpets or patterns "true." When these tracery gardens were made, often by people without any knowledge of the plants of a garden, they were found to be difficult to plant; hence attempts to do without the

Town-Garden, The Broadway, Worcestershire. From a picture in possession of the author.

gardener altogether, and get colour by the use of broken brick, white sand, and painted stone. All such work is wrong and degrading to the art of gardening, and in its extreme expressions is ridiculous.

As I use the word "artistic," in a book on the flower-garden, it may be well to say that as it is used it means right and true in relation to all the conditions of the case, and the necessary limitations of our art and all other human arts. A lovely Greek coin, a bit of canvas painted by Corot with the morning light on it, a block of stone hewn into the shape of the dying gladiator, the white mountain rocks built into a Parthenon—these are all examples of human art, every one of which can be only fairly judged in due regard to what is possible in the material of each—knowledge which it is part of the artist's essential task to possess. Often a garden may be wrong in various ways, as shown by the conifers spread in front of many a house—ugly in form, not in harmony with our native or best garden vegetation; mountain trees set out on dry plains and not even hardy; so that the word inartistic may help us to describe many errors. And again, if we are happy enough to find a garden so true and right in its results as to form a picture that an artist would be charmed to study, we may call it an artistic garden, as a short way of saying that it is about as good as it may be, taking everything into account.

LANDSCAPE PAINTING AND GARDENS.—There are few pictures of gardens, because the garden beautiful is rare. Gardens around country houses, instead of forming, as they might, graceful foregrounds to the good landscape views, disfigure all, and drive the artist away in despair. Yet there may be real pictures in gardens; it is not a mere question of patterns of a very poor sort, but one of light and shade, beauty of form, and colour. In times when gardens were made by men who did not know one tree from another, the matter was settled by the shears—it was a question of green walls only. Now we are beginning to see that there is a wholly different and higher order of beauty to be found in gardens, and we are at the beginning of a period when we may hope to get much more pleasure and instruction out of this art than ever before.

We have seen in Bond-street a variety of picture exhibitions devoted to gardens, generally of the trifling stippled water-colour order. The painters of these pictures, for the most part ten-minute sketches, have one main idea—that the only garden worth picturing is the shorn one, and pictures of such places are repeated time after time; a clipped line of *Arbor-vitæ*, with a stuffed peacock stuck by the side of it, is considered good enough for a garden picture. Work of this kind, which is almost mechanical, is so much easier than the drawing of a garden with the elements of varied beauty in it. In

Cawdor, showing effect of garden with natural forms.

the work of Alfred Parsons and a few others we see the beginning of things of beauty in the painting of gardens, but it is for us gardeners to commence by first being artists ourselves, and opening our eyes to see the ugly things about us.

Artists of real power would paint gardens and home landscapes if there were real pictures to draw ; but generally they are so rare that the work does not come into the artist's view at all. Through all the rage of the "bedding-out" fever, it was impossible for an artist to paint in a garden like those which disfigured the land from Blair Athol to the Crystal Palace. It is difficult to imagine Corot sitting down to paint the Grande Trianon, or the terrace patterns at Versailles, though a poor hamlet in the North of France, with a few willows near, gave him a lovely picture. Once, when trying to persuade Mr. Mark Fisher, the landscape painter, to come into a district remarkable for its natural beauty, he replied : " There are too many gentlemen's places there to suit my work," referring to the hardness and ugliness of the effects around most country seats, owing to the iron-bound pudding-clumps of trees, railings, capricious clippings and shearings, bad colours, and absence of fine and true form, with, almost certainly, an ugly house in the midst of all. But we ought to be able to do better than be makers of garden scarecrows to the very men who would enjoy our work most, and delight in painting it, rich as we are in the sources of beauty of tree or flower.

CHAPTER II.

GARDEN DESIGN AND RECENT WRITINGS UPON IT.

OF all the things made by man for his pleasure a flower-garden has the least business to be ugly, barren, or stereotyped, because in it we may have the fairest of the earth's children in a living, ever-changeable state, and not, as in other arts, mere representations of them. And yet we find in nearly every country place, pattern plans, conventional design, and the garden robbed of all life and grace by setting out flowers in geometric ways. A recent writer on garden design tells us that the gardener's knowledge is of no account, and that gardens

should never have been allowed to fall into the hands of the gardener or out of those of the architect; that it is an architectural matter, and should have been schemed at the same time and by the same hand as the house itself.

The chief error he makes is in saying that people, whom he calls "landscapists," destroyed all the formal gardens in England, and that they had their ruthless way until his coming. An extravagant statement, as must be

**Formal gardens
made in our
own day.**

clear to anyone who takes the trouble to look into the thing itself, which many of these writers will not do or regard the elementary facts of what they write about. Many of the most formal gardens in England have been made within the past century, when this writer says all his ideal gardens were cleared away. The Crystal Palace, the Royal Horticultural Society's garden at Kensington, Shrubland, Witley Court, Castle Howard, Mentmore, Drayton, Crewe Hall, Alton Towers, and scores of pretentious places. During the whole of that period there was hardly a country seat laid out that was not marred by the idea of a garden as a conventional and patterned thing. So far from formal gardens being abolished, as the Irish peasant said of absentees, "the country is full of them!" With Castle Howards, Trenthams, and Chatsworths staring at him, it is ludicrous to see a young architect weeping over their loss. Even when there is no money to waste in walls and gigantic water-squirts the idea of the terrace is still carried out often in plains and other

wrong positions in the shape of green banks often one above the other, as if they were an artistic treat. There are hundreds of such gardens about the country, and the ugliest and most formally set out and planted gardens ever made in England have been made in Victorian days when, we are told by writers who do not look into the facts of the thing itself, all these things were lost.

It cannot be too clearly remembered that "formal" gardens of the most deplorable type are things of our own time, and it is only in our own time the common idea that there is only one way of making a garden was spread. Hence, in all the newer houses we see the stereotyped garden often made in spite of all the needs of the ground, whereas in really old times it was not so. Berkeley is not the same as Sutton, and Sutton is quite different from Haddon.

Moreover, on top of all this formality of design of our own day were grafted the most formal and inartistic ways of arranging flowers

**Patterns of
flowers and
carpet-beds
things of our
own time.**

that ever came into the head of man, ways that were happily unknown to the Italians or the makers of the earliest terraced gardens. The true Italian gardens were often beautiful with trees in their natural forms, as in the Giusti gardens at Verona; but bedding out, or marshalling the flowers in stiff lines and geometrical patterns, is entirely a thing of our own precious time, and "carpet" gardening is simply a further remove in ugliness. The painted gravel gardens of Nesfield and Barry and other broken-brick gardeners were also an attempt to get rid of the flowers and get rigid formality instead, as in the Horticultural Society's garden at South Kensington. Part of the garden architect's scheme was to forbid the growth of plants on walls, as at Shrubland, where, for many years, there were strict orders that the walls were not to have a flower or a creeper of any kind upon them. As these pattern gardens were made by persons often ignorant of gardening, and if planted in any human way with flowers would all "go to pieces," hence the idea of setting them out as they appeared on the drawing-board, some of the beds not more than a foot in diameter, blue and yellow paints being used where the broken brick and stone did not give the desired colour!

Side by side with the adoption in most large and show places of the patterned garden, both in design and planting, disappeared

**Loss of old
garden ways.**

almost everywhere the old English garden, that is, one with a variety of form of shrub and flower and even low trees; so that now we only find this kind of garden here and there in Cornwall, Ireland, and Scotland, and on the outskirts of country towns. All true plant form was banished because it did not fit into the bad

carpet pattern ! I am only speaking of what everyone must know who cares the least about the subject, and of what can be seen to-day in all the public gardens round London and Paris ; even Kew, with the vast improvement of late years, has not emancipated itself from this formal way of flower-planting, as we see there, in front of the palm-house, purple beet marshalled in patterns. But we shall never see beautiful flower gardens again until natural ways of grouping flowers and variety of true form come back to us in the flower-garden.

After the central error above shown there comes a common one of these writers, of supposing that those who seek natural form and beauty in the garden and home-landscape are

The Wild Garden opposed to the necessary level and even formal
does not take spaces about a house. I wrote the "Wild Gar-
the place of the den" to save, not to destroy, the flower-garden ;
Flower-garden. to show that we could have all the joy of spring
 in orchard, meadow, or wood, lawn or grove, and

so save *the true flower-garden near the house* from being torn up twice a year to effect what is called spring and summer "bedding." The idea could be made clear to a child, and it is carried out in many places easy to see. Yet there is hardly a cobbler who rushes from his last to write a book on garden design who does not think that I want to bring the wilderness in at the windows, I who have given all my days to save the flower-garden from the ridiculous. A young lady who has been reading one of these bad books, seeing the square beds in my little south garden, says : " Oh ! why, *you* have a formal garden ! " It is a small square embraced by walls, and I could not have used any other form to get the best use of the space. They are just the kind of beds made in like spaces by the gardeners of Nebuchadnezzar, judging by what evidence remains to us. And he no more than I mistook stones for bushes or bad carpets for flowers, but enjoyed vine and fig and flower as Heaven sent them. All this wearisome misunderstanding comes from writers not taking the trouble to understand the simplest element of what they write about.

The real flower-garden near the house is for the ceaseless care and culture of many and diverse things often tender and in need of protection in varied and artificial soils, staking, cleaning, trials of novelties, study of colour effects lasting many weeks, sowing and movings at all seasons. The *wild garden*, on the other hand, is for things that take care of themselves in the soil of the place, things which will endure for generations if we suit the plants to the soil, like Narcissi on a rich orchard bottom, or blue Anemone in a grove on the limestone soil as in much of Ireland. This garden is a precious aid to the other, inasmuch as it allows of our letting the flower-garden do its best

work because relieved of the intolerable and ugly needs of the bedding system in digging up the garden twice a year.

Very often now terms of gardening are misapplied, confusing the mind of the student, and the air is full of a new term—the “formal” garden. For ages gardens of simple form have been

Misuse of terms. common without anyone calling them “formal” until our own time of too many words confusing thoughts. Seeing an announcement that there was a paper in the *Studio* on the “Formal Garden in Scotland,” I looked in it, seeking light, and found only plans of the usual approaches necessary for a country house, for kitchen, hall door, or carriage-way. And we gardeners of another sort do not get in like the bats through the roof, but have also ways, usually level, to our doors, but we do not call them “formal gardens.” There are gardens to which the term “formal” might with some reason be applied. Here are a few words about such by one Percy Bysshe Shelley, whose clear eyes saw beauty if there was any to be seen in earth or sky :

We saw the palace and gardens of Versailles full of statues, vases, fountains, and colonnades. *In all that belongs essentially to a garden they are extraordinarily deficient.*

A few more by Victor Hugo :

There fountains gush from the petrified gods, only to stagnate ; trees are forced to submit to the grotesque caprices of the shears and line. Natural beauty is everywhere contradicted, inverted, upset, destroyed.

And Robert Southey tells us of one

where the walks were sometimes of lighter or darker gravel, red or yellow sand, and, when such materials were at hand, pulverised coal and shells. The garden itself was a scroll-work cut very narrow, and the interstices filled with sand of different colours to imitate embroidery.

Such gardens may be called formal without too much disregard of language, and yet one might plant every one of them beautifully without in the least altering their outline. *It is only where the plants of a garden are rigidly set out in geometrical design, as in carpet-gardening and bedding-out, that the term “formal” is rightly applied.*

We live in a time when men write about garden design unmeaning words or absolute nonsense ; these, as anyone may see, are men who have had no actual contact with the work. They think garden design is a question that can be settled on a drawing-board, and have not the least idea that in any true sense the art is not possible without knowledge of many beautiful living things, and that the right planting of a country place is of far greater importance than the ground-plan about the house.

In many books on garden design the authors misuse words and confuse ideas. One, writing on the gardens of Hampton Court, is not satisfied with the terms "garden design," or "laying out gardens," but uses the word "gardenage." Another writes "lay-out" for "plan." Many, not satisfied with the good word, "landscape gardener," used by Loudon, Repton, and many other excellent men, call themselves "landscape architects"—a stupid term of French origin implying the union of two absolutely distinct studies, one dealing with varied life in a thousand different kinds and the natural beauty of the earth, and the other with stones and bricks and their putting together. The training for either of these arts is wide apart from the training demanded for the other, and the earnest practice of one leaves no time, even if there were the genius, for the other.

The term *landscape-planting* is often scoffed at by these writers, yet it is a good one with a clear meaning, which is the grouping and

**Landscape
gardening.**

growth of trees in natural forms as opposed to the universal aligning, clipping, and shearing of the Dutch; the natural incidence of light and shade and breadth as the true guide in all artistic

planting. The term *landscape-gardening* is a true and, in the fullest sense, good English one, with a clear and even beautiful meaning, namely, the study of the forms of the earth, and frank acceptance of them as the best of all for purposes of beauty or use of planter or gardener, save where the surface is so steep that one must alter it to work upon it.

We accept the varied slopes of the river bank and the path of the river as not only better than those of a Dutch canal, but a hundred times better; and not only for their beauty, but for the story they tell of the earth herself in ages past. We gratefully take the lessons of Nature in her most beautiful aspects of vegetation as to breadth, airy spaces, massing and grouping of the woods that fringe the valleys or garland the mountain rocks as better beyond all that words can express than anything men can invent or ever have invented.

We love and prefer the divinely-settled form of the tree or shrub or flower beyond any possible expression of man's misguided efforts with shears, such as we see illustrated in old Dutch books where every living thing is clipped to conform to an idea of "design" that arose in the minds of men to whom all trees were green things to be cut into ugly walls. We repudiate as false and ridiculous the common idea of the pattern-monger's book, that these aspirations of ours are in any way "styles," the inventions of certain men, because we know that they are based on eternal truths of Nature, free as the clouds to anyone who climbs the hills and has eyes to see.

The fact that ignorant men, who have never had the chance of learning these lessons, make pudding-like clumps in a vain attempt to diversify the surface of the ground, and other foolish things, does not in the least turn us aside from following the true and only ways to get the best expression possible of beauty from any given morsel of the earth's surface we have to plant.

**The true test
of a
flower-garden.**

We sympathise with the landscape-painter's work as reflecting for us, though often in a faint degree, the wondrously varied beauty of the earth, and in the case of the great master-painters full of truth and beauty. We hold that the only true test of our efforts in planting or gardening is the picture. Do we frighten the artist away, or do we bring him to see a garden so free from ugly patterns and ugly colours that, seen in a beautiful light, it would be worth painting? There is not, and there never can be, any other true test.

Even if our aim be right, the direction, as in many other matters, may be vitiated by stupidity, as in gardens where false lines and curves abound, as in the Champs Elysée in Paris. It is quite right to see the faults of this and to laugh at them; but how about those who plant in true and artistic ways? In the case we mention there is ceaseless and inartistic and vain throwing up of the ground, and sharp and ugly slopes, which are often against the cultivation of the things planted.

The rejection of clipped forms and book patterns of trees set out like lamp-posts, costly walls where none are wanted, and of all the too facile labours of the drawing-board "artist" in gardens, first affected in England in what we call pleasure-ground and park, is set down by these writers on garden design as the wicked invention of certain men. No account has been taken of the eternally beautiful lessons of Nature or even the simple facts which should be known to all who write about such things. Thus in "The Art and Craft of Garden Making" we read:

So far as the roads were concerned Brown built up a theory that, as Nature abhorred a straight line, it was necessary to make roads curl about. Serpentine lines are said to be the lines of Nature, and therefore beyond question the only proper lines.

But nothing is said of the fact that in making paths or roads in diversified country it is absolutely necessary to follow the line of easiest gradation, and this cannot always be a straight line, and is, indeed, often a beautiful bent line. In many cases we are not twenty paces from the level space around a house before we have to think of the lie of the ground in making walks, roads, or paths. We are soon face to face with the fact that the worst thing we can attempt

**Facts of natural
beauty the source
of good design.**

is a straight line. If anyone for any reason persists in the attempt the result is ugliness, and, in the case of drives, danger. Ages before Brown was born the roads of England often followed beautiful lines, and it would be just as true to attribute to "Brownites" the invention of the forms of trees, hills, or clouds themselves as to say that they invented the waved line for path or drive. The statement is of a piece with the other, that the natural and picturesque view of garden design and planting is the mischievous invention of certain men, and not the outcome of the most precious of all gifts, of Nature herself, and of the actual facts of tree and landscape beauty. All who have seen the pictures by the roadsides of many parts of Britain and the paths over the hills, and, still more so, those who have to form roads or walks in diversified country, will best know how absurd such statements are.

The very statement that there is but one way of making a garden is its own refutation; as with this formula before us what becomes of the wondrous variety of the earth and its forms, and of the advantages and needs of change that soil, site, climate, air, and view give us—plains, river valleys, old beach levels, mountains and gentle hills, chalk downs and rich loamy fields, forest and open country?

**Variety the true
source of beauty
in gardens.**

What is the use of Essex going into Dorset merely to see the same thing done in the home-landscape or the garden? But if Essex were to study his own ground and do the best he could from his own knowledge of the spot, his neighbour might be glad to see his garden. We have too much of the stereotyped style already; in nine cases out of ten we can tell beforehand what we are going to see in a country place in the way of conventional garden design and planting; and clearly that is not art in any right sense of the word and never can be.

As we go about our country the most depressing sign for all garden lovers (and this often in districts of great natural beauty) is the stereotyped gardens, probably made by the "young man in the office" from a book of plans. There is a harmful belief in the virtue of paper plans which is misleading and only suits the wants of professionalism in its worst form, and prevents the study of the ground itself, which is the only right way to get the best result.

Some of the new writers have no heart for the many beautiful things in the shape of trees and shrubs which we have known during the past generation or two.

A very few varieties of English trees are sufficient for all purposes, and we have yew for hedges, fine turf for a carpet, and quite enough flowers of brilliant hue that have always had a place in our gardens without importing curiosities from abroad.

Now, if any fact is clear about gardening it is this, that the garden's charm often arises from variety, not necessarily botanical variety, but the difference between a Menabilly and the conventional garden essentially lies in a variety of trees, shrubs, and flowers. This writer, and others like him, need to be taught that it is absolutely impossible to make a beautiful garden without the variety which he says is useless. They have not, of course, any idea of the dignity and beauty of the trees of Japan, the Rocky Mountains, and Northern Asia, or America.

One architectural writer says :

It is no use spending money on gardeners and repairs, as it might be much better invested in architectural improvements or waterworks in the pleasure-grounds.

Apart from its doubtful taste this is a stupid and harmful idea, as the two arts are in no way antagonistic, but helpful. Take away all true planting and good gardening from our Castle Ashbys, Longleats, or Wiltons, and what do we gain? For remember that the ground about a house, even in slopes which must be terraced, is often but a very small area compared with the planting we may have to do in the home landscape.

But the ugly buildings that strew the land everywhere—Georgian, carpenter's Gothic, Victorian—if we take away the good planting, the one saving grace about them, there will be nothing left but an ugly pile to laugh at. Good building and good planting go so well together—one helping the other in every way—that it is odd to see anyone writing on the subject without seeing that it is so. I cannot suppose for a moment that any good architect or other worker could fail to see the gain of good planting and good flower-gardening in relation to his work. We have only the greatest satisfaction with a country place when both building and planting are good—a rare thing, unfortunately.

To the good gardener all kinds of design are good if not against the site, soil, climate, or labours of his garden—a very important point the last. We frequently see beds a foot in

**Any way good
that best suits
the site.**

diameter and many other frivolities of paper-plans which prevent the labours of a garden being done with economy or simplicity. In many places where these hard pattern gardens are carried out, they are soon seen to be so absurd that the owners quietly turf the spot over, and hence in many country places we see only grass where there ought to be a real flower-garden. The good gardener is happy adorning old walls or necessary terraces, as at Haddon, as he knows walls are good friends in every way both as backgrounds and shelters ;

but he is as happy in a lawn garden, in a rich valley soil, or on the banks of a river, or on those gentle hill-slopes that ask for no terraces, or in the hundreds of gardens in and near towns and cities of Europe that are enclosed by walls and where there is no room for landscape effect (many of them distinctly beautiful too, as in Mr. Fox's garden at Falmouth); as much at home in a border-castle garden as in the lovely Penjerrick, like a glimpse of a valley in some Pacific isle, or Mount Usher, cooled by mountain streams.

The same architect turns on the waterworks as his chief solace :

But of all the fascinating sources of effect in garden-making the most fascinating are waterworks. An expensive luxury as a rule, but they well repay the expense.

Well, there is some evidence of the sort of design these afford ; some instances terrible in their ugliness (one hideous at Bayreuth).

And with all the care that a rich State may take of them, can we say that the effect at Versailles is artistic or delightful? Water tumbling into the blazing streets of Roman cities and nobly designed fountains supplying the people with water was right ; but in our cool land artificial fountains are very different in effect, and often hideous extravagance. Of their ugliness there is evidence in nearly every city in Europe, including our own Trafalgar Square, and that fine work at the head of the Serpentine. We have also our Crystal Palace and Chatsworth, designed as they might be by a theatrical super who had suddenly inherited a millionaire's fortune. What the effect of this is I need hardly say, but with all our British toleration of ugliness I have never heard anybody enthusiastic about their artistic merits. So far as our island countries go, nothing asks for more care and modest art than the introduction into the garden or home-landscape of artificial water. Happily our countries are rich in the charms of natural water—too often neglected in its planting.

Among the great peoples of old, so far as known to our human story, was one supreme in art, from buildings chiselled as delicately

as the petals of the wild rose, to the smallest coins in their pockets, and bits of baked clay in their graves, and this is clear to all men from what remains of their work gathered from the mud and dust of ages. And from that time of

deathless beauty in art comes the voice of one who saw this lovely art in its fulness: *The greatest and fairest things are done by Nature and the lesser by Art* (Plato). There is not a garden in Britain, free from convention and carpet-gardening, from the cottage-gardens nestling beneath the Surrey hills to those fair and

varied gardens in Cornwall, which does not tell the same story to all who have eyes to see and hearts to care for the thing itself, and not merely for incoherent talk about it. The only sad thing is that such words must be said again and again; but we live in a time of much printed fog about artistic things—the “New Art” and the “New Æsthetic”; “Evolution,” which explains how everything comes from nothing and goes back again to worse than nothing; the sliding bog of “realism and idealism” in which the phrasemonger may dance around and say the same false thing ten times over; and, last and least of all among these imbecilities, the teaching that to form a garden one had better know nothing of the things that should grow in it, from the cedar of Lebanon to the violets of the mountain rocks.

This teaching is as false as any spoken or written thing can be; there is an absolute difference between the living gardens and conventional designs dealing with dead matter, be it brick or stone, glass, iron, or carpets. There is a difference in kind, and while any pupil in an architect’s office will get out a drawing for the kind of garden we may see everywhere, the garden beautiful does not arise in that way. It is the difference between life and death we have to think of, and never to the end of time shall we get the garden beautiful formed or planted save by men who know something of the earth and its flowers, shrubs, and trees. I would much rather trust the first simple person, who knew his ground and loved his work, to get a beautiful result than any of those artificers. We have proof in the gardens of English people abroad that were freed from the too facile plans of the “office”; far more beautiful gardens arise, as in the Isle of Madeira, where every garden differs from its neighbour, and all are beautiful. So it is in a less degree in our own island, where the more we get out of the range of any one conventional idea for the garden the more beauty and freshness and happy incident we see.

CHAPTER III.

DESIGN AND POSITION—AGAINST STYLES, USELESS STONEWORK, AND STEREOTYPED PLANS—TIME'S EFFECT ON GARDEN DESIGN—ARCHITECTURE AND FLOWER GARDENS—DESIGN NOT FORMAL ONLY—USE IN THE GARDEN OF BUILDERS', AND OTHER DEGRADED FORMS OF THE PLASTIC ART.

ONE aim of this book is to uproot the idea that a flower garden must always be of set pattern placed on one side of the house. The wants of flowers can be best met, and their varied loveliness best shown, in a variety of positions, and the first thing to do is to consider the effect of arraying all our flowers in one spot under the same conditions, as such a plan can never give us a tithe of the beauty which our gardens might afford. The way has too often been to regard one spot with the same soil and aspect, and with every condition alike, as the only home for open-air flowers, though near at hand there may be positions, each favourable to different groups of flower.

The first thing is to get a clear idea of the hollowness of much of the talk about "styles." In books about laying out gardens there are many dissertations on styles, the authors going even to China and to Mexico for illustrations. The first thing the writer does is to confuse his readers with words about "styles." What is the result to anybody who looks from words to things? That there are two styles: the one strait-laced, mechanical, with much wall and stone, with fountains and sculpture; the other the natural, which, once free of the house, accepts the ground lines of the earth herself as the best, and gets plant beauty from the flowers and trees arranged in picturesque ways.

There are positions where stonework is necessary; but the beautiful terrace gardens are those that are built where the nature of the ground required them. There is nothing more melancholy than the walls, fountain basins, clipped trees, and long canals of places like the Crystal Palace, not only because they fail to satisfy the desire for beauty, but because they tell of wasted effort, and riches worse than

lost. There are, from Versailles to Caserta, a great many ugly gardens in Europe, but at Sydenham we have the greatest modern example of the waste of enormous means in making hideous a fine piece of ground. This has been called a work of genius, but it is the fruit of a poor ambition to outdo another ugly extravagance—Versailles. Versailles was the expression of such knowledge of the gardening art as men then possessed. As Versailles has numerous tall fountains, the best way of glorifying ourselves was to make some taller ones at Sydenham! Instead of confining the terrace gardening to the upper terrace, by far the greater portion of the ground was devoted to a stony extravagance of design, and nearly in the centre were placed the vast and ugly fountain basins. The contrivances to enable the water to go downstairs, the temples, statues, dead walls, all that costly rubbish, were praised by the papers as the marvellous work of a genius. When a private individual indulges in such fancies, he may not injure any but himself; but in this public garden—as an example of all that is admirable—we have, in addition to wasteful outlay, what is hurtful to the public taste.

Many whose lawns were, or might readily have been made, the most beautiful of gardens have spoiled them for sham terraced gardens, and there is a modern castle in Scotland where the embankments are piled one above another, till the whole looks as if Uncle Toby with an army of Corporal Trims had been carrying out his grandest scheme in fortification. The rude stone wall of the hill husbandman, supporting a narrow slip of soil for olive-trees or vines, became in the garden of the wealthy Roman a well-built one; but it must be remembered that, even where the wall is necessary, the beauty of the true Italian garden depends on the life of trees and flowers more than on the plan of the garden, as in the Giusti garden at Verona, whereas in our sham examples of the Italian garden all is flat and lifeless.

TERRACED GARDENS, allowing of much building (apart from the house), have been in favour with architects who have designed gardens. The landscape gardener, too often led by custom, falls in with the notion that every house, no matter what its position, should be fortified by terraces, and he busies himself in forming them even on level ground, and large sums are spent on fountains, vases, statues, balustrades, useless walls, and stucco work out of place. By the use of such materials many a noble lawn is cut up; and often the “architectural” gardening is pushed so far into the park as to curtail and injure the view.

The best effect is to be got not by carrying architectural features into the usually level town garden, but by the contrast between the garden vegetation and its built surroundings—not the sham

Arundel. Example of ground requiring terracing, showing also picturesque disposition of the trees to compare with clipped walls of trees near French châteaux.

picturesque, with rocks, cascades, and undulations of the ground, but the simple dignity of trees and the charm of turf.

Elaborate terraced gardens in the wrong place often prevent the formation of beautiful lawns, though a good lawn is the happiest thing in a garden. For many years past there has been so much cutting up, geometry and stonework, that it is rare to find a good lawn, and many a site so cut up would be vastly improved if changed into a large, nobly fringed lawn. A poorly built house with a fine open lawn has often a better effect than a fine one with a rectilineal garden and terraces in front of it, though there are cases where walls would be the way to a good result.

A style of garden "design" that for a long time has had an injurious effect on many places is the "railway embankment" phase of landscape gardening, in which we see a series of sharply graded grass slopes like well-smoothed railway embankments. In this variety we often find several sharp banks, one below the other, without a protecting wall at the top, and obtruding their sharp green angles on various points of view, and this perhaps in the face of a beautiful landscape.

A beautiful house in a fair landscape is the most delightful scene of the cultivated earth, all the more so if there be an artistic garden. The union between the house beautiful and the ground near it—a happy marriage it should be—is worthy of more thought than it has had in the past, and the best way of effecting that union artistically should interest men more and more as our cities grow larger and our lovely English landscape shrinks back from them. We have never yet got from the garden and the home landscape half the beauty which we might get by abolishing the patterns which disfigure so many gardens. Formality is often essential to the plan of a garden but never to the arrangement of its flowers or shrubs, and to array these in rigid lines, circles, or patterns can only be ugly wherever it may be.

After we have settled the essential approaches and levels around a house, the natural form or lines of the earth itself are in nearly all cases the best to follow, and it is often well to face any labour to get the ground back into its natural grade where it is disfigured by ugly or needless banks, lines, or angles. In the true Italian garden *on the hills* we have to alter the natural line of the earth, or "terrace it," because we cannot otherwise cultivate the ground or stand at ease upon it, and in such ground the formal is right, as the lawn is in a garden in the Thames valley. But the lawn is the heart of the true English garden, and as essential to it as the terrace to the gardens on the steep hills, and English lawns have been too often destroyed for plans ruinous both to the garden and the home landscape. Some-

' Haddon. Old English garden with terracing essential owing to use and nature of ground.

times on level ground the terrace walls cut off the landscape from the house, and, on the other hand, the house from the landscape!

We may get every charm of a garden and every use of a country place without sacrificing the picturesque or beautiful; there is no reason, either in the working or design of gardens, why there should be a false line in them; every charm of the flower garden may be secured by avoiding the knots and scrolls which subordinate all the plants and flowers of a garden, all its joy and life, to a conventional design. The true way is the opposite. With only the simplest plans to ensure good working, we should see the flowers and feel the beauty of plant forms, and secure every scrap of turf wanted for play or lawn, and for every enjoyment of a garden.

Time and Gardens.—Time's effect on gardens is one of the main considerations. Fortress-town and castle moat are now without further use, where in old days gardens were set within the walls. To keep all that remains of such gardens should be our first care—never to imitate them now. Many are far more beautiful than the modern gardens, which by a wicked perversity have been kept bare of plants or flower life. At one time it was rash to make a garden away from protecting walls; but when the danger from civil war was past, then arose the often beautiful Elizabethan house, free from all moat or trace of war.

In those days the extension of the decorative work of the house into the garden had some novelty to carry it off, while the kinds of evergreens were very much fewer than now. Hence if the old gardeners wanted an evergreen hedge or bush of a certain height, they clipped a Yew tree to the form and size they wanted. Notwithstanding this, we have no evidence that anything like the flat monotony often seen in our own time existed then. To-day the ever-growing city, pushing its hard face over our once beautiful land, should make us wish more and more to keep such beauty of the earth as may be still possible to us, and the railway embankments, where once were the beautiful suburbs of London, cry to us to save all we can save of the natural beauty of the earth.

*Architecture and Flower Gardening.*¹—The architect is a good gardener when he makes a beautiful house. Whatever is to be done or considered afterwards, one is always helped and encouraged by its presence; while, on the other hand, scarcely any amount of skill in gardening softens the presence of an ugly building. No one has more reason to rejoice at the presence of good architecture than the gardener and planter, and all stonework near the house, even in the garden, should be dealt with by the architect.

But when architecture goes beyond this limit, and seeks to replace

¹ Read before the Architectural Association on Friday, December 16, 1893.

Longleat. English country house with picturesque planting.

what should be a living garden by an elaborate tracery on the ground, then error and waste are at work, and the result is ugliness. The proof of this is at Versailles, at the Crystal Palace in great part, in the gardens in Vienna, and at Caserta, near Naples. One may not so freely mention private places as public ones, but many ugly and extravagant things have been done by trying to adapt a mode of garden design essential in a country like Italy, where people often lived for health's sake on tops of the hills, to gardens in the plains and valleys of England. I know a terrace in England built *right against the house*, so as to exclude the light from, and make useless, what were once the reception rooms. That deplorable result came about by endeavouring to adapt Italian modes to English conditions, and was the work of Sir Charles Barry. To anyone deeply interested in the question, one of the best places from which to consider it is the upper terrace at Versailles, looking from the fine buildings there to the country beyond and seeing how graceless and inert the whole vast design is, and how the clipped and often now dying, because mutilated, Yews thrust their ugly forms into the landscape beyond and rob it of all grace. To those who tell me this sort of work is necessary to "harmonise" with the architecture I say there are better ways, and that to rob fine buildings of all repose by a complex geometrical "pattern" in the foreground is often the worst way.

Cost and care of stonework in gardens.—Where stone or stucco gardening is done on a large scale, its cost and maintenance are monstrous. The repair of elaborate stonework in gardens is a hopeless task, as any one may see at Versailles or at the Crystal Palace. Is it in the interest of architecture that noble means should be so wasted? As the cost and difficulties of the finest work in building increase, the more the need to keep it to its true and essential uses, especially in face of the fact that half the houses in England require to be rebuilt if our architecture generally is to prove worthy of its artistic aims.

I delight in walls for my Roses, and build walls, provided they have any true use as dividing, protecting, or supporting lines. To take advantage of these and sunny sheltered corners in and about our old or new houses, and make delightful little gardens in and near them, as at Drayton or Powis, is quite a different thing from cutting off the landscape with vast flat "patterns" and scroll-work, as on the terrace at Windsor and many gardens made in our own day.

"Design" not formal only.—I find it stated by writers on this subject that "design" can only concern formality—an error, as the artistic grouping and giving picturesque effect to groups and groves

Sutton Place. Example of Elizabethan house without terracing.

of Oak, Cedar, or Fir are far higher design than putting trees in lines. There is more true design in Richmond Park and other noble parks in England, where the trees are grouped in picturesque ways and allowed to take natural forms, than in a French wood with straight lines cut through it, which the first carpenter could design as well as anybody else. In our own day a wholly different order of things has arisen, because we have thousands of beautiful things coming to us from all parts of the temperate and northern world, and those who know them will not accept a book pattern design, instead of our infinitely varied garden flora. The trees of North America and Asia form a tree garden in themselves, and it is impossible to lay out gardens of any size or dignity without a knowledge of those and all other hardy trees, not only in a cultivated but in a wild state. If anything demands special study, it is that of garden design with our present materials. If that art is to be mastered, the work of a life must be given to it—more than that, a life's devotion—and no less is the sacrifice his own art requires of the architect.

There is no such thing as a style fitted for every situation; only one who knows and studies the ground well will ever make the best of a garden, and any "style" may be right where the site fits it. A garden on the slopes about Naples is impossible without much stonework to support the earth, while about London or Paris there is usually no such need. But these considerations never enter into the minds of men who plant an Italian garden in one of our river valleys, where in nine cases out of ten an open lawn is often the best thing before the house, as at Bristol House, Roehampton; Greenlands, Henley-on-Thames; and in many gardens in the Thames valley. And there are right and wrong ways where we cannot have a lawn garden:—Haddon, simple and charming, on the one hand, and Chatsworth on the other; Knole and Ightham and Rockingham without a yard of stonework not absolutely needed for the house and its approaches, and others with a fortune spent in display of costly stonework, only effective in robbing the foreground of all repose.

The idea that the old style of building in England was always accompanied by elaborate terrace gardening is erroneous. The Elizabethan house had often an ample lawn in front or plenty of grass near, and such houses are quite as good in effect as the old houses and castles where terracing was necessary and right owing to the ground, such as Berkeley, Powis, and Rockingham.

The idea that trees must be clipped to make them "harmonise" with architecture is a mere survival. In the old days of garden design, when in any northern country there were few trees in gardens, these trees were slashed into any shape that met the de-

signer's view. But now that many beautiful trees and shrubs are coming to us from many countries, the aim of true gardening is, so far from mutilating them, to develop their natural forms. In by far the greater number of beautiful places in England, from Knole to Haddon, and from the fine west-country houses to the old border castles, there are many of the fairest gardens where the trees are never touched with shears. Sutton Place, near Guildford, built in 1521, is one of the most beautiful old houses in the home counties, and its architecture is none the less delightful because the trees near show their true forms. It is also an example of a fine old house around which there is no terraced gardening.

It would be as hopeless to design a building without knowing anything of its uses or inhabitants as to design a garden without full knowledge of its nobler ornaments—trees and the many things that go to make our garden flora vary so much in form, habits, and hardiness according to soils, situations, and districts. Errors of the most serious kind arise from dealing with such things without knowledge, and any attempt to keep the gardener out of the garden must fail, as it did in our own day in the case of the broken brick and stone flower beds at South Kensington. Except for what is mostly a very small area near the house, the architect and garden-designer deal with distinct subjects and wholly distinct materials. They should work in harmony, but not seek to do that for which their training and knowledge have not fitted them.

STATUES IN GARDENS.—By common consent the British statue is nothing to be proud of, and the spread of the statue mania to gardens—public or private—is to be deplored. The place for a good statue is within the protection of some public or other building; a bad one is better out of sight altogether. A witty French writer, M. Harduin, has lately been protesting against this *statuomanie* as he calls it, and says, quite justly, that a statue that fixes the eye in a garden is no good substitute for the effect of tree, or grass, or flower. Further, that we have already too many statues in cities. Assuming, however, that people are satisfied with statues as they are, it is surely unnecessary to spot them over the parks and in gardens while there is such an immense choice of sites for these or similar monuments on embankments or in streets.

In a northern country like ours a statue of any high merit as a work of art deserves to be protected by a building of some kind. The effect of frost and rain in our climate on statuary out-of-doors is very destructive, and the face of a statue of some merit put up only a few years ago opposite the Royal Exchange is now rotted away. The scattering of numerous statues of a low order of merit, or of no merit at all, which we see in some Italian gardens, often gives a bad effect, and the

dotting of statues about both the public gardens of Paris and London is destructive of all repose. If a place be used for the exhibition of sculpture, well and good ; but let us not in that case call it a garden. In Britain statues are often of plaster material, and those who use a garden as a place to dot about such "works of art" do not think of the garden as the best of places to show the work of Nature, and as one in which we should see many fine natural forms.

The earliest recollection I have of any large garden was one strewn with the remains of statues, but as my evidence as to effect and endurance might not be thought impartial, we may call as a witness Victor Cherbuliez, of the French Academy.

"It was one of those classical gardens the planners of which prided themselves upon as being able to give Nature lessons in good behaviour, to teach her geometry and the fine art of irreproachable lines ; but Nature is for geometers a reluctant pupil, and if she submits to their tyranny she does it with an ill grace, and will take her revenge. . . . The large basin no longer held any water, and the dolphins which in days gone by spouted it from their throats looked as if they asked each other to what purpose they were in this world. But the statues had suffered most ; moss and a green damp had invaded them, as if some kind of plague or leprosy had covered them with sores, and pitiless Time had inflicted on them mutilations and insults. One had lost an arm, another a leg ; almost all had lost their noses. There was in the basin a Neptune whose face was sadly damaged and who had nothing left but his beard and half his trident, and further on a Jupiter without a head, the rain water standing in his hollowed neck."

As to the artistic value of much of our sculpture, Lord Rosebery, in his speech at Edinburgh in 1896, said—

"If those restless spirits that possessed the Gadarene swine were to enter into the statues of Edinburgh, and if the whole stony and brazen troop were to hurry and hustle and huddle headlong down the steepest place near Edinburgh into the deepest part of the Firth of Forth, art would have sustained no serious loss."

The *Pall Mall Gazette*, commenting on this speech, wishes for a like rush to the Thames on the part of our "London monstrosities," and yet this is the sort of "art" that some wish us to expose in the garden, where there is rarely the means to be found to do even as good work as we see in cities. If the politician and the journalist ask to be delivered from the statues with which the squares and streets of our cities are adorned, our duty as lovers of Nature in the garden is clear.

In its higher expression nothing is more precious in art than sculpture ; in its lower and debased forms it is less valuable than almost any form of art. The lovely Greek sculpture in the Vatican, Louvre, or British Museum is the work of great artists, and those who study it will not be led astray by goddesses in lead or New Road nymphs in plaster. If we wish to see the results of sculpture

in the architect's own work we have but to look at the public buildings in London where it is used, mostly to spoil any architectural grace such buildings should possess, as in the National Portrait Gallery, the Natural History Museum, and the Home Office buildings, and then we may better judge how far we may go in our gardens with such art.

Real artists in sculpture are not concerned with garden design, and sculpture is not the business of the builder or landscape gardener. A statue or two of any artistic value may be placed in a garden with good effect, never, however, forgetting that a garden is a place for beautiful life, not death. It is not that we despise other arts than our own, they may charm and even help us, as in the case of a landscape painting by a man of genius. Even a drawing of a tree or flower may be a lesson in form and beauty; but all debased "art" is as harmful in the garden as it is anywhere else.

CHAPTER IV.

VARIOUS FLOWER GARDENS, MAINLY CHOSEN FOR THEIR BEAUTY; COTTAGE GARDENS IN KENT AND SOMERSET; MOUNT USHER; GREENLANDS; GOLDSBORO' HILL; PENDELL COURT; RHIANVA; SHEEN COTTAGE; DRUMMOND CASTLE; PENSHURST; COMPTON WINYATES; KETTON COTTAGE; POWIS; COTEHELE; EDGE HALL; SHRUBLAND; CHILLINGHAM; BULWICK; OFFINGTON; WILTON; STONELANDS, AND OTHERS.

THESE gardens should help us to get the most precious lesson as to design—that the best-laid-out garden is that which is best fitted for its situation, soil and climate, and without much consideration as to any “style.” Once we make a rule and say, this is the best and only way, it is not only the good architect, and that still rarer being, the good landscape gardener, who will carry it out, but anybody who has any influence in building or gardening will do the same thing in all sorts of positions with any kind of material, including the “young man in the office” and other persons who have never even given the slightest thought to any kind of artistic planting, let alone any serious study of garden design. Of the expression of this inartistic ruling we see painful evidence everywhere in the terraces like railway banks out of place and rampant through the land. On these stereotyped ideas is based another leading to greater evil, which is that, once you have got your patterned plateau, you cannot have your flowers in artistic or picturesque ways on it, and so the poor gardener has to go on trying to adapt ugly patterns in flowers to the ugly plan that is given him. The second idea is false too, as flowers may be arranged in right and natural ways in any garden, but that fact has not killed the common error that we cannot throw formality overboard in arranging flowers.

The really artistic way is to have no preconceived idea of any style, but in all cases to be led by the ground itself and by the many things upon it. Why should we in the plains or gentle meadows of

England not give effect to the beautiful lines of the landscape, and make our gardens harmonise with them? The right way is, to carry no style in one's head or pocket, and then, before saying much, go over the ground and see it from every point of view, with a view to getting the best that the site, soil, and surroundings will give. If the idea of the bastard Italian garden were the truest that could be expressed by man, it must inevitably lead to monotony and to stereotyping of the garden, and it is only by respecting the site itself and letting the plan grow out of it that we can get gardens free from monotony, and suggestive also, as they should often be, of the country in which they occur. If all our efforts only go to stereotyping the home landscape, it is hardly worth while going for a change from the Midlands into Devon. Why should we not in these islands of ours, where there are so many different kinds of landscape and characteristics of soil and climate, have gardens in harmony, as it were, with their surroundings? Also the taste of the owner ought to count. Why should he be bound to the conventional style? As no one is so likely to know the conditions of soil and climate, and the capabilities of a district as one who has lived amidst them, if we come to the aid of such an owner with an open mind as to style, we shall be much better able to give effect to his views in the shape of artistic and distinct results.

Everywhere the ugliest things are seen, especially in the larger places, but here and there one sees gardens that are beautiful, and nothing will help us so well to a clear view of what is best in the flower-garden as the consideration of such places, but we may first say something of the new and wrong way of having no flowers near the house.

Those who notice the ground round country seats find now and then a house without any flower garden, and with the turf running hard into the walls—the site of a flower garden without flowers. This unhappy omission we may suppose to result from the ugliness in summer, and nakedness in winter, of the common way of planting a flower garden.

But it is a mistake to suppose that the only alternatives to such nakedness are coarse perennials and annuals, that flower a short time and are weedy the rest of their days, or the ordinary summer-planting. Many delightful things may be grown near a house; fragrant plants, too, plants beautiful not only in summer but in colour even in winter. The ceaseless digging about of the beds also may prejudice people against flowers in the garden, as the bedding plants set out in June were taken away in autumn and replaced by spring-flowering things. These had a short period of bloom in spring, and were, in their turn, pulled up leaving bare beds

until the summer flowers were planted, sometimes very late ; so that in June, when we ought to have flowers or, at least, pleasant colour wholly over the ground, there was nothing but grave-like earth, but the spring flowers round a country house should be grown in a different way. They may be naturalised in multitudes, grown in borders, in special little gardens for bulbs, and in various other ways without in the least disturbing the beds near the house, which should for the most part be planted permanently, so that the greatest amount of beauty may be had throughout the fine months, without disfiguring the beds during those months.

But the permanent flowers should be hardy, and of the highest order of beauty, and such as require more than a few weeks or months for development ; though here and there blanks might be filled with good, tender plants, like *Heliotrope*. Many of the hardy flowers, too, should be fragrant—Tea Roses, Carnations, and tufted Pansies ; all those, grown in large groups, give off a grateful odour round a house. What is the soil in these gardens for ? Why do people make them ? Surely it is not to have them laid down to grass in a country like ours where grass in park, meadow, lawn, and playground is seen on all sides ? The objection to the bare surface of beds in such gardens is a just one ; but it is easily got rid of by permanent planting ; and if the ground in the early state of the bed or from any other cause is bare below the flowers, it is quite easy to surface the beds with small rock and other plants of good colour nearly all the year.

ENGLISH COTTAGE GARDENS are never bare and seldom ugly. Those who look at sea or sky or wood see beauty that no art can show ; but among the things made by man nothing is prettier than an English cottage garden, and they often teach lessons that “great” gardeners should learn, and are pretty from Snowdrop time till the *Fuchsia* bushes bloom nearly into winter. We do not see the same thing in other lands. The bare cottages of Belgium and North France are shocking in their ugliness ; even in Ireland and Scotland we do not see the same charming little gardens, nor are they so good in some parts of England ; as in Surrey, Kent, and the southern counties. I often pass a small cottage garden in the Weald of Sussex never without a flower for nine months in the year. It is only a square patch, but the beauty of it is far more delightful than that of the large gardens near, and it is often pretty when they are bare.

What is the secret of the cottage garden’s charms ? Cottage gardeners are good to their plots, and in the course of years they make them fertile, and the shelter of the little house and hedge favours the flowers. But there is something more and it is the

Cottage garden at Mallingley, near Winchfield, Hants.

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absence of any pretentious "plan" which lets the flowers tell their story to the heart. The walks are only what are needed, and so we see only the earth and its blossoms.

A COTTAGE GARDEN IN KENT.—Driving on one of the sunny days of autumn through the Weald of Kent from Charing to Ashford—a country strewn with pretty houses and gardens—an old house set in flowers was seen to the left just after passing the pretty

Old mill-house garden at Mount Usher, Wicklow.

village of Charing and the big woods above it. We turned from the main road, and, looking over the low garden wall, were asked in to see the pretty old house, oak-panelled, and to stroll about the small garden, little more than a cottage garden in its simplicity of planting. No pretentious plan to consider, only the yellow Sunflowers of the season massed in their own way and running about inside the little wall, and by their profusion giving an unity as well as richness of colour. One lesson of these little gardens, that are so pretty, is that one can get good effects from simple materials, and the absence of complexity and pretence of "design" aids these pictures very much. Many things are not needed for good effect, and very often we see

gardens rich in plants, but not artistic because too much cut up into dots. There is no reason why gardens should not be rich in plants and pictures too, but such are rare. A precious thing in a garden is a beautiful house, and this, with its pretty, brown-tiled roof and oak-timbered walls, is an example of many in the Weald of Kent which have braved several hundred winters and are so beautiful in colour. If these cottage gardens are beautiful from such simple materials, how much more might we get by good hardy flower gardening round old country houses with lovely backgrounds and old walks. The Somersetshire cottage garden is in a milder climate than this, and in Somerset things seem to do so well, and in all that delightful west-country. In Kent we must trust to the hardy things of which there are so many that no cottage garden can contain half of them; but in Somersetshire we may have many things which seldom thrive on the eastern side—Myrtle, Bay, and Passion-flower, tall Fuchsias, and even things in the open air in winter which in many other districts we have to put in the greenhouse.

MOUNT USHER, A WICKLOW GARDEN.—A quaint creeper-laden mill-house at Ashford, with an acre or two of ground, partly wooded, through which the silvery Vartry River flows, gentle as it falls over its little rocky weirs in summer, but swollen and turbid after wintry storms. The place is really an island at the bottom of a valley; the hilly country around is beautifully diversified, and is graced by the finest of native timber trees. The garden is quite unlike any other garden I have seen, and to see it in the time of Lilies, Roses, Pæonies, Poppies, and Delphiniums is to see much lovely colour amongst the rich greenery of the rising woodlands. In autumn the colour is less brilliant, but equally satisfying as the eye wanders from the Torch Lilies and Gladioli to the blue Agapanthus, and thence to the Pine and Fir-clad hills.

An old Ivy-covered wall makes a good background for the brilliant *Tropæolum speciosum*, which everywhere runs wild about the place, throwing its soft green wreaths over twig and branch, their tips scarlet with blossoms, or heavily laden with turquoise-blue berries. Here also the soft rosy Hydrangeas bloom, and may be seen the big scarlet hips on the great Apple Rose of Parkinson (*Rosa pomifera*), with its large glaucous leaves scented like those of the Sweet Brier. Mount Usher is a charming example of the gardens that might be made in river valleys, especially those among the mountains and hills. In such places there is often delightful shelter from violent winds, while the picturesque effect of the mountains and hills around offers a charming prospect from the gardens. There is a distinct charm about many Irish gardens, and the country also is excellent, at least in the shore districts, for the growth

of many plants that soon perish out of doors in most parts of England.

GREENLANDS is an example of a garden in which the river front of the house is a simple sloping lawn. Originally laid out by Mr. Marnock for Mr. Majoribanks, it has long been a garden showing good work. There are no terrace gardens, and one passes easily from the house to a pleasant lawn and the well-planted grounds around, studded with many fine trees, among which are beautiful groups of Cedars. A flower garden in front of the house is here avoided ; but at a little distance there are various flower gardens within easy reach, and this plan keeps the lawn immediately in front of the house unbroken, instead of, what it too often is, patched with brown earth or, not always happy, masses of flowers. It would not be the best plan to follow in every case ; the more variety the greater the charm, and there are ways of delightful flower-gardening in which no bare earth can be seen, while there are many cases where the sunny and secluded sides of the house afford the best of sites for the flower garden.

PENDELL COURT.—It will be seen here that even where it is desired to have the flower garden, in part, against the house, it is by no means always necessary that the ground should be made “architectural.” It is a great pleasure to see a beautiful old house, with no impedimenta to keep one away from the door. There are three good views of it : first, that of the lawn in front of the house, which was a flowery meadow yet uncut, with no beds or other obstructions to the view of the house, and with a fine group of trees on either hand. It was a poem in building and in lawn. Quite on the other side a border of flowers and a wall of climbers ran from the house. Looking along this border to the house, a shower of white climbing Roses was seen falling from the wall, and a quaint gable and a few windows and glistening rich Ivy behind formed a lovely picture. Another view of the house from across the water, showing its west end, is also very beautiful. There is a Wild Rose bush on the right and a tuft of Flag leaves on the left ; before you, the water and its lilies ; then a smooth, gently rising lawn creeping up to the windows, which on this side are all wreathed with white climbing Roses. All these views of the same house, although distinct, show no frivolous patterns, fountains, statues, and such objects, which often destroy all repose. The view from the house to the left is also free and charming—a wide meadow climbing up the hill through groups of trees, and in the woody part reminding one a little of Alpine pastures.

RHIANVA.—We have not only to deal with ugly gardens, made in the wrong places, but with a false idea that all the flowers

Cottage and garden near Charing, Kent. Engraved from a photograph sent by Miss Vinall.

must be set out as smooth and as "hard" as tin plate, and that terraced gardens are not suited for our beautiful hardy flowers. But one may here and there see a better way, and at Rhianva, the free growth of evergreens and climbers, and the delightful inter-lacements of hardy flowers, ferns, and creepers, make the garden beautiful. Again, I remember, the garden at Ockham Park in Dr. Lushington's time was formal and yet beautiful, through the freedom of the vegetation. So again in Italy, the stiffness of the stone is soon softened by the graceful forms of trees, shrubs, and trailers as at Verona and in many Italian gardens.

Fifty years ago the site of Rhianva, on the banks of the Menai Straits, was a steep field, with the large gray rocks so characteristic of Anglesey, and was crossed by a small stream which lost itself in marshy ground by the shore, where stood a couple of old Apple and Thorn trees and a little white-washed cottage. The extreme steepness of the rocky ground made the site difficult to deal with, and a number of supporting walls were built to form terraces ; and, by the help of a protecting sea-wall, the flowers were carried down to the very edge of the water. Facing a little to the south-east, the garden was protected from the violence of the westerly gales, while the more tender plants were sheltered from the east winds of spring by the larger shrubs and trees. The climate is mild in winter, and the garden being on a southern slope the trees and shrubs grew with great rapidity ; so that hedges of red Fuchsias and of blue and pink Hydrangeas soon hid the stone walls. Myrtles and Camellias, and some Acacias, were found to thrive out of doors ; and at the present time the only difficulty is to prevent the shrubs from injuring each other, through their rapid growth. In summer the luxuriant abundance of the Roses, climbing from bush to bush, the Cypresses, the Tamarisk and the Vines ; and the sea, and the purple mountains in the background, seem to belong rather to the Lake of Como than to Anglesey. All the borders are mossed over with small green plants ; large, hardy exotic Ferns are spread into groups ; and a lacework of Ivy, Vine, and creepers is seen in many parts. A mixed order of planting is pursued, but in many cases the shrubs and plants are allowed to spread as they will, and the climbers take picturesque shapes. Rhianva is an example of the error of the notion that a terraced garden should only be arranged as a "bedded-out" garden. We have here a terraced garden in a position that called for it, namely, a rocky slope, in which the only way of making a garden was by terracing the ground, but it is a garden that shelters every treasure of our garden flora, from the Cyclamen to the Tea Rose.

It has been said that, however valuable the more beautiful hardy

flowers, their place is not the parterre, but some out-of-the-way spot. Not only may any terrace garden be embellished with hardy flowers,

Gilbert White's garden at Selborne, engraved from sketch by A. Parsons, flowers mostly on the outer fringes of lawn in borders, and around beds of "peat shrubs."

but it is the best place for them. The odd notion that our fairest flowers must not show themselves in the flower garden might lead

one to suppose that there never was anything in the flower garden before bedding-out was invented. Is it well to devote the flower beds to one type of vegetation only, whether it be hardy or tender? We have been so long accustomed to forming flat surfaces of colour in flower beds that few think of better ways of filling them. In Nature vegetation in its most beautiful aspects is rarely a thing of one effect, but rather a union or mingling of different types of life often succeeding each other in bloom. So it might often be in the garden. The most beautiful effects must be obtained by combining different forms so as to aid each other, and give us a succession of pictures. If any place asks for permanent planting it is the precious spot of ground near the house; for no one can wish to see large, grave-like masses of soil frequently dug near the windows. It is easy to form beds that would look well in all seasons by the use of choice shrubs of many kinds—Rhododendron, Azalea, Dwarf Cypress, Heath, Clematis, Honeysuckle, Weigela, Hydrangea, Skimmia, Rock Rose, Tamarix, Daphne, Yucca, Tree Peony. Why should we not use beautiful Andromedas or Kalmias or fine evergreen Barberries in the flower garden in the same way as Camellias or Acacias or Tree Ferns in the winter garden to break and vary the surface?

The shrubs should be arranged in an open way, the opposite to the crowding of American shrubs common in our beds. In these all individual character and form are crushed away in the crowd; yet there is scarcely a shrub that has not a charm of form it will show if allowed room. One good plan is to allow no crowding, and to place the *finest hardy flowers in groups between the free untortured shrubs*. Thoroughly prepare the beds; put in the choicest shrubs, which, without being high enough to obscure the view, adorn the earth all the winter as well as all the summer, and give us a broken surface as well as a beautiful one, and, far from leading to monotony, this would lead to an infinite and varied succession of beauty.

We should not then have any set pattern to weary the eye, but quiet grace and verdure, and little pictures, month by month. The beds, filled with shrubs and garlanded with evergreens and creepers, would everywhere afford nooks and spaces among the shrubs where we could grow some of the many fine hardy Lilies with the Gladioli, Phlox, Iris, tall Anemone, Peony, and Delphinium. The choice shrubs suited for such beds are not gross feeders, like trees, but on the other hand encourage the finer hardy bulbs and flowers. They also relieve the plants by their bloom or foliage, and when a Lily or Cardinal Flower fades after blooming it is not noticed as it might be in a stiff border. In this way we should not need the wretched and costly plan of growing a number of low evergreens in pots, to “decorate” the flower garden in winter.

To get artistic effects in such a flower garden we must not by any means adopt the usual close pattern beds, because no good effect

Rhianva, Anglesey. A terraced garden with picturesque planting.

can be got from beds crowded on each other like tarts on a tray. Repose and verdure are essential. Before making the change from

the dwarf plants only, be they hardy or tender, it would be well to see that there is ample repose or room for the full expression of the beauty of each bed or group, and no complication or crowding, no complex or angular beds. *The contents of the beds and not their outlines are what we should see.* By this way of planting with beautiful flowering summer or evergreen shrubs, with abundant space for flowers to grow between, we might see beauty in our terrace garden beds on the dullest day in winter. Between the low bushes we could have evergreen carpets of Alpine plants and tiny hill shrubs, and through these the autumn, winter, and spring flowering bulbs could bloom, untarnished by the soil splashing of the ordinary border. Shelter, as well as the best culture, could be thus secured for many a fair flower, which, once well planted, would there come up year after year. Among the flowering shrubs we have many lovely wild and garden Roses to help us with our plans.

SHEEN COTTAGE.—The late Sir Richard Owen's garden is one of the most charming and simple in the neighbourhood of London. Many a visitor to Richmond Park enjoys the view of his cottage, as it nestles on the margin of the sweep of ground near the Sheen gate, but it is from the other or the garden side that the picture is best. A lawn, quite unbroken, stretches from near the windows to the boundary, and is fringed with numerous hardy trees. Here and there are masses of flowering shrubs and an odd bed of Lilies, while numerous hardy flowers are seen among the Roses and Rhododendrons. There is in the main part of the garden only one walk, which takes one round the whole, and does not show, as it glides behind the outside of the groups which fringe the little open lawn. Instead of coming quite close to the house it is cut off from it by a deep border of evergreen shrubs, intermingled with Lilies and hardy plants, and their flowers look into the windows. Instead of looking out of the window, as usual, on a bare gravel walk, the eye is caught by Rhododendrons or Spiræas, with here and there a Lily, a Foxglove, or a tall Evening Primrose. From the other side of the garden the effect of the border is quite charming, and the creeper-covered cottage seems to spring out of a bank of flowers. The placing of a wide border with Evergreens against the house is a pleasant change from the ordinary mode of laying out little gardens. Another agreeable feature of this garden is the grass walks, which ramble through a thick and shady plantation. Even in our coolest summers there is many a day on which such shady walks, carpeted with grass, are the most enjoyable retreats one can find. And their margins form capital situations for naturalising many beautiful hardy plants—Daffodils, hardy Ferns, Scillas, the tall Harebells, Snowdrops, and Snowflakes.

CAWDOR CASTLE.—The view of Cawdor shows the good of having some form and variety of shape in a garden, be the garden large or small. The trees, shrubs, and bushes give the light and shade and variety of form which is so often absent from our gardens. The hard effect which the ordinary garden shows results from the want of all mystery or variety of surface or form. In the case of Cawdor the beds are simple, so that we are less concerned with pattern or plan than with the flowers. This is as it should be. It is not a model to be followed everywhere, but such freedom and variety is greatly to be desired in gardens. After all considerations of plan have been settled, we ought to abolish the too common practice of excluding all things of a bushy, upright nature from our flower gardens.

DRUMMOND CASTLE.—A house on a rock, graced with many Ferns and Ivy, and wild flowers natural to the spot. It would not be easy to find a more graceful example of "natural" rock gardening. It is only, however, on going to the south side of the house, where the ground falls rapidly and is supported by terrace walls, that all gloom is dispelled by the brightest array of blossoming climbers that ever clad gray stones with beauty. To fancy one's self in some fairyland of sun-bathed flowers a thousand miles south in a lap of the mountains would be easy. No Italian gardens could probably show the same high beauty at the end of summer, whatever they might do earlier, and the very coolness encourages and prolongs the bloom. The shelter of the terrace, with the house behind, helps many things ; but, beyond training, there is little artificial help. It is our privilege of growing so many plants from other countries that makes our open-air gardens so beautiful in the fall of the year : here, when the leaves begin to colour, and when even the Harebell is past its best on the banks, we have a very paradise of flowers. The fact that this fine plant beauty may be enjoyed by all who have a patch of ground and a wall makes it a precious gift, and the plants that here give most flowers are nearly all as easily grown as our common Honeysuckle.

Loveliest of all the climbers here is the Flame Nasturtium (*Tropæolum speciosum*), which drapes these stately walls, as it does those of many a cottage in Scotland. Admirable for walls as is this fragile and brilliant plant, it is seen to even greater advantage when a delicate shoot runs over a Yew-hedge, with its arrows of colour, and near it on the walls are many flowers of the older and once better-known *Tropæolums* ; showy, climbing *Nasturtiums* of gardens grow high on the walls, and add to the rich glow of colours. Nothing could surpass the rich purple of the *Clematis* here—waves of colour, and flowers of great size, the cool hill air suiting them so well.

In the warm or temperate south, in Madeira or the Riviera, the garden lover sometimes makes a pretty hedge of Oak-leaved Geraniums ; but, as one does not see them in the South of England, it is a surprise to see them happy on the walls here in Scotland, growing from four feet to seven feet high, with fresh foliage and many flowers. Their spicy fragrance and pretty foliage make them worth the trouble of storing in the winter, and placing in the open air in early summer. All the winter they are kept in the house on trellises, and, carefully trained in summer against the warm wall, soon make fresh growth and are in good bloom late in September.

Large borders of the common river Forget-me-not remind us of its value as compared with the wood and Alpine Forget-me-nots usually grown in gardens. It is beautiful in moist borders, flowering long through summer and autumn. The charm of the place almost ceases with the terraces, for below them is one of those wonderful displays of "bedding out" in its cruder forms, which attains its greatest "glory" near large Scottish houses,—plants in squares, repeated by thousands, and walks from which all interest is taken by the planting on each side being of exactly the same pattern.

STEPS AND TERRACE IN THE OLD PARK, AXMINSTER.—This engraving is instructive as regards the bare state of many gardens. For many years past the rule in some of the most pretentious geometrical gardens has been to allow no vegetation on the walls or balustrades, but the older and graceful way is to garland all wall surfaces with beautiful life, and not to wholly hide them in doing so. Dividing lines and walls may do their work without being as bare as if in a stonemason's yard.

The idea of the terrace garden came from the steep slopes of Italy and Greece. The rough wall of the peasant, which prevented the earth from being washed away, and gave a little depth on the stony hillside, became, in the garden of the wealthy man, the built terrace,—structurally right, and necessary whether men gardened for pleasure or for profit. Having got their ground level through terracing, it was the rule to plant with beautiful things—Olive-trees for profit, and Cypress for shade. If anybody will compare such effects with the common debased English planting of the flower-garden, where everything is hard and flat and nothing is allowed on the walls, he will at once see a vital difference.

PENSHURST.—There is no more essential charm for a garden than that it should be itself in character and not be a copy of gardens near it or elsewhere. This merit belongs to Penshurst, and the network of orchard trees and tall summer flowers beneath them which make up much of the flower gardening there. Much of the ground between the kitchen garden and the house is thrown into squares and strips,

which shelter and divide the space, and most of this space between the hedges is planted with fruit trees, and walks—very often Grass walks—running between them. The remaining spaces are planted

A west country garden. Selwood Cottage, near Frome. Rough wall in foreground covered with rock and wall plants.

with flowers, from beds of Carnations to mixed borders of tall herbaceous plants and Lilies. Foxgloves are at home here, and in rather broad masses under the trees their effect is charming—the

shade and mystery of the overhead growth give them something of the look they have in woods. The lines of border after border are broken by the trees, and the effect is very soft and different from what it so often is, while the colour tells splendidly in the case of masses of Orange Lily. The growth is free, and there is no such thing as primness, which greatly helps the effect. Groups of *Acanthus* look well here, and *Delphinium*, *Meadow Sweet*, giant *Scabious*, and many a hardy flower are refreshing to see.

But *Penshurst* is an example of the many gardens (new and old) where the reaction from the hardness of bedding out and the winter bareness of it have led people to do away with flower beds near the house. It is not the old way to clear everything away but shaven Grass near a beautiful old house, nor is it the true way, but it is now a common one, and it gets rid of much of the ugliness of beds.

But there are ways of putting flowers in charming modesty about a house as well as that of digging up in early summer ugly grave-like beds for them. In the old days flowers clustered round the house, and were the better for its shelter, warmth, and colour. Long before the massing system, with all its garishness, was discovered, flowers were planted for many generations in quiet ways about old English houses. It is right that the main entrance and park side of a great house should be frank and open, but to make the house bare all round for the sake of bare Grass, and to lose all the advantage of shelter and seclusion, is not the best way by far. Bays and warm corners, and high walls and their shelter and variety of aspect, are delightful for flowers—flowers such as could not injure any building; not even a suspicion of the injury that comes from *Ivy* betimes could attach to borders of *Fern* or *Iris*. If we lived in a country where close turf was not seen in the park, or hills, or fields, there would be a reason for having nothing but turf under the windows. In the park the short nibbled turf is often fringed by *Bracken*, *Foxglove*, and *Wild Rose*; whereas, near the house, the way too often now is to let the turf run hard and straight into the walls, and the winds of heaven strike the house untempered by the breath of a *Violet*.

The question of some degree of seclusion about country houses is bound up with this. Nothing is worse than planting that hides sun and air from a beautiful house, but dividing lines and little sheltered gardens are often needed. There are so many ways of screening off such precious spaces, too—*Vine*, *Sweet Verbena*, *Winter Sweet*, and *Jasmine* for low walls; *Rose*, *Sweet Brier*, and *Honeysuckle* for fragrant or blossoming hedges; *Clematis*, *Wistaria*, and climbing *Rose* for arch or pergola. The very lines for shelter or privacy might be gardens of the most fragrant and beautiful things we have, from the winter *Jasmine* to the climbing *Tea Rose*. No, the Grass alone is not

Manor House garden, Stonelands, Sussex.

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and never can be the artistic way on all sides of a house, and the common French way of a waste of gravel all round a house is still worse. The gray of the Carnation is welcome in winter seen from the windows, and there are many evergreen rock plants that take their deepest hues of green in winter, and they are a long way better, even for their green, than the winter-worn turf. It is often well, too, to see a glimpse from the windows of the way the Crocus opens its heart to the sun—brilliant forerunner of crowds of fair blossoms.

COMPTON WINYATES.—Compton Winyates is one of the dearest of the old houses jewelled over the land of England, the most charming of countries for its houses. There are graceful old climbers and trees near, but not much showy gardening—almost none. There is also very little of what is called pleasure ground in the ordinary sense ; but that is too stereotyped a thing to make one regret it in the presence of such a beautiful home. None the less is it pleasant to wander over the high fields near and along the deep slopes of the coombe, especially in the autumn time with the tree leaves rich in colour, and the Barberry laden with a thousand coral boughs. Compton Winyates is one of the old houses not surrounded by terraces, but sits quietly on the turf, and tells us, as other of our finest old houses do, that each situation demands its own treatment as regards the surroundings of the house.

KETTON COTTAGE.—This is one of the Elizabethan farmhouses common in the villages round Stamford, with some recent additions. It stands in the village, a short distance from the beautiful church of St. Mary, a few yards from the little river Chater, which, coming down from Leicestershire, falls into the Welland a mile or two below Ketton and as far above Stamford. As the position is sheltered from rough winds, the small space of ground between the road and the river has proved a home for such of the hardy shrubs and flowers planted in it during the last thirty years as find the lime in both soil and water congenial to them.

The banks of the stream are in places fringed with Royal Fern and the large American Ferns, all of which bear patiently the floods which sometimes in summer and often in winter pass over their heads, lasting now and then for several weeks. All these Ferns thrive in a bed of rough leaf-mould, 6 inches or 8 inches above and below the usual water level, partly coated in the course of years with earth from the floods, and partly denuded by the action of the water, which is prevented in the exposed portions from washing away the roots by a covering of heavy stones, between which there is just room for the crowns to appear. These conditions prevent the growth of seedling Royal Ferns, but the old plants are, after more than twenty years, as vigorous as their kindred in

Ketton Cottage. Garden framed in trees showing their natural forms. Engraved from a photograph by Mr. J. T. Hopwood, Ketton Hall.

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the Norfolk marshes, the fronds of some in the shade being more than 6 feet in length. In a place rather more sheltered from the force of the stream the American Royal Ferns thrive equally well; as also on a somewhat higher level a certain number of other strong Ferns which do not suffer by floods.

On an open part of the bank a quantity of purple Loosestrife makes a good background for the Ferns, and a patch of Meadow Rue gives variety and a distinct autumn colour. For the rest the engraving shows the distinct and very happy effect of the garden, which is a home for many and beautiful hardy flowers. H.

POWIS CASTLE.—Of the many gardens I have seen, very few gave me the pleasure of Powis: first, because of its noble drive through great Oaks with breaks of Fern between, so unlike the dark monotonous avenue which spreads gloom over so many country seats. The light and shade and the noble forms of the trees make the picture more beautiful than any primly set-out avenue. The flower garden is beautiful, partly owing to its position, which is that of a true terrace garden—*i.e.* the ground falls so steeply, that terracing is necessary. These terraces were wreathed with Clematis and beautiful with shrub, and flower, and life, a picture of what a flower garden should be.

As the original name, "Castell Coch," signifies, the castle is built of red sandstone, and stands on the same rock, and the terraces are hewn out of this, which forms the walls, for the most part unaided by masonry. Glancing over a balustrading from the castle level on to the terraces beneath, the scene is charming, and we are struck at once with the harmonious blending of the flowers and their surroundings. A happy idea is carried out in regard to colours by the three terraces having each its predominating colour—*viz.* the lowest white, the middle yellow, and the highest purple; not that other colours are excluded, but these prevailing tones are maintained. A charm of this terrace has been for years a number of trellises, 8 feet to 10 feet high, covered with Clematis. Here and there the Flame Nasturtium suspends graceful festoons of brightest colour. Pyramids, Sweet Peas, good perennials and choice annuals are used; the stiffness of hard lines being quite broken by the Clematis, Roses, Sunflowers, Hollies, Japanese Maples, and Tree Pæonies. The walls of the terrace are covered with Roses, Clematises, Pears, Peaches, Nectarines, Pomegranate, which flowers freely every season, Magnolia, and Wistaria.

COTEHELE, CORNWALL.—This is one of the finest old houses in the west of England, and the quaint old terraces are laid out in old-fashioned beds and borders filled with hardy flowers. Very little masonry is seen in the formation of the terraces, and the old walls

are mantled with various creepers, Vines, Myrtle, Clematis, Magnolia, Jasmines, and Ivy.

The engraving gives a faithful representation of one side of the house, looking east. It is situated on the summit of a high hill on the Cornish side of the river Tamar, with views of its winding course, also of the distant ranges of hills in both Devon and Cornwall. The picturesque freedom of the planting is delightful, the house being prettily covered.

SHRUBLAND PARK.—Shrubland Park, in Suffolk, illustrates the

Powis Castle, Welshpool.

recent history of English flower-gardening, as it was the great bedding-out garden, the "centre" of the system, and which provided many examples for other places in England. The great terrace garden in front of the house was laid out in scrolls and intricate beds, all filled with plants of a few decided colours, principally yellow, white, red, and blue, and edged with Box. In every spot in this garden the same rigid system of set beds was followed, and not a creeper was permitted to ramble over the masonry and stonework of the various terraces. Every bit of Ivy that tried to creep up the walls and cover the stonework had to be removed, to leave the stone in

its first bareness. Where some particular colour was wanted in a certain spot, coloured stones were freely used—yellow, red, and blue—and in the summer, when the hedgerows and meadows are full of flowers, there were no flowers in this large garden to cut for the house! A few years ago, when Shrubland passed into the hands of the Hon. James Saumarez, the elaborate designs were swept away, and the terrace-garden planted with the flowers that every one loves—Roses, Lavender, and among them many of what are called common things, and climbers of many kinds clothed the walls. The self Carnation and the Tea Rose are the glory of this garden—the flowers filling the air with fragrance, the silvery hue of the large groups of fragrant Lavender, the broad masses of Carnations, and the groups of monthly Roses, make a delightful picture.

Of the Tea Rose, all the finest kinds for our climate are planted. There is an idea that it succumbs to the first frost, but all the varieties at Shrubland, and they include, we believe, every good kind in cultivation, passed unharmed through 20 degrees of frost, and this without shelter. One of the most interesting spots of Shrubland is the Bamboo walk, a straight walk, planted at one time with smooth ribbon borders. These were swept away, and Bamboos and tall Lilies now fill their place, and we have never seen Bamboos make finer growth. There are fine hardy plants to relieve the foliage of the Bamboos, and the Plume Poppy with its feathery plumes: Lilies, Funkias, or Plantain Lilies, and Evening Primroses.

CHILLINGHAM CASTLE.—Chillingham is on a ridge of land nearly 1,000 feet above the sea in a rocky moorland district, intersected by deep and beautifully wooded glens. The illustration shows but a small part of the handsome terrace garden, with its beautiful retaining wall 120 yards in length, the wall a picture, with Clematises hanging in festoons, with Ivies, Vines, the climbing Hydrangea, and Pyracantha; in front of the wall a long border was planted with some of the best hardy flowers. The flower beds, although somewhat too angular, are of sufficient size to permit of bold grouping, and this is so well done that the form of the beds is less seen, and the blending of the colours of the many flowers is well carried out. Many hardy plants are here well grown, wild Roses and hardy Fuchsias give height and boldness to the arrangement, and the terrace on summer and autumn days is gay with fine colour. The wall at the end of the terrace, which is partly overhung with trees, has its face in a great part hidden by a lovely veil of maiden hair spleenwort. From here, ascending a flight of rough Moss-covered steps, Grass slopes adorned with trees make pleasant shade, and we pass on to the south front of the castle, which has a broad gravel walk in the foreground and a lawn that merges into the park and the adjoining pastures.

Cotehele, Cornwall. Engraved from a photograph by Mr. Hayman, Launceston.

WILTON.—One of the glories of Wilton is its fine Lebanon Cedars, the tree having been extensively planted here at the time of its first introduction, and although later years have witnessed a great thinning of its ranks, enough remain to form the most prominent feature of the place. The Wilton Cedars are older than those at Goodwood or Warwick, and although mighty ones have fallen, some still remain, whilst numerous young ones are growing up to take the place of those that fall victims to the storms. Whilst the present wise policy of frequent planting is continued, there will be no break in the history of this tree at Wilton. The finest old specimen has a grand bole about 15 ft. up to the point of branching and of fairly even diameter throughout its length of main stem, which girths fully 24 ft. A stem of greater girth entirely enshrouded in Ivy stands near by, the tree having perished in a storm some years ago. A noble evergreen Oak near the Cedars has a stem that girths 19 ft., and at one time it had a head of branches spreading quite 100 yards in circumference, but a giant Cedar in its fall broke away a large portion of this Oak on one side. It is a magnificent tree in perfect health, and bids fair to grow out of its present disfigured state. Near this tree, and on the west side or library front of the house, is an Italian garden, and beyond it a long vista terminated by a stone structure called Holbein's Porch. A fine *Chamærops Fortunei* stands near, this also being a plant out of the first introduced batch. It has been outside for seventy years, is not so tall as some younger specimens we have seen, but its stem is unusually thick and denotes great age.

The view shown is that of the south front of the house, showing a little garden of stone-edged beds set in gravel. Beyond, adorned only by the grand trees on it, the lawn spreads away to the river bank, the river itself being spanned by the "Palladian Bridge," built of stone and having a roof supported by rows of columns on either side. This leads to the deer park, in which the ground rises upwards to a considerable elevation, whilst along this slope another informal avenue of Lebanon Cedars is a fine feature amid the great beauty of native trees in abundance and of large size. An interesting fact gathered in regard to the Cedars is that on an average once in ten years they ripen a batch of good seed, which is sown for future planting about the place.

Looking eastwards from the house, the ground stretches away almost as flat as a table, but this flatness has been delightfully broken up by a series of well-arranged groups, chiefly of coniferous or evergreen trees and shrubs margined in a pretty way with graceful masses of Savin. A broad gravel walk at right angles to the east front of the mansion, with lawn and fine trees on either side of it, extends for 300 yards, and is terminated by a seat hedged round with Yew.

Chillingham. Border castle garden with old-fashioned beds.

PLATE

This bold walk and the shrub groups that break up the flatness of and give distance to the fine expanse of lawn that extends to the waterside are from the designs of Sir Richard Westmacott, who assisted the Countess of Pembroke in planning the grounds.

The second engraving shows well that portion of the house commanding the view of this broad walk, with its lawn and distant water, whilst between the trees in the distance is seen the spire of Salisbury Cathedral. Near the river a statue of Venus on the top of a column stands in the centre of a little square formed by trees of the Italian Cypress. The red Cedar was charming in some of the groups, its branches laden with glaucous fruits, that appeared as a silvery sheen cast over the tree. Yews, Hollies, and Evergreen Oaks, numerous and fine, give perennial verdure to the grounds. Coniferous trees in sheltered breaks and nooks are equally fine, a tree of *Picea cephalonica* especially so, being nearly 100 ft. high, whilst many are growing with great vigour. H.

OFFINGTON.—Offington is a very instructive garden, richly stored and pretty too. Large collections are rarely in the hands of those who have any thought for general effect, and no garden is more likely to be inartistic than the one rich in plants, and it is rare to find a pretty garden which is so full of beautiful things as this is. It is one of those shore gardens in which there is much gain in point of warmth and other conditions which allow the growing of plants we have no chance of keeping in inland districts. The southern and seashore district in one gives us all the conditions we could desire for growing many more plants than are hardy in our country. In this garden Major Gaisford has gathered together a host of rare and beautiful trees, shrubs, and plants which, favoured by a genial climate, give to the garden a distinct aspect. There is here an entire absence of that conventional gardening which lays down hard, geometric patterns where we should see the free and graceful forms of shrubs and flowers. The house is nearly hidden by climbing plants, and a grand old Ivy-embowered Walnut standing on an airy lawn.

BULWICK.—Rambling about Northamptonshire, and delighted with its beautiful old houses, many of them, unfortunately, as bare of flower-gardening as a deserted ship, it was pleasant to come to a real garden at Bulwick, full of Carnations and many open-air flowers arranged in various pretty ways, even the house being full of large basins of Carnations some of them of one self-coloured kind—a rare pleasure. The flower garden was not one of those places which astonish us by a showy display, but modest at first sight as regards flower-gardening in immediate relation to the house, and the chief charm of the place was rather in various little side gardens and long and pretty borders backed with Holly and other hedges, and giving

an opportunity for growing a great number of hardy flowers which bloom in the autumn. These formed picture vistas, of which the effect is very often better than a flower garden of the usual type. But, more than this, the excellent plan was followed here by the late Lady Henry Grosvenor of having what I do not think any garden can be right without, namely, a "square" or reserve garden in which things are grown well without reference to effect. It was a large square of the kitchen garden thrown into 4-foot beds, with little beaten alleys between, in which many thousand Carnations were grown in simple masses. One sees at once how much more beauty and variety can be got in such ways than where all the effort goes to help one scheme for effect in front of one's windows. What is the secret of beauty in such a garden, and what the lesson to be learnt from it? It is that no one plan will give us a garden beautiful for any length of time even in the fine season, as any one way is so liable to failure from the weather or other causes; that the main source of success is to have various ways with flowers, as there were at Bulwick. Hardy plants in beds and borders apart from the flower garden proper (that, too, being pretty) are the source of the charms of this garden—the variety of situation, the variety of plants, but of handsome, well-chosen and well-grown plants, and even variety of level in the various gardens, such as occurs at Bulwick, are all good aids, and the nearness of an interesting kitchen garden with sheltering walls is a source of beauty and variety.

EVERSLEY.—In the late Charles Kingsley's rectory garden at Eversley, we get to see a modest, and simple as charming, type of garden. The walls and borders are full of flowers, while the Grass clothes the central space. When Canon Kingsley became rector of Eversley, in 1844, he found the garden at the rectory in as unsatisfactory a state as was, in other respects, the rest of his parish; but its capabilities he used to the utmost. On the sloping lawn between the house and the road stood, and still stands, a noble group of three Scotch Firs, planted about the time that James I.—who was just then building the grand old house of Bramshill, hard by, as a hunting box for Prince Henry—planted the Scotch Firs in Bramshill Park, and the clumps on Hartford Bridge Flats and Elvetham Mount. Most of the garden consisted then of a line of ponds from the glebe fields, past the house, down to the large pond behind the garden and churchyard. The rector at once became his own landscape gardener, and the ponds were drained. Plane trees, which threatened in every high gale to fall on the south end of the house, were cut down, and masses of shrubs were planted to keep out the cold draughts, which even on summer evenings streamed down from the bogs on the edge of Hartford Bridge Flats. What had been a wretched chicken yard in

front of the brick-floored room used as a study was laid down in Grass, with a wide border on each side, and the wall between the house and stable was soon a mass of creeping Roses, scarlet Honey-

Steps and terrace, "The Old Park," Axminster. Terrace garden not stiffly planted. From a photograph by Miss Dryden, Canons Ashby.

suckles, and Virginian Creeper. Against the south side of the house a Magnolia (*M. grandiflora*) was trained, filling the rooms with its fragrance. Lonicera and Clematis montana, Wistaria, Gloire de Dijon and Ayrshire Roses, and variegated Ivy hid the rest of the wall with a

veil of sweetness. In front of the study window, on the lawn, an immense plant of Japanese Honeysuckle grows, and next to this the pride of the study garden lay in its double yellow Brier Roses. These grew very freely, and in June the wall of the house and garden was ablaze with the golden blooms, the rooms being decorated for two or three weeks with dishes of the yellow Roses. From the low, damp situation of the rectory, none but the hardiest plants could be grown out-of-doors; but the borders were always gay with such plants as Phloxes, Delphiniums, Saxifrages, Pinks, Pansies, and, above all, Roses and Carnations. One bay in front of the house was well covered with *Pyracantha*, in which a pair of white-throats built undisturbed for many years. *Rhododendrons* grew in the greatest luxuriance, and the neighbours always came to see the rector's garden when two beds, on either side of the front, were in blossom. An ancient Yew tree, and a slight hedge of *Laburnum*, *Hollies*, *Lilac*, and *Syringa* divide the rectory garden from the churchyard, and here, again, the rector turned his mind to making the best of what he had. The church, a plain red brick structure, was gradually covered with *Roses*, *Ivy*, *Cotoneaster*, *Pyracantha*, &c., and, in order that his parishioners should look on beautiful objects when they assembled in the churchyard for their Sunday gossip before service, the older part of the churchyard was planted with choice trees, flowering shrubs, *Junipers*, *Cypress*, *Berberis*, and *Acer Negundo*, and the Grass dotted with *Crocuses* where it was not carpeted with wild white *Violets*.

EDGE HALL garden is one of those in which the hardy flowers of the northern world are grown in numbers for the owner's delight and the good of his friends, and it is in such large collections that charming novelties for our gardens often make their appearance. Such gardens in our own day carry on the traditions, so to say, of very interesting English and Scottish gardens of the past, in which numbers of beautiful open air things were grown—among those I have had the happiness to see were the late Mr. Borrer's at Henfield in Sussex, a garden museum of beautiful hardy plants and of rare British forms of plants and trees; the Ellacombes' garden at Bitton; Mr. Leeds' garden at Manchester; Stirling's at Edinburgh; Comely Bank, a home for the rarest and most beautiful plants; the Rev. Harpur Crewe's; Mr. Atkins's garden at Painswick; Sir George McLeay's at Pendell Court; Major Gaisford's at Offington, and many other delightful gardens. The riches of the collection in such gardens are a source of danger as to effect, the very number of plants often leading to a neglect of breadth and simplicity of effect; but there is no real reason why a garden, rich in many plants, may not also be beautiful in its masses, airiness and verdure. A mile to the east the well-wooded and well-heathered range

Wilton, looking from house.

Wilton, another view.

of the Broxton Hills gives shelter, whilst from the south-west to the north-west the horizon is formed by Welsh mountain ranges. A sunk fence of sandstone, easily jumped by a fox or a hare, and in other parts a line of movable hurdles, well wired against rabbits, separate three acres for house and garden from the surrounding grass fields and from a small park of eighty acres. About 200 yards from the house the sand rock comes through, forming a long terrace with an escarpment towards the west. The woods in spring are carpeted first with Primroses and wood Anemones, then with wild Hyacinths and Pink Campion, whilst later there is a tall growth of *Campanula latifolia* and large breadths of Japanese Knotwort, which have been planted to supersede Nettles, while overhead is abundance of Hawthorn, Crab, and wild Cherry. The hall stands on the side of a hollow watercourse worn in the stiff clay, which in Cheshire often lies over the sand rock. Down this watercourse runs a torrent in heavy rains, but it is quite dry in summer. On the sloping banks of this, close above the house, there formerly stood ranges of cow-houses and pig-sties, which drained into a stagnant pond in the bed of the watercourse within twenty yards of the bedroom windows. Twenty-five years ago it was drained, the watercourse confined within a covered culvert; and the whole space is now covered all summer with a dense forest of herbaceous plants—every good kind which will thrive in the cold soil on which the house stands being cultivated there.

STONELANDS, SUSSEX.—It is pleasant to get out of the conventional and there are many ways of doing so but gardens are often out of all sympathy with the surrounding country, whereas the landscape and sylvan beauty of a pretty country might often be reflected, so to say, in the home landscape. It might indeed often tell us what to do as regards grouping, and kinds of trees and the natural character of the ground even give hints as to ground work in gardens. Stonelands is characteristic of the small manor house of the woodland district of Sussex, with its groups of Scotch Firs behind the house and in intimate connection with the farm buildings near. The house, too, is of a good Sussex kind with bright sunny windows, stone, pretty in colour, big chimneys, and there is a small terrace necessary from the lie of the ground, which also cuts off the house from the road to the farm buildings near.

GOLDER'S HILL.—Places where there are simple conditions for beauty in design and planting are rare, and it is all the more pleasing to meet with an example of artistic treatment of a garden almost in London, on the western border of Hampstead Heath. As regards design and views, it is the prettiest of town gardens, and the conditions of its beauty are so simple that there is little to be said about them; an open lawn rolling up to the house, groups of fine trees, and wide and

distant views over the country, the whole suggestive of good effect from simple hardy materials both in trees and flowers, but the elevation is such that no half hardy exotics are likely to succeed, and therefore hardy things give us our best chances of success.

A sunken fence separates the lawn from some park-like meadow with fine Oaks and Firs ; and beyond, the country north of London opens up, without any building visible on either side or in the foreground. From almost every other point of view these trees seem to form a picturesque group, and afford a welcome shade in summer. In front of the house is an open lawn, which one can get on to at once from any point. Being on a gentle rise, some would no doubt have urged this as a reason for making some kind of fortification in the shape of walls, which would have destroyed the repose, verdure, and the freedom of the spot. Now the only drawback—if drawback it be to such perfect freedom and breadth of airy foreground—is the fact that it offers a temptation to unthinking people to dot it over with shrubs, or evergreen trees, and many places, well laid out, are spoiled by this thoughtless dotting about of objects of poor form. The question of flowers is the greatest difficulty, because people are so well accustomed to have all their flowers gathered in front of the house, that if abundant provision is not made for them elsewhere, the carpet is apt, some day or other, to be dissected into a number of ugly flower-beds. The best way to guard against this in lawn gardens is to provide abundance of simple beds elsewhere which, half seen peeping through the trees, or met with in groups here and there at no great distance from the house, may afford better effects than if all the beds are under the windows. Thus where the foreground is a pleasant lawn it is often well to have another site for the flower garden ; and good large beds or groups of beds, in which fine things can be grown. To have in one spot a group of large beds, simple in outline with Roses and smaller plants surfacing the ground ; next in some isolated nook, large beds of Lilies, separated by a group of low shrubs and flowering Yuccas from a few beds of hardy flowers ; then a varied flower garden partially cut off and embowered by trees—these and the like are in certain situations likely to give that variety of treatment which it is the aim of this chapter to secure.

TOTLEY HALL, NEAR SHEFFIELD, YORKS.—This fine old country house stands beside the old coach road from Sheffield to Chatsworth and Haddon Hall, on an elevation with good and extensive views. Over the front door is the date 1623, about the time when Gerard's *Herbhal* was published, and six years before Parkinson's *Paradisus* of 1629. Built in such a flower-loving epoch it seems fitting that it should be a flowery place to-day. Inside the entrance hall there is some fine old oak carving and staircase, and there was formerly

Rectory garden at Eversley.

a quaint old gallery around the hall, but new additions necessitated its removal. The flower garden slopes rather suddenly from the fringe of the front lawn and is rich in well-grown Daffodils and other choice flowers, sheltered by winding hedges. There is a fine range of hills terminated by a bluff or headland in front of the house, and to the right are vast stretches of moorland. The elevated character and breezy freshness of the place are suggestive of the sea.

Here, in spring, appear in great profusion the chaste flowers of the Daffodils, for Totley Hall is a home of the Daffodil. Standing at the lower end of the long flower borders—confined within hedges of Hollies, intersected by a winding path fringed with seedling Auriculas—there is seen a host of Daffodils.

As one gazes upon them, with their delicate and fragile heads waving gently to and fro in the soft westerly breeze, there rush involuntarily to one's mind Wordsworth's words on his sudden view of the wild Daffodils at Ullswater—

— then my heart with pleasure fills
And dances with the Daffodils.

The deep golden yellows glow with a warmth that suggests the absorption of the sun's rays at their brightest moments. The chaste and beautiful whiteness of others appears as if they had quietly appropriated, in the stillness of the night, the silvery moonbeams that softly kissed their fragile petals, whilst the paler tints of cream, sulphur and primrose are suggestive of the soft-coloured mantle spread o'er the skies by the lingering rays of the setting sun. The Daffodil—fit emblem of spring—is here in all its forms and colours.—F. W. B.

THE KEEP GARDEN AT FARNHAM CASTLE.—In our own day, when it has been stated that the only garden worthy the name is one within four square walls, it interests me to come upon gardens of wholly different character, which show the folly of rules about a subject which admits of so much variety of position, form, and detail as a flower garden does. One of the most interesting I have lately seen is the little flower garden on the top of the old keep at Farnham Castle, which is as picturesque in situation and informal in outline as a garden can be, while it is extremely pretty with the broken walls on all sides clad with Ivy and Clematis, and in the centre many flowers. The variety of form from the walls surrounding it and the various climbers give it a singular charm. The hardiest flowers are grown, as is most fitting for such a garden—Iris in masses and evergreen perennials, which help to keep some grace in the garden towards the end of the year, and Tea and other Roses also help. Although I saw it on the verge of winter, it even then had much beauty of leaf and flower.

Edge Hall, Malpas, Cheshire. Lawn garden with hardy flowers in beds and groups. Engraved from a photograph sent by Rev. C. Wolley-Dod.

It should be clear that in any such situation it is only possible through flower gardening of the free and picturesque kind to get a good result, and, happily, there are so many treasures in our gardens now, that while growing things for their beauty of form or flower or fragrance, we may have much variety as to contents, grouping, and succession of bloom in such a garden.

ELDERFIELD.—In Miss Yonge's garden we are again away from convention and free to enjoy the charm of trees and shrubs among the flowers, as in many beautiful British gardens somewhat larger than cottage gardens, but keeping the unstamped grace and variety of the cottage garden. One of the good points of such gardens is the freedom enjoyed to do or undo at any time of the year—there is always pleasant work to do and no violent effort at any one time—as is the case with gardens that depend on tender flowers only. The true flower-garden is one in which there is, as in nature and life, ceaseless change. “Elderfield has always looked an ideal home for an authoress. A little low white house—nothing but a cottage she calls it herself—covered with creepers, which keep up a succession of bloom to peep in at the windows. There is a very old Myrtle to the right, shorn of much of its height since the very cold winter of 1895; and round Miss Yonge's drawing-room window (the upper one to the left) a Banksian and a summer Rose are ever looking in at her as she writes steadily every morning at the writing table drawn close up to the window, or tapping at the glass when the curtains are drawn and they are in danger of being forgotten.”

M. ACTON.”

ENGLISH GARDENS ABROAD AND THEIR LESSONS.—Some of the most beautiful flower gardens are to be seen in the homes of English people living in Madeira, the Riviera, Algeria, and countries generally permitting of beautiful flower gardening during the winter and with a season of many flowers throughout the spring; real gardens varied and full of beautiful colour, yet without any trace of the barren monotony characteristic of most gardens at home. The generally picturesque nature of the ground, the presence of graceful fruit and other trees, and the absence of any pretentious attempt to conform the whole to one set idea, lead to the simple and artistic garden. The garden of Mr. Arkwright at Mustapha, near Algiers, is a good example of the English garden in other lands, a garden full of beautiful things, and these so placed that pictures are seen at every turn. Noble Tea Roses like Chromatella are fountains of bloom, sometimes running up a tapering Cypress, and sending out of it far overhead graceful shoots laden with flowers. Lamarque, the noblest of white Roses, grows and blooms about as freely as the Elder bush does at home. Many Tea Roses of all sizes are here; sometimes kinds are superb that rarely open well with us at home, such as Cloth of Gold.

Lawn garden at Golder's Hill.

But it is not only the climate makes the garden beautiful, as the way of planting is the main source of beauty here.

Borders are thick set with the foliage of the Iris in many forms, and particularly the winter-flowering Iris, which has its home in Algeria. The Pelargoniums are in lovely bushes in light or shade, while Datura, Palm, Jasmine, Acacia, Fig, Lemon, and Magnolia are happy in the sun, with masses of Cineraria here and there in half-shade, with many Violets, and even wild flowers of the country. Bougainvilleas and handsome Bignonias grace the walls in free and pretty ways, while here and there the Algerian Ivy is seen, a noble climber, the fine qualities of which are not in the least affected by the hot sun in the summer here—it ascends to high parts of the mountains there, which look arid enough and are terribly hot in summer. No one need despair of gracing a dry bank with a fine thing who takes the Algerian Ivy for that purpose, and it may be its long sojourn in so dry a country has prepared it better for growth in the sun than the forms of the Ivy from the cooler northern woods of our Islands. Some of the most beautiful garden effects I have seen were here, all the finer from the background of high cliffs above clad with ever-green Oak, Pine, and wild Olive, but the best lesson is not from the varied life in the garden so much as from the happy and natural way the whole is disposed.

In this way also we have variety as well as pictures—as much variety as may be wished, of which there is an example in Mr. Hanbury's well-stored garden at La Mortola, in the Italian Riviera.

The variety is not in itself so much worth seeking as beauty, which is just what we lose when we commit ourselves to any one way of flower gardening. To be free to add or plant at almost any time of the year is a great advantage; whereas in the pattern flower garden the whole is set out and taken up at fixed times. The result is a dreadfully fixed one too, and if any beautiful bush, or bulb, or flower happens to come in our way that does not fit into the wretched system, so much the worse for it.

The fear of anything like a bush or low tree that governs the idea of many flower gardens at home at present does not exist here, so that we have light and shade, many bushes and even low trees that give chances for surprises and changes. This is partly owing to the warmth which allows of the growth of many pretty bushes that may well grace a flower garden, but, once free from the idea that a flower garden must be a flat surface seen at a glance, there would be no real difficulty in carrying out like ways of planting in our climate in which so many lovely bushes grow if we give them a chance. One minor charm of these English gardens abroad arises from the fact that any necessary stone-work is done in a simple way by the garden men.

The flower garden in the ruined keep at Farnham Castle, Surrey.

As the ground is often steep, steps and little walls or protecting corners are often wanted ; but whenever the native gardener wants anything of this kind, he does not go through a circumlocution bureau for inspiration and drawings to scale, but builds what he wants in a simple ready way with the stone nearest at hand, and the result is much better from a gardening point of view than more elaborate and costly work. The island of Madeira is very instructive too in the variety of its gardens ; every one I remember was distinct, and this was owing to the owners being free to do as the ground invited them, instead of following any fixed idea as to style, or leaving it to men who are ready with similar plans for all sorts of positions. In France, England, or Germany this could never happen, because owing to conformity about style and the use of book plans, we can usually tell beforehand what sort of garden we are to see !

Miss Yonge's garden at Elderfield

CHAPTER V.

BORDERS OF HARDY FLOWERS.

WE now come to the flowers that are worthy of a place in gardens, and to consider ways of arranging them. Their number and variety being almost without limit, the question is, how the garden lover is to enjoy as many of these treasures as his conditions allow of. As during all time a simple border has been the first expression of flower gardening, and as there is no arrangement of flowers more graceful, varied, or capable of giving more delight, and none so easily adapted to almost every kind of garden, some ideas of the various kinds of borders of hardy flowers mainly deserve our first consideration.

COST AND ENDURANCE.—The difference in cost of growing hardy flowers or tender should be thought of. The sacrifice of flower gardens to plants that perish every year has often left them poor of all the nobler plants. We must take into account the hothouses, the propagation of plants by thousands at certain seasons, the planting out at the busiest and fairest time of the year—in June, the digging up and storing in autumn, the care in the winter.

Perhaps the most striking effects from individual plants ever seen in England were Japanese Lilies grown for years in the open air by Mr. M'Intosh among his Rhododendrons at Weybridge Heath. And not only Lilies; but many noble flowers may be grown in the same simple way. A few years ago we saw only dense masses of Rhododendrons; now the idea of growing this shrub with the finer hardy plants has spread. It means more room to show the form of the shrubs, and more light and shade; mutual relief of shrub and plant; colonies and groups of lovely plants among the shrubs. Good preparation and some knowledge of plants are needed, but no necessity whatever for any system that may not be called permanent.

There are a number of things which, given thorough preparation at first, it would be wise to leave alone for some years at a time—as, for example, groups or beds of the various Tritomas, Irises, Lilies, Pæonies, the free-flowering Yuccas, Narcissi—these and many more,

either grouped with others or in families. When all these exhaust the ground or become too crowded, by all means move them and replant, but this is a very different thing from moving all the plants in the flower garden twice a year.

It would be better every way if, so far as the flower garden is concerned, gardeners were to see what could be done unaided by the hothouse; but meanwhile the wise man will reduce the expense of glass, labour, fire, repairs, paint, pipes, and boilers to something like reasonable proportions. In presence of the wealth of our hardy garden flora, the promise of which is now such as men never expected

Flower-borders with grass path between. From a photograph by Mrs. Martin, Bournbrook Hall, Birmingham.

a few years ago no one need doubt of making a fair flower garden from hardy plants alone.

THE TRUE WAY to make gardens yield a return of beauty for the labour and skill given them is the permanent one. Choose some beautiful class of plants and select a place that will suit them, even as to their effect in the garden landscape. Let the beds be planted as permanently and as well as possible, so that there will remain little to do for years. All plants may not lend themselves to this permanent plan, but such as do not may be grown apart—for instance, the Poppy,

Anemones, Turban and Persian Ranunculuses, Carnations, Stocks, Asters, and the finer annuals. But a great many delightful plants can be planted permanently, and be either allowed to arrange themselves, to group with others, or to grow among peat-loving shrubs which, in many places, are jammed into pudding-shaped masses void of form or grace, or light and shade.

One of the best reforms will be to avoid the conventional pattern plans, and adopt simple beds and borders, in positions suited to the plants they are to grow. These can best be filled permanently, because the planter is free to deal with them in a bolder and more artistic way than if he has to consider their relation to a number of small beds. In this way, also, the delight of flowers is much more keenly felt as one sees them relieved, sees them at different times, and to more advantage than the flowers stereotyped under the window. Roses — favourites with everybody — grouped well together, and not trained as standards, would lend themselves admirably to culture with other things—moss Roses growing out of a carpet of double Primroses, and Tea Roses with Carnations. Then there are many groups made by the aid of the finer perennials themselves, such as the Delphiniums and Phloxes, by choosing things that would go well together. Other plants, such as Yuccas, of which there are now various beautiful kinds, are often best by themselves; and noble groups they form, whether in flower or not. The kinds of Yucca that flower very freely, such as *Y. recurva* and *Y. flaccida*, lend themselves to grouping with Flame Flowers (*Tritoma*) and the bolder autumn plants.

No plan which involves expensive yearly efforts on the same piece of ground can ever be satisfactory. All garden plants require attention, but not annual attention. The true way is quite different—the devotion of the skill and effort to fresh beds and effects each year. It does not exclude summer “bedding,” but includes lovely and varied aspects of vegetation far beyond that attainable in summer “bedding,” and attempts to make the garden artistically beautiful. It also helps to make the skill of the gardener effective for lasting good, and prevents its being thrown away in annual fireworks. There can be no gardening without care; but is there not a vast difference between some of these beds and borders and those with flowers which disappear with the frosts of October, and leave us nothing but bare earth?

The main charm of bedding plants—that of lasting in bloom a long time—is really a drawback. It is the stereotyped kind of garden which we have to fight against; we want beautiful and changeful gardens, and should therefore have the flowers of each season. Too short a bloom is a misfortune; but so is too long a bloom, and numbers of hardy plants bloom quite as long as can be desired.

There is nothing whatever used in bedding out to be compared in colour, form, or fragrance with many families of hardy plants. There is no beauty among bedding plants at all comparable with that of Irises, Lilies, Delphiniums, Evening Primroses, Pæonies, Carnations, Narcissi, and a host of others. Are we to put aside or into the background all this glorious beauty for the sake of a few things that merely give us flat colour? No one who knows even to a slight extent what the plants of the northern and temperate world are can admit that this sort of gardening should have the first place. There is nothing among "carpet" plants equal to Windflowers in many kinds, flowering in spring, summer, and autumn; Torch Lilies, superb in autumn: Columbines; Harebells; Delphiniums; Day Lilies; Everlasting Peas; Evening Primroses; Pæonies; Phloxes; Ranunculus, double and single, and the many fine species; all the noble autumn-blooming, Daisy-like flowers; Scabious; plummy Spiræas; Globe Flowers; Lilies, in noble variety; Polyanthus; Primroses; Auriculas; Wallflowers; Meadow Saffrons; Crocuses, of the spring and autumn; Scillas; Gladioli; Snowflakes; Grape Hyacinths; Narcissi, in lovely variety; Tulips, the old florists' kinds, and many wild species; Yuccas; Carnations and Pinks; Dielytras; Cornflowers; Foxgloves; Stocks; Starworts; great Scarlet and other Poppies; Christmas Roses, both of the winter and spring; Forget-me-nots; Pansies and many of the rock plants of the mountains of Europe—from the Alps to the hills of Greece, cushioned with Aubrietia, and skyblue Wind-flowers—all hardy as the Docks by the frozen brooks.

FLOWER BORDERS FRINGING SHRUBBERIES.—A frequent way in which people attempt to cultivate hardy flowers is in what is called the "mixed border," often made on the edge of a shrubbery, the roots of which leave little food or even light for the flowers. The face of a shrubbery should be broken and varied; the shrubs should not form a hard line, but here and there they should come full to the edge and finish it. The variety of positions and places afforded by the front of a shrubbery so arranged is tempting, but it is generally best to use plants which do not depend for their beauty on high culture—which, in fact, fight their way near shrubs—and there are a great many of them, such as the evergreen Candytufts, the large-leaved Rockfoils, Acanthus, Day Lilies, Solomon's Seal, Starworts, Leopard's Banes, Moon Daisies, and hardy native Ferns.

A scattered, dotty mixed border along the face of a shrubbery gives a poor effect, but a good one may be secured by grouping the plants in the open spaces between the shrubs, making a careful selection of plants, each occupying a bold space. Nothing can be more delightful than a border made thus; but it requires knowledge

of plants, and that desire to consider plants in relation to their surroundings which is never shown by those who make a "dotty" mixed border, which is the same all the way along and in no place pretty. The presence of tree and shrub life is a great advantage to those who know how to use it. Here is a group of shrubs over which we can throw a delicate veil of some pretty creeper that would look stiff and wretched against a wall; there a shady recess beneath a flowering tree: instead of planting it up with shrubs in the common way, cover the ground with Woodruff, which will form a pretty carpet and flower very early in the year, and through the Woodruff a few British Ferns; in front of this use only low plants, and we shall

A flower-border at Fillingham Castle, Lincoln.

thus get a pretty little vista, with shade and a pleasant relief. Next we come to a bare patch on the margin. Cover it with a strong evergreen Candytuft, and let this form the edge. Then allow a group of Japan Quince to come right into the grass edge and break the margin; then a large group of broad-leaved Saxifrage, receding under the near bushes and trees; and so proceed making groups and colonies, considering every aid from shrub or tree, and never using a plant of which we do not know and enjoy the effect.

This plan is capable of much variety, whether we are dealing with an established and grown shrubbery, or a choice plantation of flowering Evergreens. In the last case, owing to the soil and the neat habit of the bushes, we have excellent conditions in which good culture is possible. One can have the finest things among

them—if the bushes are not jammed together. The ordinary way of planting shrubs is such that they grow together, and then it is not possible to have flowers between them, nor to see the true form of the bushes, which are lost in one solid leafy mass. In growing fine things—Lilies or Cardinal Flowers, or tall Evening Primroses—among open bushes we may form a delightful garden, we secure sufficient space for the bushes to show their forms, and we get light and shade among them. In such plantations one might have in the back parts “secret” colonies of lovely things which it might not be well to show in the front of the border, or which required shade and shelter that the front did not afford.

BORDERS BY GRASS WALKS IN SHADE OR SUN.—It is not only in the flower garden where we may have much beauty of flower, but away from it there are many places better fitted for growing the more beautiful things which do not require continual attention. Unhappily, the common way of planting shrubberies has robbed many Grass walks of all charm. The great trees, which take care of themselves, are often fine, but the common mixed plantation of Evergreens means death to the variety and beauty of flower we may have by Grass walks in sun or shade. The shrubs are frequently planted in mixtures, in which the most free-growing are so thickly set as soon to cover the whole ground, Cherry Laurel, Portugal Laurel, Privet, and such common things frequently killing all the choicer shrubs and forming dark heavy walls of leaves. Some of these Evergreens, being very hungry things, overrun the ground, rob the trees, and frequently, as in the case of the Portugal Laurels, give a dark monotonous effect while keeping the walks wet, airless, and lifeless.

Light and shade and the charm of colour are impossible in such cases with these heavy, dank Evergreens, often cut back, but once one is free of their slavery what delightful places there are for growing all hardy flowers in broad masses, from the handsome Oriental Hellebores of the early spring to the delicate lavenders of the Starworts in October. Not only hardy flowers, but graceful climbers like the wild Clematis, and lovely corners of light and shade may be made instead of the walls of sombre Evergreens. If we want the ground green with dwarf plants, we have no end of delightful plants at hand in the Ivies and Evergreens like Cotoneaster. There is no need for the labour and ugliness of clipping. I have seen places with acres of detestable clipped Laurels, weary and so ugly! With all these grubbed and burnt, what places, too, for such beautiful things as the giant Fennels with their more than Fern-like grace, and all our strong, hardy Ferns which want no rocks, with Solomon's Seal and Foxgloves among them. Such walks may pass from open spaces into half-shady ones or through groves of old Fir or other trees,

and so give us picturesque variety apart from their planting with flowers.

FLOWER BORDERS AGAINST WALLS AND HOUSES.—In many situations near houses, and especially old houses, there are delightful opportunities for a very beautiful kind of flower border. The stone forms fine background, and there are no thieving tree roots. Here we have conditions exactly opposite to those in the shrubbery; here we can have the best soil, and keep it for our favourites; we can have Delphiniums, Lilies, Pæonies, Irises, and all choice plants well grown. Walls may be adorned with climbers of graceful growth, climbing Rose, Wistaria, Vine, or Clematis, which will help out our beautiful mixed border. Those must to some extent be trained, although they may be allowed a certain degree of abandoned grace even on a wall. In this kind of border we have, as a rule, no back-

Flower border against wall at Sidbury Manor.

ground of shrubs, and therefore we must get the choicest variety of plant life into the border itself and we must try to have a constant succession of interest. In winter this kind of border may have a bare look when seen from the windows, but the variety of good hardy plants is so great, that we can make it almost evergreen by using evergreen rock-plants. Where walls are broken with pillars, a still better effect may be obtained by training Vines and Wistaria along the top and over the pillars or the buttresses.

THE FLOWER BORDER IN THE FRUIT OR KITCHEN GARDEN.—We have here a frequent kind of mixed border often badly made, but which may be excellent. A good plan is to secure from about eight to ten feet of rich soil on each side of the walk, and cut the borders off from the main garden by a trellis of some kind from seven feet to nine feet high. This trellis may be of strong iron wire, or, better

still, of simple rough wooden branches. Any kind of rough permanent trellis will do, on which we may grow Climbing Roses and Clematis and all the choicer but not rampant climbers. Moreover, we can grow them in their natural grace along the wires or rough branches, or up and across a rough wooden trellis—Rose and Jasmine showing their grace uncontrolled. We fix the main branches to the supports, and leave the rest to the winds, and form a fine type of flower border in this way, as we have the graceful climbing plants in contrast with the flowers in the border.

General borders may be made in various ways ; but it may be well to bear in mind the following points : Select only good plants ; throw away weedy kinds, there is no scarcity of the best. See good collections. Put, at first, rare kinds in lines across four-foot nursery beds, so that a stock of plants may be at hand. Make the choicest borders where they cannot be robbed by the roots of trees ; see that the ground is good and rich, and that it is at least two and a half feet deep, so deep that, in a dry season, the roots can seek their supplies far below the surface. In planting, plant in naturally disposed groups, never repeating the same plant along the border at intervals, as is so often done with favourites. Do not graduate the plants in height from the front to the back, as is generally done, but sometimes let a bold plant come to the edge ; and, on the other hand, let a little carpet of a dwarf plant pass in here and there to the back, so as to give a varied instead of a monotonous surface. Have no patience with bare ground, and *cover* the border with dwarf plants ; do not put them along the front of the border only. Let Hepaticas and double and other Primroses, and Saxifrages, and Golden Moneywort and Stonecrops, and Forget-me-nots, and dwarf Phloxes, and many similar plants cover the ground among the tall plants betimes—at the back as well as the front. Let the little ground plants form broad patches and colonies by themselves occasionally, and let them pass into and under other plants. A white Lily will be all the better for having a colony of creeping Forget-me-nots over it in the winter, and the variety that may be thus obtained is infinite.

Thoroughly prepared at first, the border might remain for years without any digging in the usual sense. When a plant is old and rather too thick, never hesitate to replant it on a wet day in the middle of August any more than in the middle of winter. Take it up and put a fresh bold group in fresh ground ; the young plants will have plenty of roots by the winter, and in the following spring will flower much stronger than if they had been transplanted in spring or in winter. Do not pay much attention to labelling ; if a plant is not worth knowing, it is not worth growing ; let each good thing be so bold and so well grown as to make its presence felt.

MR. FRANK MILES ON THE FLOWER BORDER.—Among the first to see the merits of effectively carpeting borders, and who made the border suggested in my *Hardy Flowers*, was the late Frank

Flower border against house.

Miles, the artist, and an excellent flower gardener. His own account of his work I give here.

If we are to have mixed borders of herbaceous plants, one thing is quite certain—we can never go back to the borders of our ancestors in which every

plant had a bare space of ground round it. In the spot where once a plant had bloomed, there was an end for the year of any flowers. Now a yard of ground should have bloom on it at least eight months in the year, and this applies to every yard of ground in a really good mixed border. I am certain that, once a border is well made, it need not be dug up at all. But the question is—what is a well-made border? I think a border is not well made, or suitable for growing the most beautiful plants to perfection, unless it is as well made as a Vine border in a vinery. Why we should not take as much trouble with the garden border as the border of a conservatory I cannot imagine, seeing that Lilies will grow 11 feet high in the open air, not less than 10½ inches across the flower, and Irises little less than that. The more I garden the deeper I get my drainage, and the fuller of sand and fibre my soil. I consider, first, that a border must have a bed of broken bricks or other drainage, with ashes over that, to prevent the drainage from filling up; secondly, that that bed of drainage must have 2 feet of light soil over it; thirdly, that that soil must have equal parts of sand, soil, and vegetable matter. A soil of these constituents and depth is never wet in winter and never dry in summer. During the dry weather I found soil like this, in which quantities of auratum Lilies were growing, to be quite moist an inch below the surface, and I know in winter it always appears dry compared with the natural garden soil.

But, for all practical intents and purposes, every 6 inches of ground could contain its plant, so that no 6 inches of bare ground need obtrude on the eye. Almost any kind of bare rock has a certain beauty, but I cannot say bare ground is ever beautiful. Well, supposing the back of the border filled with Delphiniums, Phloxes, and Roses, pegged down, and other summer and autumn-blooming plants, and supposing the border to be made as I have described it, I should carpet the ground at the back with spring-blooming flowers, so that when the Roses are bare and the Delphiniums and Phloxes have not pushed above ground, the border should even then be a blaze of beauty. Crocuses, Snowdrops, Aconites, and Primroses are quite enough for that purpose. The whole space under the Roses I should cover with the Common Wood Anemone, and the golden Wood Anemone, and early Cyclamens, and the earliest Dwarf Daffodils. And among the Roses and Pæonies and other medium-sized shrubs I would put all the taller Lilies, such as require continual shade on their roots; and such as pardalinum and the Californian Lilies generally, the Japanese, Chinese, and finer American Lilies. Now we come more to the front of the border, and here I would have combinations, such as the great St. Bruno's Lily and the delicate hybrid Columbines, Primroses planted over hardy autumn Gladioli, so that when the Primroses are at rest the Gladioli should catch the eye: Carnations and Daffodils, planted so that the Carnations form a maze of blue-green for the delicate creams and oranges of the Daffodils. When the Daffodils are gone there are the Carnations in the autumn. A mass of *Iberis correæfolia* happens to have been the very best thing possible for some *Lilium Browni* to grow through, for the *Iberis* flowered early and then made a protection for the young growth of the *Browni*, and then a lovely dark green setting for the infinite beauty of the Lily flowers. As for saying that this cannot be done, I say that it is nonsense, for the *Iberis* flowered beautifully under such circumstances, and the Lilies too. If once you get it into your head that no bit of ground ought ever to be seen without flowers or immediate prospect of flowers, heaps of combinations will immediately occur to those conversant with plants and the deep-rooting habits of most bulbs and the surface rooting of many herbaceous plants—for instance, *Colchicums* and Daffodils, with a surface of *Campanula pusilla alba*. The big leaves of the *Colchicum* grow in spring, and there would be nothing but leaves were it not for the masses of

Daffodils. By and by the leaves of the Colchicums and Daffodils are dry enough to pull away, and then the Campanula, be it *pusilla*, *pusilla alba*, or *turbinata alba*, comes into a sheet of bloom. Before the bloom has passed away the Colchicum blooms begin to push up, and as some of my Colchicums are 5 inches across, of the richest rose colour, I do not exactly feel that this is a colourless kind of gardening, and as I have a hundred different kinds of Daffodils, this little arrangement will not be without interest in spring.

THE DAFFODILS and Colchicums root deeply and grow mostly in winter, requiring water then, and not in summer, when the Campanula carpet is taking it all. There are some, however, which one must be careful about—the common white Lily, for instance, which wants exposing to the sun in the autumn. I do not mind the exquisite French Poppies among these candidum Lilies, because the Poppies die about August, and then the Lilies get their baking and refuse to show the bare earth, soon covering it all with their leaves. For the extreme front of the border hundreds of combinations will occur—Pansies over Daffodils, Portulacas over Central Asian bulbs, Christmas Roses and Hellebores over the taller

Flower border in fruit garden at Dunrobin Castle, N.B.

Daffodils, with Gladioli, Tritomas, and giant Daffodils, Hepaticas, and autumn-blooming and spring-blooming Cyclamens, with Scillas and Snowdrops. When *Anemone japonica* is low, up come the taller Tulips, *sylvestris* for instance, and higher still out of the dark green leaves come the bejewelled Crown Imperials.

As for the cultural advantages, I can imagine this system in the hands of a skilful gardener to be the best of all. In the first place, the plants suffer much less from drought, because there is so much less surface exposed to sun and wind. Examine, not right under the root, but under the spreading part of a *Mignonette*, and see if, on a broiling hot day, the ground is not much cooler and moister than on the bare ground. Irises are almost the only plants I know of that do require the soil bare about their rootstocks, but then Irises are a carpet of green always, and a few clumps of Tiger Lilies or Tiger Irises will not seriously injure their flowering prospects. And what cannot be done with an herbaceous border edge when that edge is the green Grass? Crocuses and Crocuses all the autumn and winter and spring in the Grass. The tiniest Scillas and Hyacinths, and Daffodils,

and Snowdrops are leading into the border without any break. So I believe, and I think many others will believe by and by, that every bulbous plant ought to be grown in combination with something else, as *Amaryllis Belladonna*, for instance, which I plant with *Arum italicum pictum*. In spring the *Arum* comes up extremely early and its leaves protect the far more delicate leaves of the *Amaryllis* till they are growing freely and the *Arum* dies down. The ground is surfaced with Violets, so that the *Belladonnas* are now coming into bloom, not with the bare ground but with a setting of Violet leaves in beautiful contrast with their pink blossoms. Christmas Roses of all kinds would probably be a more beautiful setting still, but the *Belladonnas* want a good deal of summer drying up, which the *Hellebores* could not stand so well.

WE CAN NEVER GO BACK to the mixed border of our ancestors ; we have been spoilt for such blank, flowerless spaces as they had by the gorgeousness of bedding out. But we have now a wealth of hardy plants, especially bulbs, which they never had, and this combination of bulbous plants and herbaceous plants will certainly lead to a preparation of the borders which has been hardly dreamt of by people who do not care what they spend on tropical flowers ; for it seems to be forgotten that we have *Irises* as big as a plate and *Lilies* as tall as a tree, all hardy and requiring little attention when once they have been properly planted. The time that used to be spent year after year in digging acres of borders might now be spent in properly making or re-making a few yards of border, till the whole outdoor borders are as exactly suited for the growth of plants to the uttermost perfection—as many as possible being put in the given space—as the borders of a large conservatory. It is in such a border as this that we attain the utmost variety, unceasingly beautiful, every yard different, every week varying, holding on its surface at least three times the value of plant life and successional plant beauty of any ordinary garden. The chief enemy to the system is the slug ; but while the *Belladonna Delphinium*, which is usually half eaten by slugs in most gardens, grows 6 feet high with me, I am not going to give up my system.

The way so well described by Mr. F. Miles, and which he carried out admirably in his father's garden at Bingham—one of the few really lovely mixed borders I have seen—is to some extent that carried out in many pretty cottage gardens, owing to the plots being stored with all sorts of hardy flowers ; those are the cottage gardens where one often sees a charming succession of flowers and no bare ground.

One of the prettiest garden borders I know is against a small house. Instead of the walk coming near the windows, a bed of choice shrubs, varying from 9 feet to 15 feet in width, is against the house. Nothing in this border grows high enough to intercept the view out of the windows on the ground floor, from which were seen the flowers of the border and a green lawn beyond. Among the shrubs were tall Evening Primroses, and *Lilies*, and Meadow Sweets, and tall blue Larkspurs, which after the early shrubs have flowered bloom above them. The ground is always furnished, and the effect is good, even in winter.

EVERGREEN BORDERS OF HARDY FLOWERS.—The plants of the older kind of mixed border were—like the Grasses of the meadows of the northern world—stricken to the earth by winter, and the border

was not nearly so pretty then as the withered Grass of the plain or copse. But since the revival of interest in hardy and Alpine flowers, and the many introductions of recent years, we have a great number of beautiful plants that are evergreen in winter and that enable us to make evergreen borders. The great white blanket that covers the north and many mountain ranges in winter protects also for months many Alpine plants which do not lose their leaves in winter, such as Rockfoils, Stonecrops, Primroses, Gentians, and Christmas Roses. The most delicate of Alpine plants suffer, when exposed to our winter, from excitement of growth, to which they are not subject in their own home, but many others do not mind our winters much, and it is easy

Border of hardy flowers on open margin of lawn. (Newton Don, Kelso, N.B.)

by good choice of plants to make excellent borders wholly or in greater part evergreen.

These are not only good as evergreens, but they are delightful in colour, many being beautiful in flower in spring, and having also the charm of assuming their most refreshing green just when other plants are dying in autumn. Along with these rock and herbaceous plants we may group a great many shrublets that come almost between the true shrub and the Alpine flower—little woody evergreen creeping things like the dwarf Partridge Berry, Canadian Cornel, hardy Heaths, and Sand Myrtles, often good in colour when grouped.

Among these various plants we have plenty for evergreen borders, and this is important, as, while many might object to the bare earth of the ordinary border of herbaceous plants near the house or in other

Border of Delphiniums in the garden at Hall Green, showing effect of grouping hardy flowers instead of "dotting."

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favourite spots, it is different with borders of evergreen plants, which may be charming and natural in effect throughout the year.

Of garden pictures, there are few prettier than Crocus, Snowdrops, or Scilla coming through the green, moss-like carpets in these evergreen borders, far prettier to those who love quiet and natural colour than more showy effects. Often narrow evergreen borders are the best things that can be placed at the foot of important walls, as the way of allowing Grass to go right up to the walls is a foolish one, and often leads to injury to the wall trees. A narrow border (18 inches will do), cut off with a natural stone edging from the Grass or walk, is best: even a border of this size may have many lovely things, from early Cyclamen to the rarer Meadow Saffrons in the autumn. Besides the flowers already named, we have Violets, Periwinkles, Yuccas, Carnations, Pinks, white Rock Cress, Barrenworts, charming in foliage, purple Rock Cresses, Omphalodes, Iris, Acanthus, Indian and other Strawberries, Houseleeks, Thymes, Forget-me-nots, Sandworts, Gentianella, Lavender, Rosemary, hardy Rock Roses, and many native and other hardy evergreen Ferns in all their fine variety; Bamboos, Ruscus and Dwarf Savin, these are an essential aid in the making of evergreen borders.

HARDY BORDER FLOWERS FOR BRITISH GARDENS.

From this list all families not pretty hardy in Britain are excluded: whatever we may do with flower beds, mixed borders should be mainly of hardy plants, and we ought to be able to plant or refresh them at any time through the autumn or winter months. Well planned mixed borders, covered as they mostly should be with rock plants forming green carpets, should have few gaps in early summer, but where these occur they may be filled up with half-hardy plants as the stock of plants may permit, or with good annuals. It is important in making borders to use the finest species in each genus.

Acanthus	Aubrietia	Convolvulus	Eutoca	Hollyhock
Achillea	Bartonia	Coreopsis	Fritillaria	Hyacinthus
Acis	Bellis	Corydalis	Fuchsia	Iberis
Aconitum	Bocconia	Crocus	Funkia	Iris
Adonis	Brachycome	Cyclamen	Gaillardia	Ixiolirion
Agapanthus	Brodiaea in var.	Cypripedium	Galanthus	Kniphofia
Agrostemma	Calendula	Delphinium	Galtonia	Lathyrus
Allium	Calla	Dianthus	Gentiana	Lavatera
Allysum	Calliopsis	Dielytra	Geranium	Lavendula
Alstroemeria in var.	Calochortus	Digitalis	Geum	Leucojum
Amaryllis	Caltha in var.	Dodecatheon	Gladiolus	Lilium
Amberboa	Campanula	Doronicum	Godetia	Linaria
Anemone	Carnations	Dryas	Gypsophila	Linum
Anthericum	Catananche	Echinops	Helenium	Lobelia
Antirrhinum	Centaurea	Epilobium	Helianthemum	Lupinus
Arabis	Cerastium	Epimedium	Helianthus	Lychnis
Arenaria	Cheiranthus	Eremurus	Helichrysum	Lythospermum
Argemone	Chelone	Erigeron	Helleborus	Lythrum
Armeria	Chionodoxa	Erodium	Hepatica	Malorpe
Arnebia	Chrysanthemum	Eryngium	Hesperis	Malva
Arum	Colchicum	Erythronium	Heuchera	Meconopsis
Aster	Convallaria	Eschscholtzia	Hieracium	Megasea

Border Flowers for British Gardens—continued.

Michauxia	Papaver	Ramondia	Senecio	Trillium
Mimulus	Pæonia	Rhodanthe	Sidalcea	Triteleia
Mirabilis	Pancratium	Rockets	Sparaxis	Tritonia
Monarda	Pansy	Rudbeckia	Spiræa	Trollius
Montbretia	Pentstemon	Ranunculus	Statice	Tropeolum
Muscari	Phlox	Salpiglossis	Sternbergia	Tulipa
Myosotis	Physalis	Salvia	Stocks	Veratrum
Narcissus	Portulacca	Saponaria	Sweet Pea	Verbascum
Oenothera	Polemonium	Saxifraga	Sweet William	Veronica
Onosma	Potentilla	Scabiosa	Symphytum	Viola
Orchis	Plumbago	Schizostylis	Thymus	Waldsteinia
Ornithogalum	Primula	Scilla	Tiarella	Wallflower
Orobus	Puschkinia	Sedum	Tigridia	Zephyranthes
Omphalodes	Pyrethrum	Sempervivum	Tradescantia	Zinnia
Oxalis

Borders: The Grove, Wishaw.

English Iris.

CHAPTER VI.

THE RESERVE AND CUT-FLOWER GARDENS.

NOTHING is worse in gardening than the way in which plants of all kinds are huddled together without regard to fitness for association in stature, in time of blooming, or in needs of culture. The common scene of confusion is the shrubby border, into which Carnations, annuals, Alpine flowers, and rampant herbs are often thrown, to dwindle and perish. There is no shrubby border that could not be made beautiful by carpeting it with wood and copse plants of the northern world in broad groups, but many of our favourite flowers are not wood plants, and many—for example, Carnations—cannot maintain the struggle against the bushes and trees. *Hardy plants should be divided into two broad series at least—those which thrive in and near woody growth, and those which must perish there.* Solomon's Seal and the blue Apennine Anemone are types of plants that one may grow in any shady place: Carnation, Pink, Auricula are among the flowers which must have good soil and be kept away from tree roots, and though good borders, away from shrubby growth, grow many plants well, a further division of the work will be found wise in many places.

One good plan that all can follow is the growing of certain plants without heed to their place in any design, but not in any kind of "mixed border" or in other mixed arrangements. Many hardy flowers are worthy of special culture, and good results cannot often be got without it, whether we grow Carnations, Pinks, Pansies, Phloxes, Lilies, Stocks, double Wallflowers, Cloves, or scarlet Lobelias. Even a choice annual, such as Rhodanthe, or a beautiful Grass, it is not easy to succeed with unless it has a fair chance, away from the crowding of

the ordinary mixed border. This special culture of favourite flowers may be best carried out in a plot of ground set aside for beds of the choicer flowers, in a piece of ground in or near the kitchen garden or any other open position, sheltered, but not shaded. Such ground should be treated as a market gardener would treat it—well enriched, and open, and thrown into four-foot beds; the little pathways need not be gravelled or edged, but simply marked out with the feet. With the aid of such a division of the garden, the cultivation of many fine hardy plants becomes a pleasure. When any plant gets tired of its bed, it is easy to make the Carnation bed of past years the bulb one for the next year, and so on. It would be easy to change one's favourites from bed to bed, so that deep-rooting plants should follow surface-rooting kinds, and thus the freshness of the garden would be kept up. If any edging is used, it should be of natural stone sunk in the earth, as such edgings are not ugly or costly; but the abolition of all edgings, beyond one or two main lines, would tend to simplify the work. Such a plot is excellent for giving cut flowers in quantity, and is also a great aid as a nursery, while it would also be a help to exchanges with friends or neighbours, in the generous way of all true gardeners. The space occupied by it will depend upon the size and wants of the place; but, wherever the room can be spared, an eighth of an acre might be devoted to the culture in simple beds of favourite flowers, and even the smallest garden should have a small plot of this kind.

WHAT TO GROW IN THE RESERVE GARDEN.—Among the fair flowers which in this way may be cultivated, each separately and well, are the delightful old Clove Carnations—white, crimson, and scarlet, as well as many other kinds; tall Phloxes, so fair in country gardens in the autumn; scarlet Lobelias, splendid in colour; Pinks of many kinds; Persian and Turban Ranunculus; bright old garden Anemones, and the finer species of Anemone; Lilies, and as many as possible of the splendid kinds introduced into our gardens within the past dozen years from California and Japan; tall perennial Delphiniums, with their spikes of blue; double Rockets; beautiful Irises, English, Spanish, Japanese, and German; Pansies in great variety; Tiger Flowers; the Columbine, including the lovely blue Columbine of the Rocky Mountains; Pyrethrums, Chinese Pinks, Scabious, Sweet Williams; Stocks of many kinds; Wall-flowers, double and single; the annual Phloxes; Zinnias, which, if grown as grown abroad—that is to say, well and singly grown—are fine in colour; China Asters, quilled and others; the Sweet Sultan, in two or three forms; showy tricolour Chrysanthemums; Grasses for cutting in winter; Grape Hyacinths; rare Narcissus; Meadow Saffrons; Lilies of the Valley; Crocuses, the autumnal as well as the vernal kinds; Dahlias, cactus

and single ; Pæonies ; Primroses, double and single ; Pentstemons ; Polyanthus ; Oxlips ; Tulips, many early and late kinds ; Sweet Violets ; American Cowslips ; Gladioli ; Christmas Roses ; and, lastly, Everlasting Flowers, which may be grown with the pretty Grasses, and, like them, be gathered for the house in winter. All these fair flowers deserve care in the gardens, and should not be trusted to the too often ill-cultivated slips called "mixed borders," and many other plants which we wish to increase or take good care of.

In these special plots for hardy flowers are included the various hardy florists' flowers. The term "florists' flowers" was once applied to flowers supposed to be popular with amateurs and florists, but it had never any clear meaning. A Rose is a florist's flower ; but it is more—

Christmas Roses in bed in reserve garden. (Durie, Fife, N.B.).

it is everybody's flower, and we call it a Rose, having no use for any other term. The reserve garden is a good place to grow flowers for cutting for the house. The enemy in the way of plenty of cut flowers has hitherto been the gardener ; but he was limited in his cutting operations to glass-houses, which he naturally wished to keep gay. A supply equal to that of a dozen plant houses can be got from an open square in the kitchen garden or any piece of good ground. For eight months there is a procession of open-air flowers, which can easily be grown in sufficient quantity to allow the cutting of plenty for every want. A bed or a few lines of each favourite in a plot of good soil would give a great number of flowers, and these, aided by the Roses and other bush and tree flowers about the garden, would yield all the flowers that a large house would require, and many besides for hospitals and for those who have not gardens. Flowers

grown for cutting should be carefully selected as regards odour, form, and colour, and the gardener should do all he can to carry out an idea tending so much to give people pleasure at home, and the smallest country place can afford a plot of ground to grow flowers for cutting.

DOUBLE CROPPING OF BEDS.—We have had evidence of the good way in which inter-cropping suits plants in nursery beds, and there is reason to believe that the presence in rich ground of two plants wholly different in their nature is a good plan. A collection of Narcissi, with lines between of Delphiniums and hardy Fuchsias, that is to say, two lines of each in a 4ft. bed, will thrive. The same is true of other hardy spring bulbs, which may be alternated with the choicer perennials that bloom in autumn; and this way is a good one for people who live in their gardens chiefly in spring and autumn, as it secures two distinct seasons of bloom in the same ground. This applies to store beds as distinct from the regular flower garden, though some kind of inter-cropping would give an excellent result in the flower garden also; as, for instance, if we have beds of Roses, we might have them carpeted with early bulbs, and be none the worse for it, and so also with Pæonies and many other flowers. It wants some care to find out which go best together; but, given that, all is easy enough.

GARDENS OF ONE FLOWER.

Apart from the reserve garden, with its flowers in close masses, we may have gardens of a favourite flower and its forms, for the purpose of studying a family or adding to it by collecting or cross-breeding. Such gardens now and then owe their existence to the difficulty of cultivating a flower, as was the case of a charming garden of the lovely forms of our native Primrose formed by a friend of mine, who thus describes it:—

“A PRIMROSE GARDEN.—No flower better deserves a garden to itself than the Primrose. It is so old a favourite, and has been cultivated into so many forms, that any one determined to have a Primrose garden may choose the kind he likes best, and set to work accordingly. There are the single-stalked Primroses, the earliest of all, flowering from the middle of March onwards, while some may be had in bloom as soon as the end of February. They range in colour from pure white to deep primrose, and from palest pinky-lilac through strong red-purples to a colour nearly approaching blue, and there are also rich reds of many shades. There is not as yet any Primrose of a true pink colour, nor, though the type colour is yellow, are there as yet any strong yellows of the orange class. There are also double Primroses in nearly all the same colourings. The Polyanthus, with its neat trusses of small flowers, though beautiful in the hand and indis-

Gardens of one flower : A Primrose garden in Surrey.

pensable in the good garden of hardy flowers, is not a plant for the Primrose garden, as it makes no show in the mass. The grand Primroses for garden effect are the large bunch-flowered kinds, white, yellow, and orange-coloured, red, crimson, and rich brown; of infinite variety in form, texture, habit, and colouring, easy to raise to any amount by seed, as also by division of the older plants. A Primrose garden (part of which is here illustrated), that for some years has been an ever-increasing source of pleasure and interest to its owners, was formed a few years ago by making an opening about 70 yards long, and varying from 10 yards to 15 yards wide, through a wild copse of young Birch trees. The natural soil was very poor and sandy, so it was prepared by a thorough trenching and a liberal addition of loam and manure, which has to be renewed every year. No formal walks are made, but one main track is trodden down about 2 feet wide near the middle of the space, dividing into two here and there, where a broader clearing makes it desirable to have two paths in the width. The older divided plants are put into groups of a colour together, from twenty to fifty of a sort. The groups of seedlings are of necessity more various, though they are more or less true to the parent colour, so that a patch of a hundred seedlings—from yellows, for instance—will give a general effect of yellow throughout the group. The whites and yellows are kept at one end of the garden, and the reds at the other; the deepest yellows next to the reds. Seen from a little distance, the yellow and white part of the Primrose garden looks like a river of silver and gold flowing through the copse. The white stems of the Birches and the tender green of their young leaves help to form a pretty picture, which is at its best when the whole is illuminated by the evening sunlight."

Some of the Plants for Reserve Garden and for Cutting Flowers.

Carnations	Pyrethrum	Grasses, the more	Campanula	Polyanthus
Phloxes	Schizostylis	graceful kinds	Chrysanthemums	Oxlips
Scarlet Lobelias	Chinese Pinks	Zinnias	Meadow Saffrons	Tulips
Pinks	Scabious	Sweet Sultan	Roses	Violets
Double Rockets	Blue Cornflower	Ranunculus	Crinum	American Cowslips
Iris	Sweet Williams	Anemone	Crocus	Gaillardia
Pansies	Stocks	Lilies	Dahlia	Gladiolus
Alstroemeria	Wallflowers	Delphiniums	Pæonies	Everlastings
Tigridia	Grape Hyacinths	Narcissus	Pentstemon	Christmas Roses
Columbines		China Asters	Primroses	Lenten Roses

CHAPTER VII.

HARDY BULBOUS AND TUBEROUS FLOWERS, AND THEIR GARDEN USE.

AT no distant time lists of these things were mostly looked at for the sake of getting a few bulbs to force, but that day is past, at least, for all who now see the great part which hardy bulbous and tuberous plants must take in the outdoor gardens of the future. Since those days the hills of California and of Japan alone have given us a noble lily garden, and the plants of this order in cultivation now form a lovely host. We are not nearly so likely to want novelties as knowledge of how to make effective use of the nobler plants, such as the Narcissus, the glory of the spring, as the Lily is of the summer garden.

We may indeed be often tempted with Zephyr flowers, and Ixias and other plants, beautiful in warmer countries than ours, but delicate here, and only living with us as the result of care which is quite needless, but there are so many lovely things from the mountains and plains of the northern world, and from the mountains in all parts, as hardy as the wild Hyacinths of British woods, that our search will be more for the nobler materials and how to make artistic use of them than in quest of novelty as such.

LILIES.—It would be fair to begin with the Snowdrop, but we will take the plants in the order of their value ; and, having regard to past service and the present beauty of the Lilies, they should take the first place among hardy bulbs. Who of those who remember the Orange and White Lilies of all English and Irish gardens would have looked for the splendid Lilies that have come to us within less than a generation ? For size, and form, and lovely colour they surpass all we had ever dreamt of even among tropical flowers. The variety is so great that a volume would be required to describe them ; the catalogues give us many of their names. The main thing for all who

care for them is how to possess their beauty with the least amount of care and disappointment ; and, happily, the question has been solved for many handsome kinds by planting them in the peat beds that were made at first wholly in the interest of the American shrubs. Some of the finest Lilies thrive admirably in these, and by adding here and there deep leaf-mould, rotten cow manure, and the like, other kinds may be grown, for some Lilies thrive best in such soil. Nor need we neglect the mixed borders because we have new ways for our Lilies, as several of the European Lilies thrive perfectly in ordinary borders. They may be naturalised too, or some of them, in deep moist peat bottoms ; for example, the American swamp Lily (*L. superbum*). The mania for draining everything might even lead to evil in the case of some Lilies which inhabit the cold northern woods, and which do with a very different degree of moisture from that required by the Lilies of California, where the soil in summer is as road dust on a dry hill. Lilies are so varied in their nature and stature that they may adorn almost any aspect in sun or shade. The new and rare among them will have special beds or borders, and we have Lily men and even Lily maniacs who will have Lily gardens. And as these lovely flowers tumble into our lap, as it were, from the woods and hills of Western China, Japan, and California, untouched by man until he found them made to his hand a few years ago, it is reasonable to suppose that some of them would take care of themselves, if trusted in likely spots, with us. I put some of the Panther Lily deep in a leafy hollow in a Sussex wood, just to see if it would survive in such conditions. Whether owing to a series of cold wet seasons and the want of the glorious sun of the hills in Nevada County, California, where I found it, we know not, but after the first season it did not come up. I thought no more of it, but a friend going into the same wood some years afterwards found a colony of it in bloom. So that we must not always cry out if Lilies do not come up, as they have a way of resting for a year now and then.

NARCISSUS.—Next to the Lily in value as an outdoor flower is the Narcissus, though when we know the Iris better it may find a high place. But the wondrous development of the garden forms of Narcissus during recent years, and their fitness for our climate, give it great value. Mountain plants in origin, for the most part they are as hardy as riverside rushes, and those few southern forms that will only live in dry banks and at the foot of warm walls need not concern us who look for pictures of Narcissi in the open air. We have not to ask where the Narcissi will grow, as there are few places they will not grow in with the usual garden culture, and in some cool, loamy soils they take to the turf as ducks to water. Hence it is easy

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Group of Giant Indian Lilies in half-shady place (Surrey).

on many soils to have a spring garden of these flowers, naturally grouped and massed, set in turf, and giving us many flowers for the house as well as pictures in lawn and meadow. For this purpose what is chiefly wanted is that the bulb growers should offer the best hardy sorts for the wild garden by the thousand at low rates. These precious early flowers will also have their place in the garden for cut flowers or the nursery bed, where the many new forms of *Narcissi* raised in England must take their place until they become plentiful. The true hardiness of the flower allows of its being enjoyed in all parts of these scattered islands, from Scilly, where it is grown in quantities for the markets, to the north of Scotland. In Ireland the *Narcissus* is at home, and there are excellent collections in the College Botanic Gardens at Dublin and also at Glasnevin, while there is a very well-grown one at Cork, and Miss Currie, of Lismore, grows many of the most precious kinds. In old days the white *Narcissi* grown in the gardens spread here and there into orchards and fields, and so it happens that now we have to seek in Ireland some of the graceful white *Narcissi*.

IRIS.—The Iris is one of the oldest of our garden flowers, in many forms too, but, like the Lily, it has come to us in greater novelty and beauty of recent years, and as districts in Central Asia and Asia Minor are opened to collectors, we must have our Iris gardens too. And what so fair as an Iris garden? They are the Orchids of the north, many of them as hardy as reeds, and with more richness of colour than Orchids. The old Irises of our gardens are usually of the *Germanica* class; there is much variety among these groups, and they are very hardy and precious, and excellent for the adornment of gardens and even walls and thatched roofs, as we see in France, the Iris of this great group having a valuable power of thriving on such surfaces as well as on good soil.

There is a group of waterside and water-loving Iris, much less seen in our gardens than the above, and some of them not yet come to us, but of great value. They are allied to the common yellow Iris of our watercourses, but are taller and richer in colour, the golden Iris (*Aurea*), *Monnieri*, and *Ochroleuca* being the best known so far, and very free, hardy, and beautiful plants they are, thriving, too, almost anywhere, but best in rich, moist soil. And we have the distinct gain of the splendid Japanese Iris, in its many strange forms, the Japanese surpassing all waterside Irises in its wide range of colour, though most beautiful perhaps in its simple forms, white and purple. This plant, though its beauty suggests that of the tropics, will grow side by side with our great water dock by any lake side, or even in a clay ditch, where only the coarsest weeds live. The Siberian Iris and the forms near it are very graceful beside streams or ponds, either in open or

copsy places, and far more graceful and charming in such positions than in set borders. All these water-loving Irises will do for the wild garden in bold groups when we can spare them.

Then there are the brilliant purple and gold *Iris reticulata* and its allies, little bulbous Irises, for the spring garden, early and charming things, many beautiful ; Irises that flower in winter and early spring, like the Algerian Iris ; others happy in Britain on warm soils and warm corners, and some for the rock garden, like the crested Iris ; and the many pretty forms of *Iris pumila*, of some of which edgings were made in old gardens. The foliage of the evergreen Iris is so graceful and usually so nice in colour that artistic use may be made of it in that way. The most novel of all the groups of Iris, however, are the Cushion Irises, which promise much beauty, but are yet too little known to see how far that beauty may be preserved in our gardens. The old *Iris Susiana* has been known for many years, and some of its allies, like *I. Lorteti* and the Wolf Iris, seem more hardy and not less beautiful.

TULIPS.—The old garden Tulip, a favourite for generations, grown in the so-called florist varieties, and the source once of severe mania, is but one of a large number of wild *Tulipa*, many of which have come to us of late years from Central Asia. The old Tulips are the forms of an Italian species (*T. Gesneriana*), and these varieties are worthy of all the attention they ever had ; but the wild form is as good as any of its varieties for splendid effect, and a selection should be made of its simpler colours, including a good white and yellow. The bedding Tulips, which are earlier in blooming, are forms of *T. scabriscapa*, though useful, are not nearly so valuable for their effect as the late tulips. The new species coming from Central Asia and other lands promise to be very valuable, too, for their effect, though our climate may not suit all of them, as it does the fine hardy *Gesneriana*. The colour of these tulips is too fine to be missed, and, as the bloom is too short-lived to give beds under the windows to it, the best way is to plant them in borders, and, when scarce, in the nursery ; when plentiful in the wild garden. I put some in new hedgerow banks a few years ago, and also the wood tulip in a meadow regularly mown, and now have a splendid bloom every spring. As wild tulips abound in the south of Europe travellers might often get many roots which could be tried in this and other ways. Some of the bedding tulips have very ugly slaty colours, and there is much waste in planting them. The Dutch bulb raisers care more for variety than beauty of colour, but the aim in our gardens should be to get more of the fine simple colours, and the wild kinds planted so far as we may in effective ways ; a few trials in that way will show that it is a much more effective one than setting out the plants in tile or other patterns. The later

these wild tulips come into bloom the better, as it brings their nobler colour in when the harsh changes of the spring are nearly over, and in the north they will come in with the early summer days. These ideas of the more picturesque planting of the hardier Tulips need not take from the lover of the old florist kinds his Tulip garden, which was very charming with its long beds of good soil, and at its best in some sheltered—hedged in or walled—garden.

CROCUS.—If the Crocus has any fault it is courage in coming so early that it has to face every trouble of the spring, and green winters induce it to open too early. Yet what promise it brings us of the many-blossomed spring in border and in lawn; for, in addition to the old and good way in garden borders, the Crocus, at least all the forms and series and the hardy and vigorous European kinds, is easily

Narcissus princeps at St. Nicholas House, Scarborough.

naturalised in lawns or meadow turf, and others even under Beech trees as in Crowsley Park. As regards this question, it should be remembered that the Crocus is wild in rich meadow grass in various parts of England, at Nottingham and in Essex. The autumnal kinds may be naturalised too, but they ask perhaps for a warmer soil than the vernal kinds. Recent years have brought us many new Crocuses. The effect of the old kinds is not surpassed, but their beauty may be more fully shown than in lines and dots by scattering them in natural-looking groups in grassy places among trees or in the open turf.

SNOWDROP AND SNOWFLAKE.—The old Snowdrop gives as good an effect as any other, but the many new varieties give the Snowdrop more value. Whether these new forms are species or varieties matters little; their value as garden plants is the only question that concerns

flower-gardeners. Who would have thought a few years ago that our Snowdrop was only one of a large number taking care of themselves in the mountains of Asia Minor and other regions? Others are coming, and when these increase in our gardens we shall have fresh aids to make our spring gardens more beautiful. As these new kinds are mostly plants from cool regions, they will probably be easily naturalised in many soils. The snowflake must not be forgotten—few spring flowers are more free than the vernal and late Snowflakes.

SCILLAS, HYACINTHS, AND LIKE PLANTS.—The lovely early group of plants allied to our Wood Hyacinth—*Scilla*, *Chionodoxa*, and *Hyacinthus* (the more tiny and dwarf wild species are referred to here under this last name)—ask for some thought as to their artistic use. The *Scillas* are well known, but the newer forms of *Chionodoxa* give an unlooked-for loveliness of blue very early in the spring, and show a pretty variety in their delicate colours; and yet there is no more lovely thing among them than the Taurian *Scilla*, a large form of the long-neglected *Scilla bifolia*. It is so early and so deep a blue that one may get rich effects with it very early. The more tiny and select of all these plants are alpine, delightful for rock-gardens, and all the more so if we can use them in visible groups. The stouter kinds, such as the larger *Chionodoxa*, are coming in such numbers that we may try their effects in many ways; it is impossible to omit them from whatever kind of spring gardening we adopt.

The common Hyacinth—in its double forms at least—is so stiff that we take little interest in it for the flower garden; but the simpler colours of the single kinds deserve a place. Would it not be worth while growing the single Hyacinth *provincialis* from which these all come? Hyacinths will come up year after year in flower beds, and throwing away the roots after once blooming is a mistake.

OTHER LILIES.—Apart from the true Lilies there are certain plants to which the name is also given betimes, such as the Torch Lily (*Kniphofia*), the Day Lily (*Hemerocallis*), the Peruvian Lily (*Alstroemeria*), the African Lily (*Agapanthus*), the Belladonna Lily (*Amaryllis*), the Cape Lily (*Crinum*), the Plantain Lily (*Funkia*), the Wood Lily (*Trillium*), the Mariposa Lily (*Calochortus*), besides other Lilies that do not come under our present heading, or which do not ask for thought as regards their effective use.

The Torch Lilies are brilliant in colour, and have been added to of recent years, but severe winters have thinned them, and they will always be best in dry soils and in sunny positions, protected in winter. They are best kept apart from flowers more refined in colour, such as the Tea Rose. The Day Lilies are a really hardy race, and most of them will grow anywhere. With their fine leaves

Tulip garden at the Castle, Dingwall.

and showy, well-formed flowers, they may be used with good effect in various ways. The Peruvian Lily is valuable, but far more beautiful on warm soils. If on cool soils—and in cool districts it fails—we must prepare beds for it, but the best way in gardening is always to grow the flowers that thrive without great labour in the soil we have. The Belladonna Lily can be grown in no more effective way than the old one of planting it under south walls. The Cape Lilies have increased of late years from hybrids and otherwise, and are worth attention in deep soil in warm corners near walls that protect them from the north. The African Lily is most important for its unrivalled blue, but, save in the warmest parts of the south, where it may live in the open air protected, it is essential to give it greenhouse or like protection in winter. It is one of the plants for which the expense of tubs or large pots is worth indulging in, and there are new and handsome kinds, which make the culture more interesting. The Wood Lilies are valuable because they give us effects both distinct and beautiful in peat borders or bog gardens. Shade is not essential, though we think the best effects are attained in half-shady spots.

The Mariposa Lilies are beautiful indeed, some of them almost surpassing any flowers of the old world; but they come from one of the best climates and warmest soils in the world, and one can hardly hope that they will thrive in our climate without special care. Yet such charming flowers will always have a place in curious gardens, where they will thrive in frames and warm corners. Such plants, however, cannot be depended on for much effect in the open garden, though new kinds are being brought from Western America which may thrive in our climate, and help to show us the beauty of these singularly lovely things.

ANEMONES AND RANUNCULUS.—The Poppy Anemone has been a welcome flower in our gardens for hundreds of years, and it should never be forgotten, save in cold soils where it dwindles. Many now grow it well from seed, but the old way of planting the tubers of favourite kinds and colours should be carried out in the flower garden in Rose beds or in any beds to spare. The Scarlet Anemone and its varieties is also precious; the Star Anemone, so charming in Italy and Greece in spring, is rarely seen happy in our gardens which are too cold for it, no doubt, so it may well be left out in favour of the hardier sorts. Valuable as the brightest Anemones are, the old Turban and Persian Ranunculus, and other forms were once a great charm of the flower garden, and should not be forgotten in warm soils, where they thrive, but they perish in severe winters, and require some care.

VARIOUS.—The old Dog's-Tooth Violet of the mountains of Europe has been joined in our gardens of recent years by a number of

its American relations, graceful plants for peat borders, but as yet not so valuable as the European kind in its various forms, which are among the prettiest early spring flowers. They are, moreover, true wild garden plants, which thrive in turf, coming up every year even more faithfully than *Crocus* or *Snowdrop*. The Snake's-head, too (*Fritillaria*), is a charming wild garden plant, thriving in grass in rich or wet meadows; where not native it may well be introduced. The new yellow *Fritillaries* give a greater interest to this group of plants, some of which are fitted for the wild garden, but we never could see the charms of the Crown Imperials, with their offensive odour. The Stars of Bethlehem (*Ornithogalum*) thrive in grass, and are pretty in it. Unfortunately the handsome Arabian kind is not hardy. The *Montbretias* are plants of somewhat recent appearance in our gardens, and they have a vigour and hardiness we do not look for in Cape plants, and a tenacious way of growing and increasing even in cold poor soil, and are, therefore, valuable where we wish to have close tufts of graceful leaves and gay blossoms below flowering shrubs not set too closely on the ground. Grape Hyacinths (*Muscari*) are often very pretty, and nearly always hardy. I use them freely in grass, where their blue is very pretty in spring. The choicer newer kinds will find a place in the nursery beds or rock-garden till more plentiful.

Among the new plants we have one of fine distinction in the Giant Asphodels (*Eremurus*), plants of noble port and vigour, but which, though here and there grown and flowered well, are not as yet proved for our climate, with its often open, snowless winters. We must find out the kinds really hardy and that bloom handsomely with us before we can judge of their value in the flower garden.

The old tiger flowers (*Tigridia*) should not be forgotten, especially on limestone or other warm soils, where they are most at home. There are several new kinds, which make the family of more value. Plants that give much pleasure from their good colours are the *Triteleia* and *Brodiaea*. Some new and pretty effects will be given by the best of these as soon as plentiful.

So noble a plant as the *Gladiolus* should not, perhaps, have been left to the end, but the fact that the finest class are only half hardy, and require care, makes them less important in our country than Lilies and Narcissi, that give so much beauty with little or no care. The years pass so swiftly, and are so full of cares, that things demanding two important attentions yearly—*i.e.*, taking up and planting—must take a minor place, except in the case of growers who make a special care of them. The groups known as *Lemoinei* and *Saundersi* hybrids, being hardier, give better results, but generally our climate is against the older *Gladioli*, and disease very often comes with any large attempt to grow them.

HARDY BULBS FOR CUT FLOWERS.—The special or reserve garden includes beds for hardy bulbs—a very good way of growing them, and for supplying flowers for the house. A curious habit of the flowers of bulbs is that, cut from the plants when just opening and put into water, they get larger than they would if left on the plants out of doors, and this should lead us to encourage many lovely flowers among hardy bulbs that are among the best for our rooms. Hitherto the horror of the gardener has been cutting flowers for the house ; but if cutting prolongs his bloom, strengthens his plants, and gives all who care for his flowers a fuller enjoyment of them, we may secure his powerful aid. Consider what one may escape in storms, frosts, and other dangers if a flower, cut just on arriving at maturity, lasts

Bed of Italian Narcissus.

longer indoors than out, and actually, as in the case of the Narcissus, gets larger ! Narcissi, through their hardiness and drooping heads, endure our climate better than any other flowers, and yet severe storms will beat them about and destroy flowers that might have lived for days in the house. Large showy flowers like Tulips, suffer with every heavy shower. Anything which makes it easier to have flowers in the house is a real gain ; their exquisite forms are best seen, and tell their story best when brought near to the eye. A flower of our yellow wood Tulip opening and closing, and showing its changing form in a room, gives ideas of beauty which cannot be gleaned by glancing at a bed of bulbs. A variety of hardy bulbs should therefore be grown for their value as cut flowers, apart from their use in the garden.

HARDY BULBS AMONG CHOICE SHRUBS.—One of the most

marked improvements is the planting of handsome bulbs in masses of Rhododendrons and like bushes. These beds, as usually planted, are interesting only when in flower, and not always then, owing to the flat surface into which the shrubs are pressed; Lilies, therefore, and the finer bulbs may with great advantage be placed among the shrubs. In many cases where this plan has been carried out, it has almost changed the entire aspects of gardens, and given various beautiful types of life instead of only one, and many fine rare bulbs find a home in such beds, which should be sacred from the spade. In placing choice, peat-loving shrubs, give the bushes room to fully attain their natural forms, and plant the interspaces with finer bulbs. Light and shade, relief and grace, are among the merits of this mode of planting. Beds of the smaller shrubs will do admirably for the smaller and more delicate bulbs, the shelter of low shrubs being an advantage to many little bulbs whose leaves are apt to suffer from cold winds. In this way we get relief, variety, and longer bloom, and the shrubs show their forms better when they have free play of light and air about them.

BULBS IN BEDS ON TURF.—Bold beds of Lilies and the taller bulbs are admirable for the lawn, and for quiet corners of the pleasure-ground. The showy beds of bulbs which are to be seen in public and other gardens, and which come so largely into spring gardens, are familiar to all. The beds suggested here are of a higher and more permanent nature, and are intended to be placed where they will be let alone. At Moulton Grange some years ago I saw on the turf in a quiet corner a bed of Tiger Lilies which had no other flowers near to mar its beauty. It was a large oval bed, and the colour of the finely grown Lilies was brilliant and effective seen through the trees and glades. In point of colour alone, nothing could be better; the mass of bloom was profuse, and the plants, about 6 feet high, told well in the garden landscape. The plants had a great advantage in habit, form, and colour over the usual dwarf type of showy "bedding" plant. Many hardy flowers of the highest beauty would have as effective colour if we took equal pains with them. Colour on a 6-foot plant is usually more effective than on a plant 6 inches or 12 inches high, and some hardy Lilies are well over 6 feet high. This Lily bed was on one of those little strips of turf which occur by most shrubberies, and within a few yards of a walk, so that it could be easily seen. Among the most lovely beds are those of the nobler Lilies, while Iris, and many beautiful Day Lily, Pæony, Gladiolus, and Cape Hyacinth may be grouped with them or near them. It may be as well to note that what is meant here is not wild gardening with bulbs, but very good cultivation of them, and surfacing and edging the beds with spring flowers.

Some Hardy Bulbous and Tuberous Plants for British Flower Gardens.

Acis
Agapanthus
Allium
Alstrœmeria
Amaryllis
Anemone
Anthericum
Arum
Calla

Calochortus
Chionodoxa
Colchicum
Convallaria
Crocus
Cyclamen
Erythronium
Fritillaria
Galanthus

Gladiolus
Galtonia
Hyacinthus
Iris
Ixiolirion
Leucojum
Lilium
Montbretia
Muscari

Narcissus
Orchis
Ornithogalum
Oxalis
Pœonia
Pancratium
Puschkinia
Ranunculus
Schizostylis

Scilla
Sparaxis
Sternbergia
Tigridia
Trillium
Triteleia
Tritonia
Tropæolum
Tulipa

Iris border (at Bulwick).

CHAPTER VIII.

ANNUAL AND BIENNIAL PLANTS, AND HALF-HARDY PLANTS ANNUALLY RAISED FROM SEED.

WHATEVER we may do with perennials, shrubs, or hardy bulbs, the plants in this class must ever be of great value to the flower-gardener; and among the most pleasant memories of flower-garden things are often those of annual or biennial plants: tall and splendid Stocks in a farmhouse garden on a chalky soil, seen on a bright day in early spring; Wallflowers in London market gardens and in cottage gardens, when not cut down by cruel winters; Snapdragons on old garden walls, and bright Marigolds everywhere; Hollyhock lines, Sweet Pea hedges, and Mignonette carpets; Evening Primrose, Poppies, Sweet Scabious, and Sweet-williams. However rich a garden may be in hardy flowers or bedding plants, it is wise in our climate to depend a good deal upon annuals. Although they do not last so long in bloom, and are not so fine in quality as Lilies or Roses, yet they can generally be depended upon for a very handsome show of flower in early autumn, particularly in northern and cool districts. In some cases it would not be wise to sacrifice the summer garden for autumnal flowering plants, but where people do not much enjoy their garden except in autumn, it is essential to make good use of those treated of herein.

Where the choicest flowers are grown in beds near the house, or in what should be the flower garden, autumnal annuals are not so good as more enduring plants, although useful as an aid. In many cases the best way would be to grow the annuals in separate borders, even in borders in the kitchen garden, as they are very well grown at Campsey Ash. Like most other plants, they enjoy fresh ground, and where they are grown in borders by themselves it is easy to enrich the ground, and make it fitted for them, easier than when grown among perennials, Roses and the like. With this precaution the culture is very simple; in the south some attention to watering is essential in dry years, in the north the moist cool climate gives the best results.

In wet seasons and in wet northern districts annuals surprise us by their vigour and beauty. In warmer counties the effect of the heat may in the case of the hardy kinds be met by autumn-sowing in good rich ground. The autumn sowings are the best. The plants not only flower much sooner, but, where the soil and climate suit them, they are stronger and more beautiful. The reason why they are so often seen in poor condition is that they are sown on hungry soil and are crowded.

Concerning crowding, "Salmoniceps" writes:—"I have just measured a plant to-day (October 4) of *Nemophila insignis*, sown more than a year ago. It has been in flower since May, and measures now 4 feet by 3 feet 10 inches. It would take a long time to count the blossoms, although they are not so large as the earlier ones. The plant grows in a new and rich border. According to the ordinary way of sowing annuals, this single plant occupies the space which is usually allotted to a whole packet of seed."

In nature, annuals are usually autumn-sown and gather strength in the winter. In growing a number of annuals from various countries, we must remember that our winters can be faced by the hardy ones only, such as the Sweet Pea, Cornflower, *Silene*, *Nemophila*, *Viscaria*, *Limnanthes*, Larkspur, Poppy, and Scabious. Annuals are best in masses or groups, and they are never perhaps so full of colour and beauty as on an old rich vine border.

In considering the best kinds we will look more at the important groups of plants, as there is a great number of curious kinds that might be named here, but they are not so important for effect.

Among annual and biennial flowers we have the lovely Everlastings of Australia, which have an order of beauty quite distinct from those we see in gardens into which annuals do not enter. Carefully gathered, they have the additional charm that they may adorn our houses during the winter. The Pimpernels, which with their pretty blue flowers were once made charming use of in gardens, are much neglected. The Mexican Poppy is a pretty flower and quite distinct. Among annuals

we find plants of fine foliage or habit, such as the Hemp, Castor Oil Tree and other Mallows, Maize and other grasses, Cotton and Blessed Thistles. The annual Chrysanthemums of Southern Europe and Northern Africa, and indeed of our own fields, are charming in effect. The annual Convolvuli are pretty, and in southern gardens may be used charmingly. The annual Larkspurs are so little used in gardens that it is only in seed farms that we have the pleasure of seeing them now and then in all their beauty. The annual Chinese Pinks are very charming grown in sunny beds and good soil. Our native Foxglove, which takes such good care of itself in many of our woodlands, breaks in the hands of the gardener into beautiful varieties well worth growing, if not in the garden, in shrubberies and in copses and woods. It is a good plan, when any ground is broken up for fence-making or rough planting, to scatter a few seeds of the white and other pretty kinds and leave them to take care of themselves. There are many graceful grasses which may be treated as annuals, and their flowers, like the Everlasting flowers, be in bloom through the winter. The night-smelling Stocks will appeal to some, but are rather too strong in odour for others. The annual Hibiscus when well grown are effective plants, and the same may be said of the Hollyhock, for which probably the best way is to raise it from seed, as in that way we can fight better against the fungus which destroys it. The Single Hollyhock is worthy of much care and is often very effective. The Flaxes are very pretty annuals, red and blue, and even the common cultivated Flax is a beautiful plant. The beauty of the Ice plants, of which we see so little in our country, is fairly shown by the little annual one. In our day quite a series of beautiful forms of Mignonette have come to add to the charms of that always welcome plant. The annual and biennial Evening Primroses are often extremely valuable and showy.

The Sweet Scabious are pretty and varied in colour and so fragrant. Of Sweet Peas there is a delightful series in our own day, when so many kinds have been raised that one could easily make a garden of them. No words can exaggerate their value, either in mixed or separate colours, and they should be both autumn and spring sown, so as to get a chance of those fine tall hedges of Sweet Peas which come where we sow in autumn and get the plants safely through the winter, and they are doubly valuable owing to the many beautiful new kinds. Zinnia is extremely fine in colour, but in our country it wants warm soils and the best positions in order to do well. In Italy, Austria, and South Germany they are much more beautiful and vigorous than with us.

Some annual plants, like the Cornflower, Sweet Sultan, Sweet Pea, Scabious, are precious for cutting for the house, and may be grown

with the hardy flowers for this purpose where there is room for it ; others are good for trellis-work, and others for surfaces we wish to adorn with pretty climbers, such as Canary Creeper, Maurandya, Adlumia, Gourds, Convolvulus.

The various French and African Marigolds, and the prettier forms of the pot Marigold, are very showy plants, and, for those who love much colour, are almost essential, and the same may be said of the various annual Calliopsis. The China Aster used to be grown much better than it is generally now, and there is no doubt, where people do not get much colour from other plants, such as Roses and the finer perennials, the China Aster in its many forms is useful. But more important by far are the various kinds of Stock, which have the added charm of fragrance, and which do so well in many gardens with light and warm soils in the north and in Scotland. Cosmos are pretty plants worthy of a place, and the best of the annual kinds of Datura are picturesque and distinct. Chinese Pinks are very beautiful and charming in variety. The Gaillardias, which are such poor perennials in many soils, are in some cases better raised as annuals, and there are annual kinds of value. The Gilias are very pretty, varied, and hardy, and some very dwarf, forming a carpet for taller plants.

The Godetias, allied to the Evening Primroses, are handsome when well grown, especially the white and simple coloured kinds, and where they live over the winter, from autumn sowing, they are very strong and handsome the following year. The many varieties of the annual Ipomæ are graceful, there being much charming variety among the blooms, and with these may be named the various kinds of Convolvulus minor, which does not climb. Lavatera and Malope are handsome plants in the autumn garden, as are the Lupins, well grown, and the new Nemesia from the Cape is charming. The white Tobacco and the true Tobacco are handsome in warm soils. We think the various Nigellas very interesting, while every one should have the annual Phloxes, now to be had in such good colours, and the Portulacas, which are so showy on warm borders. The Salpiglossis is a beautiful plant, especially where we take the trouble to select the simpler colours, the amber coloured one being very fine. The Sweet Scabious has charming varieties, and is often very fine in colour, though not so good on heavy and cool soils.

The Sweet Sultans are pretty, and useful for cutting for the house, and Love-lies-bleeding (*Amaranthus*) and its allies are quaintly effective. The Snap-Dragons, which are often treated as annuals, are frequently excellent when grown in their simple colours, the striped kinds not being nearly so good in effect. The annual Poppies are essential where a good display is hoped for from annuals, also the

White Foxglove. Engraved from a photograph by H. Hyde of a self-sown plant in shrubbery
at Gravetye Manor.

Mexican and Californian Poppies. Such handsome plants as the varieties of *Tropæolum* are also many of them beautiful annuals. Among plants of, perhaps, less importance than some of the preceding, the following may be mentioned: *Bartonia*, *Brachycome*, *Calandrinia*, *Cosmidium*, *Nolana*, *Didiscus*, *Kaulfussia*, *Linum*, *Lobelia*, *Martynia*, *Mesembryanthemum*, *Nycterinia*, *Platystemon*, *Saponaria*, *Senecio*, *Stenactis*, and *Xeranthemum*, as affording some good plants for those interested in flower gardening with annual and biennial plants.

HALF-HARDY PLANTS TREATED AS ANNUALS.—It is not every one who has the means to winter a large number of tender bedding

Bed of "China Asters," showing effect of well-grown annual plants in garden.

plants, and the keeping of a large stock involves much work, and takes up space that might be better occupied. But a garden may be made very gay in summer with half-hardy plants raised from seed, and without keeping a single plant over the winter in the greenhouse. In seedlings there may be differences in habit and colour, but this should be no objection. There are a few plants which come from seed true to the type through many generations, like *Verbena venosa*. Seedling *Verbenas* make a handsome bed, and usually do much better so grown than from cuttings. Balsams, again, are not half so much used for open-air decoration as they deserve to be, and those who have only seen them starving in small

pots cannot form an idea of their beauty when planted out in good open soil, away from trees and in warm soils. Take the border Pansies in various shades of purple, yellow, and white. Varieties may be raised in the early spring for planting out the same summer, and so of the Verbena, Pelargonium, Pyrethrum, *Salvia patens*, *S. argentea*, Heliotrope, and Snapdragons, which should be sown in heat in January ; to the Petunia, Phlox Drummondii, Dianthus, Indian Pink, Ageratum, and Lobelia, which in February should be sown in pans in heat, and, if kept growing, will be ready for planting out in May. Begonias for bedding may be grown from seed in the same year, but are more effective if raised during the preceding year, selected according to colour, and stored in winter ready for bedding out early in summer. Fuchsias sown in January flower well in August. Of fine-leaved plants which can be raised from seed for use in the open-air the same year, there are Amaranthus, Celosia, Centaurea, Cineraria, Humea, Canna, Chamæpeuce, Nicotiana, Ricinus, Solanum, and Wigandia.

Old plants of Verbenas and like plants kept through the winter harbour the eggs of vermin always ready to eat up the collection if it is neglected for a week, but, starting with clean houses and frames, and with seeds in early spring, the gardener makes a better fight against his many insect enemies. As regards the plants one would like to raise in this way, seedsmen should select and fix distinct colours of different races of plants. It would not be difficult to select a bluish or purple Verbena which one might count on as coming pretty true from seed. We have so much relied upon cuttings and old plants that the raising of fine seedlings has seldom had fair attention. Many raise seeds, but few give the early thinning, the light, the sturdy growth, and the unchecked culture that seedlings require ; but now, when we may raise not only the annual pure and simple, but the half-hardy flower-garden plants, and the nobler hardy plants like Carnations and Hollyhocks, seed-raising for the flower-garden deserves much attention.

BIENNIAL PLANTS are usually such as make their growth in one year and flower the next, but the line between biennial and annual is not a strict one, because in their native countries annual plants often spring up in one year, and flower the next. In countries with open winters and hot summers, annuals do so naturally, and begin to grow in the first rains through the winter, and flower strongly the next year—these often being kinds sown in spring in gardens. Hollyhocks, Foxgloves, Chimney Campanula, and Sweet Williams come under this head, but in some cases early raising in spring gives us a chance of blooming some of them the same year as they are sown. In any case it is better for simplicity's

sake to group all annual and biennial plants together, and with them the half-hardy plants raised from seed for use in the flower garden, as the work of raising all is, to a great extent, the same.

Some of the more important Families of Annual and Biennial Plants, and of Half-hardy Plants raised from Seed for the Flower Garden.

Acroclinium	Centranthus	Hedysarum	Mesembryan-	Ricinus
Adlumia	Cheiranthus	Helichrysum	themum	Salpiglossis
Agathæa	China Aster	Heliophila	Mignonette	Salvia
Ageratum	Chrysanthemum	Heliotrope	Mimulus	Saponaria
Agrostemma	Clarkia	Hesperis	Mirabilis	Scabious
Alonsoa	Clintonia	Hibiscus	Myosotis	Schizanthus
Alyssum	Convolvulus	Hollyhock	Nemesia	Schizopetalon
Amaranthus	Coreopsis	Iberis	Nemophila	Senecio
Amberboa	Cosmidium	Impatiens	Nicotiana	Silene
Ammobium	Cosmos	Ionopsidium	Nierembergia	Solanum
Anagallis	Crepis	Ipomæa	Nigella	Sorghum
Antirrhinum	Cuphea	Ipomopsis	Nolana	Specularia
Arctotis	Datura	Isotoma	Nycterinia	Sphenogyne
Argemone	Delphinium	Kaulfussia	Oenothera	Stenactis
Artemisia	Dianthus	Lasthenia	Onopordon	Stocks
Bartonia	Didiscus	Lavatera	Oxalis rosea	Sweet Peas
Begonia	Digitalis	Leptociphon	Oxyura	Sweet William
Boerkhausia	Erysimum	Leptosyne	Papaver	Tagetes
Brachycome	Erythræa	Limnanthes	Pelargonium	Tropæolum
Calandrinia	Eschscholtzia	Linaria	Pentstemon	Verbascum
Calceolaria	Eucharidium .	Linum	Petunia	Verbena
Calendula	Eutoca	Loasa	Phacelia	Viola
Calliopsis	Fuchsia	Lobelia	Pharbitis	Virginia Stock
Campanula	Gaillardia	Lophospermum	Phlox	Viscaria
Cannabis	Gilia	Lupin	Platystemon	Waitzia
Cape Marigold	Glaucium	Maize	Podolepis	Whitlavia
Catananche	Godetia	Malope	Polygonum	Zea
Celosia	Gourds	Malva	Portulaca	Zeranthemum
Celsia	Grasses	Martynia	Pyrethrum	Zinnia
Centaurea	Gypsophila	Maurandya	Rhodanthe

Zea : Knockdolian, Colmonell, N.B.

CHAPTER IX.

FLOWERING SHRUBS AND TREES, AND THEIR ARTISTIC USE.

SPRING comes to us wreathed in Honeysuckle, and summer brings the Wild Rose and the May bloom, and these are but messengers of a host of lovely shrubs and low trees of the hills and plains of northern and temperate regions, and also of the high mountains of countries like India, where there are vast alpine regions with shrubs as hardy as our own, as we see in the case of the white Clematis that covers many an English cottage wall with its fair white bloom. If we think of the pictures formed in thousands of places in England, Scotland, and Ireland, by the May alone, we may get an idea of the precious beauty there is in the American, Asiatic, and European kinds, some of which flower later than our own and make the May bloom season longer. Nothing is lovelier among flowering trees than a group of the various Thorns, beautiful also in fruit, and the foliage of some kinds is finely coloured in autumn. The Thorns are but one branch of, perhaps, the most important order of flowering trees, embracing

the Apples (a garden in their varied flowers alone); Pears, wild and cultivated; Crabs, pretty in bloom and bright in fruit; Quinces, Medlars, Snowy Mespilus, Almonds, Double Cherries, Japan Quinces, Plums (including Sloe and Bullace), not to speak of a number of less important families. Among these, the larger and more important branches of this great order of plants, there is some likeness in habit and size, which allows of similar use.

The Double Peaches are among the most precious of trees of this order, but for some reason we rarely see them in any but a miserable state in England. In France they are sometimes lovely not only in the flower, but in the mass of colour from healthy growth. It may be that the failure of the shoots to ripen in our cool climate is owing to some weakness through grafting on a bad stock. There is such a great and noble variety among these trees that there is room for distinct effects. An excellent point in favour of trees like Thorns, Crabs, Almonds, and Bird Cherries is that, in their maturity, they, in groups or single specimens, stand free on the turf—free, too, from all care; and it is easy to see how important this is for all who care for English tree-fringed lawns—a long way more beautiful than any other kind of tree garden.

It is not only the flowers on the trees we have to think of, but also in the house—as cut flowers gathered when the buds are ready to open—gathering the branchlets and long twigs before the flowers are quite out and placing them in vases in rooms. In very bad weather this way will prolong the bloom for us, or even save it in the case of very hard frost, and in a cold spring it will advance the bloom a little, the warmth of the house giving a few days' gain in time of opening. As to the kinds of shrubs that may be cut for the house in this way, there are many of the same race, from the Sloe to the beautiful kinds of Apple. There is a good deal in putting them into the right sort of glass. The Japanese are very clever in fitting the flowers into vases so that each may show its form and beauty best. Mr. Alfred Parsons says he noticed that flowers seem to last longer in bronze, in which, it may be, the action of the light is less than in an ordinary vessel.

While such trees as the Almond or Crab will usually be in the more distant parts of the garden picture, the variety of flowering shrubs is so great that we may choose from among them for the most precious of flower garden beds. Take an ordinary flower garden under the windows of the house, often with the beds in winter as bare as oilcloth. What beautiful groups of flowering evergreens we might plant in them! Mountain Laurels (*Kalmia*), Japan and American *Andromeda*, Azaleas, choice Evergreen Barberries, alpine *Cotoneaster*, Evergreen *Daphne*, *Desfontainea*, in the south; the taller hardy Heaths, *Escallonia*, *Ledum*, alpine and wild forms of *Rhodo-*

dendron, Sweet Gale, Star bush, and various Laurustinus, leaving out not a few which thrive only in the warmer districts. Charming gardens might be made of such bushes, not lumped together, but in open groups, with the more beautiful American hardy flowers between them, such as the Wood Lily and Mocassin flower, many rare Lilies, and beautiful bulbous flowers of all seasons. The light and shade and variety in such beds of choice evergreens and flowers mingled are charming, and the plan would be a permanent one as it would tend to abolish the never-ending digging in the flower garden. Beds of flowering shrubs in the flower garden are not always so well suited for small gardens ; but in bold ones, now naked in winter, it would make them sightly even at that season, and much easier to deal with in early summer.

The Rhododendrons of the hybrid sorts are too much used, and, as they are nearly always grafted, the common stock that bears them in the end kills the plant it should support, and so we too often see the common pontic kind. Yet there are many beautiful things among these hybrids. The good colours are well worth picking out from them, and the aim of the planter should be to show the habit and form of the plant. This does not mean that they may not be grouped or massed just as before, but openings of all sizes should be left among them for light and shade, and for handsome herbaceous plants that die down in the winter, thus allowing the full light for half the year to evergreens.

In the south and west the various *Arbutus* are charming for lawns and ravines, and for sheltering the flower garden, as is also the sweet Bay Laurel, but the common Cherry Laurel and the Portugal should not be planted near anything precious.

The hardy Azaleas are, considering their great number and variety, perhaps the most precious flowering shrubs we have ; they are fine in form of bush, even when they get little freedom, and superb in colour, the foliage in autumn, too, being rich in colour in sunny places. The Hydrangeas are noble plants in warm valleys, and on soils where they are not too often cut down by the winter ; not only the common one of the markets, which, in soils where it turns blue, is so effective in the garden, but a variety of good kinds, among which should always be the oak-leaved Hydrangea, as old plants of it are so handsome. As these are plants that cannot be grown everywhere, this is a good reason why they should be made much of where the climate suits them. There are few garden sights more interesting than groups of Hydrangeas well grown and placed, and it is one we rarely see.

The Brooms have many effective plants and none more so than the common and the Spanish Brooms, which should be massed on banks, or where they will come into the picture, and some of the smaller Brooms are excellent for rock-gardens. The Furze in all its

obtainable forms is just as precious, as it blooms so early, it will grow almost anywhere, and it brightens up a landscape as no other plant does. We have only to place it in any rough spots to enjoy it without care. Native shrubs should not be neglected ; the wild single Guelder Rose is as pretty a shrub as any from across the sea, while all the hardy kinds may give us good and bold effects grouped with or near such bushes as Deutzias, Weigelas, Mock Oranges—all plants of high value and much variety.

From an artistic point of view nothing is better than groups of our hardy Heaths in any open place where room can be found for them, including white heather and all other strong varieties of heather, as well as all other kinds of hardy Heaths. After planting they give little trouble, and they are good in colour even in winter, being generally happiest out of the garden proper, where any other wild plants may be allowed to grow among them. No doubt, the choicest and smallest of these Heaths deserve careful garden culture, but for effect the forms of our common Heather, the Cornish and Irish Heaths, are the best, and in bold masses not primly kept, but, once well rooted, allowed to mingle with any pretty wild plants. We might even assist this idea by sowing or planting other things, such as Foxgloves, Harebells, or the small Furze, among the Heaths. When Heaths are grown in this way their bloom is charming from the first peep of spring, when the little rosy Heath of the mountains of central Europe begins to open, till the autumn days, and even the mild winter ones, when the delicately tinted Portuguese Heath (*E. codonodes*) blooms in the south and west of England.

We take little notice of such minor things as the Fire-bush, so lovely in Cornwall, and pretty also in other seashore districts, as it may not be enjoyed in the country generally, and we also leave out some others, like the Witch and Japan Hazels, the Winter-sweet, and the Allspice bushes, which, though pretty seen near at hand, do not give us those definite effects in the garden landscape which it is well to seek if we wish to get out of the fatal jumble of the common shrubbery. The Escallonias, though very precious in seashore gardens and in the south on warm soils, are apt to go into mourning after hard winters elsewhere. So many of our island gardens are near the sea that we must not undervalue these shrubs, but a constant source of waste is the planting of things not really hardy in districts where they perish in hard winters, such as the *Arbutus* about London and in the midlands. And, even where things seem hardy, some of them, like *Fuchsias*, never give the charming effects we get from them in the west of Ireland, in Wales, and in warm coast gardens, whatever care we take. Such facts should not discourage, because they only emphasise the lesson that the true way in a garden is for each to do

The White Indian Azalea (*A. Indica*), in a wood at Coolhurst, Sussex.

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GARDEN

what soil and climate allow of, and in that way we arrive at the most important artistic gain of all, *i.e.* that each garden has its own distinct charms.

A very lovely group is the Lilacs, much enriched of recent years by the introduction of new species and many charming varieties of the common old Lilac—lovely plants, worthy of the finest days of our English spring. Few of the forms found in France seem to thrive in our gardens, owing to grafting on the Privet, which often, after a year or two's poor bloom, kills the plant and begins to take care of itself. How much evil has been done to English ideas of flowering shrubs by thrusting this Privet everywhere! Lilacs, being hardy in all parts of Britain, deserve our best care, and should always be grouped together in the open sun. They should always be bought from nurserymen who raise them from layers or suckers in the good old way, and should be, once grown up, always kept a little open and free by simple pruning, so that we may get handsome trusses. With these, too, must be grouped such lovely things as the Snow-drop tree, the Stuartias, and bush Magnolias. The Magnolias have recently become more numerous, and it will be easy soon to have a Magnolia garden, at least in favoured places. The tree Magnolias should come among the taller flowering trees in the distant parts of our flower grove—Horse Chestnuts, Buckeyes, Tulip Trees, Laburnums, Catalpa, and Yellow Wood. The Alpine Laburnum, so very beautiful in bloom, becomes a tall slender tree where not overcrowded, and the flowering Ash (*Ornus*) must not be forgotten among the taller flowering trees. For the Paulownia, so beautiful in France and Italy in spring, our climate is not warm enough to secure full size or health, save in the most favoured places in the south.

Some shrubs of modest charm as to their flowers give very pretty effects in well-placed groups, such as the flowering Currant, Tamarix, and Ceanothus on walls. But none are more charming than the wild Roses in summer, the Sweet Briar being taken as representing our native wild Roses; the Glossy Rose (*R. lucida*), the American wild Roses; the many-flowered Rose (*Polyantha*), and the Japanese (*R. rugosa*). These and others I have planted in hedgerows and rough fences, and have never planted anything that has given a more beautiful return.

The Judas Tree is neglected in England, and rarely planted in an effective way. In the Parc Monceau in Paris there is a beautiful grove of it in which trees of various ages form one family party, so to say, showing some differences in colour and earliness. Such slight but often valuable differences arise when we raise trees from seed and do not slavishly follow the habit of grafting one thing on another. This is one of the gains of following a more natural mode of

increasing trees than is usual in nurseries, as those raised from seed have a chance of interesting variations, whereas grafting from the same identical form shuts out all chance of it. It is curious that a tree so effective in bloom, and so distinct in habit as the Judas Tree is, should be so little planted with us, and, when planted, so often left to the scant mercy of the shrubbery border. All such trees have their own ways and wants, and should not be jumbled up in the common crowded and ignorant way of planting.

I have never seen anything with greater pleasure than a bush of *Citrus Trifoliata* which I saw in the School Garden at Versailles—a sheet of large and beautiful flowers—on April 19. I had previously no idea that any *Citrus* could have borne such a beautiful and distinct bloom in the open air, and yet this was borne by a hardy shrub standing for years among Crabs, Almonds, and trees of that degree of hardiness.

Of Indian Azaleas in the open air Mr. C. R. Scrase-Dickens writes: “The hardy Azaleas of the American races are very popular, but few know the value of the white Indian Azalea for the open garden in the south of England. Few plants give so little trouble when once established, even though the late frosts may now and again spoil the beauty of the flowers. When planted out and left alone, it is not much more than three or four feet in height, dense and spreading. The engraving shows a bush over ten feet across with a shadow thrown over the upper part by a tree of *Magnolia* which grows at the side. It gets shelter from cold winds and from too fierce a sun on the flowers. Any one who intends to plant this Azalea should remember that it flowers naturally at a time when there may still be late frosts and cold winds hovering about, and that it would be a mistaken kindness to choose any place, such as under a south wall, which would tend to make the blossoms open earlier in the season. We have some plants under a north wall which do admirably, but they seem to like association with other things. The variety which does best here is the old typical white. Overgrown plants of other colours from the greenhouse have been turned out sometimes, but they do not seem so happy or produce so good an effect.”

If one-tenth the trouble wasted on “carpet-bedding” plants and other fleeting and costly rubbish had been spent on flowering shrubs, our gardens would be all the better for it. There are no plants so much neglected as flowering shrubs, and even when planted they are rarely well grown, owing to the “traditions” of what is called the shrubbery. The common way is to dig the shrubbery every winter, and this is often carried out as a matter of form without giving the soil any manure, while much harm is done by mutilating the roots of

the shrubs. The labour and time wasted in this way, if devoted to the proper culture of a portion of the ground each year, would make our gardens delightful indeed. Many shrubs, as fair as any flower requiring the shelter of glass, have been introduced into this country; but for the most part they have been destroyed by the muddle "shrubbery."

The idea of the murderous common shrubbery is so rooted in the popular mind that it is almost hopeless to expect much change for the better. The true way is to depart wholly from it as a mass of *mixed* shrubs, for beautiful families should be grouped apart. Each family or plant should have a separate place, free from the all-devouring

Spiræa (Belmont, Carlow).

Privet and Laurel, and each part of the shrubbery should have its own character, which may easily be given to it by grouping instead of mixing, which ends in the starvation of the choice kinds. We do not allow stove and green-house plants to be choked in this way, yet no plants are more worthy of a distinct place and of care than hardy shrubs. Low flowering trees, like Hawthorns, group admirably on the turf, but the finer kinds of flowering shrubs should be planted in beds. The shrubbery itself need no longer be a dark dreary mass, but light and shade may play in it, its varied life be well shown, and the habits

and forms of each thing may be seen. Shrubs of high quality or rare deserve to be well grown. Any one who thinks how much less trouble is given by hardy plants than by pot plants will not begrudge attention to outdoor things, and some may even consider a garden of beautiful shrubs as a conservatory in the open air, no kind of flower gardening being more delightful or enduring. We have often to rearrange vigorous herbaceous plants, and constantly to work with the lovable Carnation, but shrubs give us little trouble.

It is not only flowers that suffer from being stuck in lines and patterns; our beautiful flowering shrubs are injured in the same way. The Rhododendron and the Azalea, and what are commonly called American plants, are often put in such close masses that their forms cannot be seen. We may get the flowers to some extent, but they are not so enjoyable as when the plants are allowed to show their individual forms.

There is not the slightest reason why we should not have all the force of colour, too, because it is quite possible to have a number of beautiful Rhododendrons and other flowering shrubs together without putting them in the serried mass in which they are usually seen.

So, without going into varieties or touching upon all the treasures within our reach, it is clear how much those who care to adorn their gardens in the most enduring way have to gain by planting flowering shrubs after their own tastes. Those who have given a fair chance to one half the groups of plants referred to in this chapter need not care much about garden coal bills, hot-houses, "contrasts of colour," and the many other considerations, as the beauty of the flowering trees and shrubs will come year after year as certainly as the wind through the Cherry-blooms.

Some Flowering Trees and Shrubs Hardy in British Gardens.

Abelia	Chionanthus	Exochorda	Leycesteria	Rhodora
Æsculus	Cladrastis	Fabiana	Liriodendron	Rhodotypos
Akebia	Clematis	Forsythia	Lonicera	Ribes
Amelanchier	Clethra	Fothergilla	Lupinus	Robinia
Amygdalus	Colletia	Garrya	Magnolia	Rosa
Andromeda	Colutea	Gaultheria	Mahonia	Rubus
Aralia	Comptonia	Genista	Malus	Sambucus
Arbutus	Cornus	Gleditschia	Mespilus	Sophora
Arctostaphylos	Corylopsis	Halesia	Olearia	Spartium
Asimina	Cotoneaster	Hamamelis	Ononis	Spiræa
Azalea	Cratægus	Hibiscus	Ornus	Staphylea
Azara	Cydonia	Hypericum	Ozothamnus	Stauntonia
Berberidopsis	Cytisus	Hydrangea	Paulownia	Stuartia
Berberis	Daphne	Illicium	Pavia	Styrax
Bignonia	Desfontainea	Indigofera	Pernettya	Syringa
Buddleia	Desmodium	Jasminum	Philadelphu	Tamarix
Calycanthus	Deutzia	Kalmia	Phlomis	Ulex
Camellia	Edwardsia	Kerria	Piptanthus	Veronica
Caragana	Embothrium	Kœlreuteria	Prunus	Viburnum
Catalpa	Erica	Laburnum	Pterostyrax	Virgilia
Ceanothus	Escallonia	Ledum	Pyrus	Weigela
Cerasus	Eucryphia	Leiophyllum	Raphiolepis	Wistaria
Cercis	Euonymus	Lespedeza	Rhododendron	Xanthoceras
Chimonanthus				

* * * *Some of the evergreens, though thriving long in the southern and shore lands, may perish in severe winters in cold inland districts.*

CHAPTER X.

CLIMBERS AND THEIR ARTISTIC USE.

THE splendid squadrons of the Pine, with crests proud in alpine storm and massed in serried armies along the northern mountains :—the Oak kings of a thousand winters in the forest plain are lovely gifts of the earth mother, but more precious still to the gardener are the most fragile of all woody things that garland bush and tree with beautiful forms and blossoms, like Clematis, Jasmine and Honeysuckle, and the many lace-workers of the woods and brakes. It is delightful to be able to turn our often ugly inheritance from the builder almost into gardens by the aid of these, from great yellow Roses to Ivy in many lovely forms ; but it is well to take a wider view of these climbing and rambling bushes and their places in the garden and in the pleasure-ground. It is for our own convenience we go through the labour of nailing them to walls, and though it is a charming and necessary way of growing them it is well to remember that many climbers may be grown in beautiful ways without such laborious training. The tendency to over-pruning of the climbers on walls ends often in a kind

of crucifixion, and the more freely things are trained the better. Proof of this is in the handsome masses of climbers on the high walls of the Trinity College Gardens at Dublin and in many private places where climbers have been liberally and well planted on walls.

But it should never be forgotten that many of these plants will grow by themselves, like the Honeysuckles, which, while pleasant to

see on walls, are not less so on banks, or even on the level ground. Pretty fences and dividing screens may also be easily formed by hardy climbers. The wild kinds of Clematis are charming, and, apart from their use in the garden, they should be encouraged for trees and banks.

The Ivy of our northern woods has broken into a number of beautiful varieties often distinct in form and even in colour; they deserve far more attention for evergreen bowers, evergreen fences, and dividing lines, apart from their growth on walls and trees. The bush forms of these may make broken hedge-like garlands 2 feet to 3 feet high round little isolated flower gardens. Almost equally beautiful plants in form of leaf are the Green Briers (*Smilax*), some of which are hardy in England, but seen in few gardens, and rarely treated in an artistic way, though excellent for walls and rocks. In the eastern counties they may be seen doing well in the open ground, as in Cambridge.

Of the beauty of the Jasmine of all climbers there is least need to speak, yet how rarely one sees the old white Jasmine made good use of in large gardens. It should be in bold wreaths or masses where it thrives, and so also the winter Jasmine, which is a precious thing for our country, should not be put in as a plant or two in bad conditions, but treated as a fine distinct thing in masses round cottages and outhouses. The finest of hardy climbers, the Wistaria, is much more frequently and rightly planted in France than in our gardens, though it thrives in the Thames valley as well as in the Seine valley. It should be, in addition to its use on walls and houses, made into bold covered ways and bowers and trained up trees, and even along Oak fences.

VIGOROUS CLIMBERS ON TREES.—It is not only that stout climbers are more beautiful and natural, and show their form better growing amongst trees, but it is the best way that many of them can be grown with safety owing to their vigour. The way the common Ivy wreaths the trees in rich woods, and the wild Clematis throws ropes up trees on the chalk hills, shows what the larger hardy climbers do over trees or rough or open copses, or even now and then in hedgerows. Some vigorous climbers would in time ascend the tallest trees, and there is nothing more beautiful than a veil of Clematis montana running over a tall tree. Besides the well-known climbers, there are species of Clematis which have never come into general cultivation, but which are beautiful for such uses, though not all showy. The same may be said of the Honeysuckles, wild Vines, and various other families with which much of the northern tree and shrub world is garlanded. Occasionally one sees a climbing Rose rambling over a tree, and perhaps among our garden pictures nothing is more lovely

than such a Rose when in flower. By a selection of the hardiest of climbing Roses very beautiful pictures might be formed in our pleasure grounds and plantations, and we might often see as the result

Climbers on the Vicarage, Odiham.

of design what is now mainly an accident, as a number of wild Roses grow "freely" among trees and large shrubs.

CLIMBERS OF CLASSIC BEAUTY OR RARITY are often found a

home for on walls, and in our country some variety of wall surface is a great gain to botanic gardens and private gardens like Offington, in which a great variety of shrubs from all countries is grown. In the milder districts of the country and in favoured spots round the coast some of the finest exotics, such as *Lapageria*, and some greenhouse plants of great beauty, like *Clianthus*, which about London can only be enjoyed in a greenhouse, may be grown on walls in the open air. Some of the fine plants of Chili also may be grown on walls of various aspects. *Abelia*, *Lardizabala*, *Berberidopsis* and *Rhynchospermum* are among the plants sometimes so grown, but there is no limit as to selection. Many who have visited our best gardens will probably have stored away in their memories some of the pictures they have seen given by noble wall plants well grown in this way—as, for example, the New Zealand *Edwardsia* at Linton, so fine in form and colour and the handsome *Fremontia*. Hard winters settle the fate of many beautiful things among these, but, happily, some of the loveliest things are hardy, like the Winter Sweet, *Bignonia*, *Magnolia*, and sometimes the splendid colour of the Pomegranate buds is seen among them.

It may be noted here that among the unfortunate attempts of certain architects who designed gardens to get rid of the gardener and his troublesome plants were instructions that no climbers were to be allowed on walls. There was not a single spray of any climber allowed to grow on the house or extensive terrace walls at Shrubland, some years ago, as if in a garden death were better than life.

FRAGILE CLIMBERS ON SHRUBS.—Apart from the vigorous climbers that we may trust in shrubberies, woods, and on rough banks, and which, when fairly started, take care of themselves, there are fragile things which deserve to be used in rather a new way as far as most gardens are concerned, namely, for throwing a delicate lace-work of flowers over the evergreen and other choice shrubs grown in our gardens—*Rhododendron*, *Kalmia*, *Andromeda*, *Azalea*, and even taller shrubs. A group of *Hollies* will not look any the worse for wreaths of fragrant *Clematis* in autumn. Often stiff, unbroken masses of *Rhododendrons* and Evergreen flowering shrubs will be more varied if delicate flakes of *Clematis* (white, lavender, or claret-red) or the bright arrows of the *Flame Nasturtium* come among them here and there in autumn. The great showy hybrid *Clematises* of our gardens are not so good for this use as the more elegant wild *Clematises* of N. America, Europe, and N. Africa, such as the *Hairbell* and others of the less vigorous *Clematis*. These are so fragile in growth that many of them may be trusted among groups of choice shrubs like *Azaleas*, training themselves and throwing veils over the

bushes here and there. Among these nothing is better than the various forms of *Clematis Viticella*, and there is also a number of not very showy plants which might be used in this way, such as *Apios* and even the climbing Fern of N. America, and some *Bomareas* and the wild *Nasturtiums*. Two lovely twining shrubs must never be left out in any scheme of this kind, the *Atragene* or Alpine *Clematis* of the mountains of Europe, hardy as the Oak and tender in colour as the dove, and in all the warmer districts the winter-flowering *Clematis* of the islands of the Mediterranean and the North African coasts, where it garlands with the *Smilax* millions of acres of hyena- and jackal-haunted scrub.

A Trumpet Flower (*Bignonia grandiflora*). Engraved from a photograph by Miss Willmott.

ROSES AS CLIMBERS.—It would be difficult to overpraise the value of the Rose in all arrangements of climbing plants. Many of the more vigorous Wild Roses of the northern world are naturally almost climbing plants, and some of them are seen 20 ft. high or so among trees. In gardens many varieties might be mentioned which in past years were a great source of beauty and gave a very showy effect when well used, but, in our own time, and within the past generation or two, since the raising of *Gloire de Dijon*, a noble series of climbing Roses, wholly distinct from the old climbing kinds, has been raised in France, the most precious flowers that have ever adorned the Rose-garden.

The old Climbers and Garland Roses were almost too vigorous for the garden, and their bloom did not last long enough to justify their getting a place there ; but now, with the great climbing Tea Roses we have for the southern parts of these islands, we may count on a bloom for months. Hence we have in these Roses, where they thrive the best, the most precious of all ornaments for walls of houses, trellis work, pergolas. In southern parts of the country we even get fine results from these Roses on the north side of walls, where some Roses flower better than on the south side. Also, we can grow them in the open on trellises or away from walls, but in the northern parts of the country, where these great climbing Tea Roses may not thrive so well, walls come in to help us more and more by their shelter and warmth, and the encouragement they give to early bloom.

Apart from these great Roses of garden origin, which will long be among the most precious, some Wild Roses are of the highest importance in warm districts and good soils, particularly the Indian *R. Brunonis* and the many-flowered Roses (*R. polyantha*) of Japan ; but in the presence of the need of so much wall space for the garden Roses these Wild Roses will usually be best in the shrubbery or some place apart, where they may be let alone, and no good can arise from choice, garden ground being given to Roses like *R. polyantha* which are even more vigorous than our own wild Dog Rose.

In Europe perhaps the country that pleases one most by its fitness for Rose culture is that along the shores of the Mediterranean, where the Banksian and other more delicate Roses may be seen up trees, forming hedges, and arranging themselves in other delightful ways. I remember being very much struck with the beauty of the single Banksian Rose in such positions, and often wondered why it was not secured for our own gardens, even though it might not grow so freely as there.

VINES FOR THEIR BEAUTY OF FORM.—Going back some thousands of years to the earliest sculptured remains of some of the oldest peoples, we see evidence that the Grape Vine was in common use, and it is no doubt much older than the monuments of Assyria. Among the Kabyle villages of North Africa I passed many Vines of great age trailing over very old Olive trees in the little orchard fields. In such countries there was the value of the fruit, but even in ours, where the Grape ripens rarely out of doors, the charm of the plant is so great that we see many cottages in Surrey and Norfolk set deep in Vine leaves. The Grape Vine, however, is but one of a large family, and, though we may not see in our country its garlands from tree to tree purple with fruit, we may see much of its fine forms of leaf. The wild Vines are too vigorous for use on walls, though excellent for banks and trees and for any place outside the

flower garden. I have seen them clambering up forest trees, spreading into masses of fine foliage on the ground, and sending out long arms in search of the nearest trees—strong and handsome climbers, hardy, vigorous, and soon covering dry banks, rocks, and trees.

To the Vines (*Vitis*) have now been joined by the botanists Virginian Creepers (*Ampelopsis*), and between the two groups it need not be said what noble things they offer for garlanding trees, walls, bowers, rocks, and banks. It cannot be said that we neglect these Virginian and Japanese creepers, but the Vines are so far seldom well used with us, although easy of cultivation.

Wooden Pergola, with Clematis and other hardy Climbers.

PERGOLAS.—Though our summer is often not sunny, there are seasons when shaded walks may be enjoyed, and numbers of free-growing climbing plants give an abundant and lovely choice of living drapery for them, *Aristolochia*, *Wistaria*, Virginian Creeper, rambling Roses, Honeysuckles, Jasmines and the free Clematises doing well over such. In Italy and warm countries one often sees in gardens the pergola—as the creeper-shaded walk is called—serving the two-fold purpose of supporting Grape Vines and giving pleasant coolness during the summer heat. As a rule, these pergolas are rude trellis-work structures of wood, sometimes supported by stone posts where

these are at hand. In the gardens in the neighbourhood of Rome, Naples, and Florence there are beautiful examples of the pergola—stately structures, the supports of which are massive columns of stone covered and festooned with Banksian Roses, Wistaria, Periploca, Clematises, Honeysuckles, Passion Flowers, scarlet Trumpet Flowers, and other climbers which form cool retreats in the hot days. But such pergolas seldom occurred outside the gardens of the great villas, and near humbler dwellings the pergola was usually a simple structure made for the purpose of supporting the Grape Vine, and nearly always pretty.

These creeper-clad covered ways should usually lead to somewhere and be over a frequented walk, and should not cut off any line of view nor be placed near big trees, especially such trees as the Elm, whose hungry roots would travel a long way to feed upon the good soil that the climbers should be planted in. A simple structure is the best. The supports, failing the Italian way of making posts of stone—also seen, by the way, in gate-posts in Northern England—should be Oak tree stems, about 9 inches in diameter, let into the ground about 2 feet; the better if on a bed of concrete. The posts must be connected and firmly secured to each other by long pieces along the sides, while the top may be formed of smaller pieces to make a firm structure. On no account let the “rustic” carpenter begin to adorn it with the fantastic branchings he is so fond of.

TREES SUPPORTING CLIMBERS.—Instead of trusting to wire and ugly posts or the many artificial ways for supporting climbers, why should we not do as the Italians and people of south Europe do, use living trees to carry the vine or climber. Weeping trees of graceful leaf and form might be used in this way with fine effect. Abroad they take for this purpose any kind of tree which happens to be near and keep it within bounds, and those who know our garden flora may select trees which, while beautiful themselves, will not be much trouble to keep in bounds, like the weeping Cherry, weeping Aspen, some Willows even, and any light leaved weeping tree would be charming for its own sake as well as for what it might carry. Some of them might even be beautiful in flower, and there would be no trouble in getting creepers to run over them.

LIGHT ARCHES OVER WALKS.—When a quiet walk leads from one part of the garden to another, and that walk is spanned at intervals with slender iron or other light arches clothed with Honeysuckle, Clematis, or Jasmine, it gives an added grace to the walk. This also is a delightful way of framing, so to say, a flower border, the light arches springing up from the line of the trellis, which should be used to cut off the borders from the kitchen garden.

ANNUAL AND HERBACEOUS CLIMBERS.—However rich we may

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Pergola in Mrs. Eden's garden at Venice.

be in perennial and shrubby climbers, we must not forget the climbing things among annual and like plants to help us, especially in the smaller class of gardens and those on which we depend more on annual flowers. Hedges of Sweet Peas there are few things to equal; the fragile annual *Convolvuli* in many colours are pretty for low trellises, the vigorous herbaceous *Bindweeds* for rough places outside the flower garden. Most showy of all annual climbers are the many Gourds, which, treated in a bold way, give fine effects when trained over outhouses, sheds, or on strong stakes as columns. The showy annual climbing *Tropæolums*, as well as the brilliant herbaceous and tuberous rooted kinds, are most precious, and *Apios*, *Adlumia*, *Eccremocarpus*, *Maurandya* and *Cobæa* in mild districts are among the plants that help us to make walls into gardens. Nor must we forget the Hop, a vigorous, graceful, herbaceous climber, of much value where well placed. Among these climbers we may place the Passion Flower, because so often short-lived in the cold and more inland parts of our islands. It is best for sheltered and sea-coast places and is not quite hardy there in our coldest seasons; still, if its base be sheltered with some dry Fern, it will spring up again.

COVERED WAYS OF FRUIT TREES.—This way of growing fruit trees and shading walks is not often seen, though few things would be prettier or more useful in gardens if fruit trees of high quality were chosen. Although in our gardens the shaded walk is not so necessary as it is in Italy and Southern France, in hot seasons shade is welcome in Britain; and, as in many gardens we have four times as many walks as are needed, there is plenty of room for covering some of them with fruit trees which would give us flowers in spring, fruit in autumn, and light shade. The very substance of which walks are made is often good for fruit, and those who know the Apricot district of Oxfordshire and the neighbouring counties may see how well fruit trees do in hard walks. It is not only in kitchen and fruit gardens that their shade might be welcome, but in flower gardens, if we ever get out of the common notion of a flower garden which insists on everything being seen at one glance and the whole as flat and hard as oilcloth.

PLASHED ALLEYS.—In some old gardens there was a way of “plashing” trees over walks—trees like the Lime, which grew so vigorously that they had to be cut back with an equal vigour, this leading in the end to ugliness in the excessive mutilation of the trees. One result of the frequent cutting was a vigorous summer growth of shoots, which cast a dense shade and dripped in wet weather. The purpose of such walks would be well fulfilled by training fruit trees over them, as they are trees which much more readily submit to training and give the light and airy shade which is best in our country. The fruit trellis, whatever it is formed of, need not be

confined to fruit trees only, but here and there wreaths of Clematis or other elegant climbers might vary the lines.

EVERGREENS AS CLIMBERS.—Those who live in sheltered valleys on warm soils, or among pleasant hills above the line of hard frosts, may be so rich in evergreens that they will keep their walls for the fairest of true climbers. But in cold, exposed, and inland parts people are often glad to have good evergreens on walls, even bushes not naturally climbers in habit, such as *Garrya elliptica*, the choicer evergreen *Barberries*, *Camellias* on the north sides of walls, *Azara*, *Escallonia*,

Wistaria on covered way.

Cotoneaster, and evergreen *Euonymus*. The *Laurustinus*, too, is charming on many cottage walls in winter and may escape there when it would suffer in the open; the *Myrtle* is happy on walls in southern districts, and even the *Poet's Laurel* may be glad of the shelter of a wall in the north. The evergreen *Magnolia*, which in warmer Europe is a standard tree, in our country must usually be grown on walls, even in the south, and there is no finer picture than a good tree of *Magnolia* on a house. The beautiful *Ceanothus* of the Californian hills often keep company with these evergreens on walls; but even in the warmer soils of the home countries they are tender, and their delicate sprays of flowers are much less frequently seen

with us than in France, although we cannot resist trying them on sunny walls, and on chalky and sandy soils they have better chances.

Apart from true shrubs used as evergreens, so frequently seen in Britain, we have some natural evergreen climbing plants for walls, first of all being our native *Ivy*, in all its beautiful forms, and of varied use for walls, houses, borders, screens, and even summer-houses and shelters. How much better to make bowers in the garden of *Ivy*, as a living roof, than of rotten timber, straw, or heath! If we make a strong and enduring framework, and then plant the *Ivy* well, we soon get a living roof, which, with little care, will last for many years and always look well.

SOME CLIMBING, TWINING, AND WALL PLANTS FOR BRITISH GARDENS.—There is scarcely any limit to the different uses that plants of a climbing or rambling habit may be put to, for many of them are extremely beautiful when employed for the draping of arbours, pergolas, or even living trees, while for hiding unsightly fences or clothing sloping banks, the more vigorous kinds are well adapted. For draping buildings or furnishing walls there is a great variety of plants, either quite hardy or sufficiently tender to need the protection of a wall in order to pass through an ordinary winter without much injury. The majority of those enumerated below are hardy enough to succeed as wall plants in any part of England, while a few are adapted only for particularly mild districts.

Those plants marked with an asterisk are either half-hardy or require some slight protection in cold districts or special care in some cases.

Abelia	Celastrus	Exochorda	Lycium	Ribes
Abutilon	Chimonanthus	Exogonum	Magnolia	Rosea
Actinidia	Choisya	Forsythia	*Mandevilla	Rubus
Adlumia	Clematis	Fremontia	Maurandya	Schizandra
Akebia	Cocculus	Fuchsia	Menispermum	Solanum
*Aloysia	Clianthus	Garrya	*Mitraria	Schizophragma
Apios	Convolvulus	Grevillea	Muhlenbeckia	Smilax
Aristolochia	Cotoneaster	Hedera	Myrtus	*Sollya
Azara	Cratægus	Illicium	Paliurus	Stauntonia
Berberis	Cydonia	Indigofera	*Passiflora	Stuartia
*Berberidopsis	Desfontainea	Jasminum	Periploca	*Thunbergia
Bignonia	Eccremocarpus	Kerria	Physianthus	Tropæolum
Buddleia	Edwardsia	*Lapageria	Piptanthus	Vitis (now including
Calystegia	*Embothrium	*Lardizabala	*Pittosporum	Ampelopsis)
Camellia	Escallonia	Leptospermum	Pueraria	Wistaria
*Carpenteria	Eucryphia	Lonicera	*Punica	Xanthoceras
Ceanothus	Euonymus	Lophospermum	Rhus

Akebia quinata.

CHAPTER XI.

ALPINE FLOWER- ROCK- AND WALL GARDENS.

IT was a common idea that the exquisite flowers of alpine plants could not be grown in gardens in lowland regions, and it was not confined to the public, but propagated by writers whenever they have had to figure or describe alpine flowers. So far from its being true, however, there are but few alpine flowers that ever cheered the traveller's eye that cannot be grown in these islands.

Alpine plants grow naturally on high mountains, whether they spring from sub-tropical plains or green northern pastures. Above the cultivated land these flowers begin to occur on moorland and in the fringes of the hill woods; they are seen in multitudes in the broad pastures with which many mountains are robed, enamelling their green, and where neither grass nor tall herbs exist; where mountains are crumbled into slopes of shattered rock by the contending forces of heat and cold; even there, amidst the glaciers, they spring from the ruined ground, as if the earth-mother had sent up her loveliest children to plead with the spirits of destruction.

Alpine plants fringe the fields of snow and ice of the mountains, and at such elevations often have scarcely time to flower before they are again buried deep in snow. Enormous areas of the earth, inhabited by alpine plants, are every year covered by a deep bed of snow and where tree or shrub cannot live from the intense cold, a

deep mass of down-like snow falls upon alpine plants, like a great cloud-borne quilt, under which they rest safe from alternations of frost and biting winds with moist and spring-like days as in our green winters.

But these conditions are not always essential for their growth in a cool northern country like ours. The reason that alpine plants abound in high regions is because no taller vegetation can exist there; were these places inhabited by trees and shrubs, we should find fewer alpine plants among them; on the other hand, were no stronger vegetation found at a lower elevation, these plants would often there appear. Also, as there are few hard and fast lines in nature, many plants found on the high Alps are also met with in rocky or barish ground at much lower elevations. *Gentiana erna*, for example, often flowers very late in summer when the snow thaws on a very high mountain; yet it is also found on much lower mountains, and occurs in England and Ireland. In the close struggle upon the plains and low tree-clad hills, the smaller species are often overrun by trees, trailers, bushes, and vigorous herbs, but, where in far northern and high mountain regions these fail from the earth, the lovely alpine flowers prevail.

Alpine plants possess the charm of endless variety, and include things widely different:—tiny orchids, tree-like moss, and ferns that peep from crevices of alpine cliffs, often so small that they seem to cling to the rocks for shelter, not daring to throw forth their fronds with airy grace; bulbous plants, from Lilies to Bluebells; evergreen shrubs, perfect in leaf and blossom and fruit, yet so small that a finger glass would make a house for them; dwarfest creeping plants, spreading over the brows of rocks, draping them with lovely colour; Rockfoils and Stonecrops no bigger than mosses, and, like them, mantling the earth with green carpets in winter, and embracing nearly every type of the plant-life of northern lands.

In the culture of these plants, the first thing to be remembered is that much difference exists among them as regards size and vigour. We have, on the one hand, a number of plants that merely require to be sown or planted in the roughest way to flourish—*Arabis* and *Aubrietia*, for example; and, on the other, there are some kinds, like *Gentians* and the *Primulas* of the high Alps, which are rarely seen in good health in gardens and it is as to these that advice is chiefly required. And nearly all the misfortunes which these little plants have met with in our gardens are due to a false conception of what a rock-garden ought to be, and of what the alpine plant requires. It is too often thought that they will do best if merely raised on tiny heaps of stones and brick rubbish, such as we frequently see dignified with the name of “rockwork.” Moun-

tains are often "bare," and cliffs devoid of soil; but we must not suppose that the choice jewellery of plant-life scattered over the ribs of the mountain lives upon little more than the air and the melting snow. Where else can we find such a depth of stony soil as on the ridges of shattered stone and grit flanking some great glacier, stained with tufts of crimson Rockfoil? Can we gauge the depth of that chink from which peep tufts of the beautiful little *Androsace helvetica*, which for ages has gathered the crumbling grit, into which the roots enter so far that we cannot dig them out? And if we find plants growing from mere cracks without soil, even then the roots simply search farther into the heart of the flaky rock, so that they are safer from drought than on the level ground.

We meet on the Alps plants not more than an inch high firmly rooted in crevices of slaty rock, and by knocking away the sides from bits of projecting rock, and laying the roots quite bare, we may find them radiating in all directions against a flat rock, some of the largest perhaps more than a yard long. Even smaller plants descend quite as deep, though it is rare to find the texture and position of the rock such as will admit of tracing them. It is true we occasionally find in fields of flat hard rock hollows in which moss and leaves have gathered, and where, in a depression of the surface, without an outlet of any kind, alpine plants grow freely; but in droughts they are just as liable to suffer from want of water as they would be in our plains. On level or sloping spots of ground in the Alps the earth is of great depth, and, if it is not all earth in the common sense of the word, it is more suitable to the plants than what we commonly understand by that term. Stones of all sizes broken up with the soil, sand, and grit prevent evaporation; the roots lap round them, follow them down, and in such positions they never suffer from want of moisture. It must be remembered that the continual degradation of the rocks effected by frost, snow, and heavy rains in summer serves to "earth up," so to speak, many alpine plants.

In numbers of gardens an attempt at "rockwork" has been made; but the result is often ridiculous, not because it is puny when compared with Nature's work, but because it is generally so arranged that rock-plants cannot exist upon it. The idea of rockwork first arose from a desire to imitate those natural croppings-out of rocks which are often half covered with dwarf mountain plants. The conditions which surround these are rarely taken into account by those who make rock-gardens. In moist districts, where rains keep porous stone in a humid state, this straight-sided rockwork may support a few plants, but in the larger portion of the British Isles it is useless and ugly. It is not alone because they love the mountain air

that the Gentians and such plants prefer it, but also because the great elevation is unsuitable to coarser vegetation, and the alpine plants have it all to themselves. Take a patch of *Silene acaulis*, by which the summits of some of our highest mountains are sheeted over, and plant it 2,000 feet lower down in suitable soil, keeping it moist and free from weeds, and it will grow well; but leave it to Nature, and the strong herbs will soon cover it, excluding the light and killing it.

Although hundreds of kinds of alpine flowers may be grown without a particle of rock near them, yet the slight elevation given by rocky banks is congenial to some of the rarest kinds. The effect of a well-made rock-garden is pretty in garden scenery. It furnishes a home for many native and other plants which may not safely be put in among tall flowers in borders; and it is important that the most essential principles to be borne in mind when making it should be stated. The usual mistake is that of not providing a feeding-place for the roots of the plants. On ordinary rockwork even the coarsest British weeds cannot find a resting-place, because there is no body of soil for the roots to find nourishment sufficient to keep the plant fresh in all weathers.

POSITION FOR THE ROCK-GARDEN.—The rock-garden should never be near walls; never very near a house; never, if possible, within view of formal surroundings of any kind, and it should be in an open situation. No efforts should be spared to make all the surroundings, and every point visible from the rock-garden, graceful and natural as they can be made. The part of the gardens around the rock-garden should be picturesque, if possible, and, in any case, be a quiet airy spot with as few jarring points as may be. No tree should be in the rock-garden; hence a site should not be selected where it would be necessary to remove favourite trees. The roots of trees would find their way into the masses of good soil for the alpine flowers, and soon exhaust them. Besides, as these flowers are usually found on treeless wastes, it is best not to place them in shaded places.

As regards the stone to be used, sandstone or millstone grit would perhaps be the best; but it is seldom that a choice can be made, and almost any kind of stone will do, from Kentish rag to limestone: soft and slaty kinds and others liable to crumble away should be avoided, as also should magnesian limestone. The stone of the neighbourhood should be adopted, for economy's sake, if for no other reason. Wherever the natural rock crops out, it is sheer waste to create artificial rockwork instead of embellishing that which naturally occurs. In many cases nothing would be necessary but to clear the ground, and add here and there a few loads of good soil,

with broken stones to prevent evaporation, the natural crevices and crests being planted where possible. Cliffs or banks of chalk, as well as all kinds of rock, should be taken advantage of in this way: many plants, like the dwarf Harebells and Rock Roses, thrive in such

Passage in rock-garden.

places. No burrs, clinkers, vitrified matter, portions of old arches and pillars, broken-nosed statues, etc., should ever be seen in a garden of alpine flowers. Never let any part of the rock-garden appear as if it had been shot out of a cart. The rocks should all have their bases buried in the ground, and the seams should not be visible; wherever a vertical or oblique seam occurs, it

should be crammed with earth, and the plants put in with the earth will quickly hide the seam. Horizontal fissures should be avoided as much as possible. No vacuum should exist beneath the surface of the soil or surface-stones, and the broken stone and grit should be so disposed that there are no hollows. Myriads of alpine plants have been destroyed from the want of observing this precaution, the open crevices and loose soil allowing the dry air to destroy the alpine plants in a very short time, and so one often sees what was meant for a "rock-garden" covered with weeds and brambles, and forgotten!

In all cases where elevations of any kind are desired, the true way is to obtain them by a mass of soil suitable to the plants, putting a "rock" in here and there as the work proceeds; frequently it would be desirable to make these mounds of earth without any strata. The wrong and usual way is to get the elevation by piling up ugly masses of stones, vitrified bricks, and other rubbish.

No very formal walk—that is to say, no walk with regularly trimmed edges—should come near the rock-garden. This need not prevent the presence of good walks through or near it, as by allowing the edges of the walk to be broken and stony, and by encouraging Stonecrops, Rockfoils, and other little plants to crawl into the

Wrong way of forming rock-garden.

Right.

Alpine Plants growing at the bottom of a sloping ridge.

Alpine Plant on border surrounded by half-buried stones.

Corner of a ledge of natural rock with Alpine Plants.

Steps from deep recess of Rock-garden, mossed over with Alpine Flowers.

Ledge of Alpine Flowers (a Garden Sketch).

walk at will, a pretty margin will result. There is no surface of this kind that may not be thus adorned. Violets, Ferns, Forget-me-nots, will do in the shadier parts, and the Stonecrops and many others will thrive in the full sun. The whole of the surface of the alpine garden should be covered with plants as far as possible, except a few projecting points. In moist districts, *Erinus* and the Balearic Sandwort will grow on the face of the rocks ; and even upright faces of rock will grow a variety of plants. Regular steps should never be in or near the rock-garden. Steps may be made quite picturesque, and even beautiful, with Violets and other small plants jutting from every crevice ; and no cement should be used.

In cases where the simplest type of rock-garden only is attempted, and where there are no steps or rude walks in the rock-garden, the very fringes of the gravel walks may be graced by such plants as the dwarfer Stonecrops. The alpine Toadflax is never more beautiful than when self-sown in a gravel walk. A rock-garden so made that its miniature cliffs overhang is useless for alpine vegetation, and all but such wall-loving plants as *Corydalis lutea* soon die on it. The tendency to make it with overhanging "peaks" is often seen in the cement rock-gardens now common.

SOIL.—The great majority of alpine plants thrive best in deep soil. In it they can root deeply, and when once rooted they will not suffer from drought, from which they would quickly perish if planted in the usual way. Three feet deep is not too much for most kinds, and in nearly all cases it is a good plan to have plenty of broken sandstone or grit mixed with the soil. Any free loam, with plenty of sand and broken grit, will suit most alpine plants. But peat is required by some, as, for example, various small and brilliant rock-plants like the *Menziesia*, *Trillium*, *Cypripedium*, *Spigelia*, and a number of other mountain and bog-plants. Hence, though the body of the soil may be of loam, it is well to have a few masses of peat here and there. This is better than forming all the ground of good loam, and then digging holes for the reception of small masses of peat. The soil of some portions might also be chalky or calcareous, for the sake of plants that are known to thrive best on such formations, like the Milkwords, the Bee Orchis, and *Rhododendron Chamæcistus*. Any other varieties of soil required by particular kinds can be given as they are planted.

It is not well to associate a small lakelet or pond with the rock-garden, as is frequently done. If a picturesque piece of water can be seen from the rock-garden, well and good ; but water should not, as a rule, be closely associated with it. Hence, in places of limited extent, water should not be thought of.

In the planting of every kind of rock-garden, it should be

remembered that *all* the surface should be planted. Not alone on slopes, or favourable ledges, or chinks, should we see this exquisite plant-life, as many rare mountain species will thrive on the less trodden parts of footways; others, like the two-flowered Violet, seem to thrive best in the fissures between steps; many dwarf succulents delight in gravel and the hardest soil.

In cultivating the very rarest and smallest alpine plants, the stony, or partially stony, surface is to be preferred. Full exposure is necessary for very minute plants, and stones are useful in preventing evaporation and protecting them in other ways.

Few have much idea of the number of alpine plants that may be grown on fully exposed ordinary ground. But some kinds require care, and there are usually new kinds coming in, which, even

Steps in a rock garden at Coneyhurst.

if vigorous, should be kept apart for a time. Therefore, where the culture of alpine plants is entered into with zest, there ought to be a sort of nursery spot on which to grow the most delicate and rare kinds. It should be fully exposed, and sufficiently elevated to secure perfect drainage.

ILL-FORMED ROCK GARDENS.—The increased interest in rock gardening of recent years has led to much work of this kind being done throughout the country, and without good results from an artistic point of view. The rock gardens are not right in structure nor good for growing plants. If they were good for the life of plants one might pass over their other defects, but when made, as they often are, of cement, and even of natural stone so that the plants grow with great difficulty, owing chiefly to the stones overhanging so as to leave dry and dusty recesses, the result is bad. No doubt rocks do in nature often have such recesses, but they very often

come out of the ground in ways that the flowers and moss grow well on them.

In the present state of the art of garden design, rock gardens are formed mainly by nurserymen ; these are not men who, as a rule, by the very nature of their business, can give much attention to the study of rocks in natural situations, or learn how the different strata crop out in the ways most happy for vegetation, without which study we think no good work in this way is possible. The work we see now is often done better than the ugly masses of scoria and various rubbish of the earlier "rock works," but it is still a very long way from what is artistic. Simplicity is rarely thought of, or of the rock coming out of the ground in any pretty way, of which we may see numerous examples in upland moors in England, even without going to the mountains or the Alps. On the contrary, we see pretentious rickety piles of stone on stone, with pebbles between to keep the big ones up, and forty stones where seven would be enough.

A characteristic of these elaborate failures is a rocky depression, often an ugly one, in the ground. This is by no means the most likely thing in Nature to give the prettiest effects. If alpine and rock plants wanted shelter, we could see some meaning in these depressions, but the conditions that suit such plants are quite the opposite, and a rock garden should be for the most part made on a fully exposed rocky knoll.

The fact that such bad work is usual is, however, no proof that we cannot get nearer to the truth, and there is a good opening for one who would devote himself to going on the hills and seeing the ways in which rocks and flowers meet. He would not have to study only the more imposing aspects of that charming subject, but also the simpler ones, because in gardens in all that concerns the rocks we can get only simple effects, and on a small scale. One of the commonest mistakes is piling stone upon stone in such a way that there is no room for grouping anything. If one were to take five or six of the stones one sees in a rock garden, and simply lay them with the prettiest and most mossy sides showing out of the bank in the right kind of earth, one would get a better place for plants than a rock garden made, it may be, of hundreds of tons of stone could give, because then we should have room to group and mass them, without which no good effect is possible.

The common "rockery," like the common mixed border, is an incoherent muddle, and can scarcely be anything else so long as the present plan is followed. The plants hate it, and in effect it is very like the rows of false teeth in the dentists' shops in St. Martin's-lane. We should seek gardens of alpine flowers, with here and there a mossy stone showing modestly among them—not limiting one's efforts to

Gentiana on level ground, showing also grouping instead of "dotting" alpine plants.

any one idea, but beginning at least with simplicity of effect. Then groups and carpets of rock plants would be easy to form, and their culture would be easier in every way.

REFUSE BRICK "ROCKERIES."—Whoever started the idea of the use of the refuse of the brickyard to form the rock-garden was no friend of the garden, as alpine flowers do not thrive on masses of vitrified brick rubbish. And these brick rubbish horrors are put up with overhanging brows so that a drop of moisture cannot get to the plants, and a dry wind can sweep through them as easily as through a grill. If the practice were confined to cottages near brickfields it would not much astonish us; but in Dulwich Park several thousand tons of it have been put about under the pretence of making rock-gardens, and also at Waterlow Park, Highgate, which was once a pretty and varied piece of ground. If the County Council waste money in this way, we cannot perhaps wonder so much at the owners of villas doing it, but in any case it is ugly and disgraceful in a garden, though we see it freely used in many large country gardens. No other ignoble materials should be seen in any rock garden, in which even stumps of trees are out of place. With some people any broken-nosed statue or other stony or vitrified rubbish is used in what should be the most beautiful and natural of all gardens—the alpine garden. If we have not rock in its natural position, or cannot secure some pieces of natural rock to use even on a small scale, it is far better to grow the rock plants in simple ways, even on the level earth on which many of them thrive.

It would be well to ask the cost of such a disfigurement in public and large gardens where it is done on as large a scale as this; the mere price of cartage would have made a model rock garden of natural stone. When these villainous banks of brick-yard refuse were first erected, anything more hideous in a public garden was not to be seen, but by piling on them common shrubs, evergreens, Tobacco, Stonecrops, China Asters, Begonias, Chrysanthemums, Beet-root, Heath, Elder, and higgledy-piggledy verdure of this nature, a sort of brick-rubbish salad was the result, and the effect of the brick is less seen. It is not only the ugliness of this in itself that is bad; it is such an injustice to the gardener, who has to adorn at all seasons such structures, to expect him to get any good results from the kind of thing a Brentford cobbler who happens to live near a brickyard makes a little "rockwork" of in his garden.

MISPLACED ARTIFICIAL ROCK.—Artificial rock is formed now and then in districts where the natural rock is beautiful, as in the country round Tunbridge Wells. Though why anybody should bring the artificial rockmaker into a garden or park where there is already fine natural beautiful rock it is not easy to see. Also, in certain

In the rock-garden at Batsford.

districts, it is a mistake to place this artificial rock under conditions where rock of any kind does not occur in nature. It would be much better, as far as alpine and rock plants are concerned, to dispense with much of this ugly artificial rockwork, and take advantage of the fact that many of these plants grow perfectly well on raised borders and on fully exposed low banks.

ALPINE PLANTS IN GROUPS.—Many vigorous alpine flowers will do perfectly well on level ground in our cool climate, if they are not overrun by coarser plants. Where there are natural rocks or good artificial ones it is best to plant them properly ; but people who are particular would often be better without artificial “rockwork” if they wished to grow these plants in simpler ways. There is not the slightest occasion to have what is called “rockwork” for these flowers. I do not speak only of things like the beautiful *Gentianella*, which for many years has been grown in our gardens, but of the *Rockfoils*, the *Stonecrops*, and the true alpine plants in great numbers. Then, for the sake of securing the benefits of the refreshing rains, it would often be best, in the south of England at least, to avoid the dusty pockets hitherto built for rock flowers. In proof of what may be done in this way there is a little alpine garden, made in quite a level place in the worst possible soil for growing the plant, the hot *Bagshot* sand, where the soil is always fit for working after heavy rain, but in hot summer is almost like ashes. By making the soil rather deep, and by burying a few stones among the plants to prevent dryness, this flower, which naturally thrives in loamy soil, grew well, and the plan suits many alpine plants.

The next point is the great superiority of natural grouping over the botanical or labelled style of little single specimens of a great number of plants. In a few yards of border, in the ordinary way, there would be fifty or more kinds, but nothing pretty for those who have ever seen the beautiful mountain gardens. Many rightly contend that, in a sense, Nature includes all, and that therefore the term “natural” may be misapplied, but is a perfectly just one when used in the sense of Nature’s way of arranging flowers as opposed to the lines, circles, and other set patterns so commonly followed by man. Through bold and natural grouping we may get fine colour without a trace of formality. But most gardeners find it difficult to group in this natural way, because so used to setting things out in formal lines. But a little attention to natural objects will help us to get away from set patterns, and let things intermingle here and there and run into each other to form groups such as we may see among the rocks by alpine paths. After a little time the plants themselves begin to help us, and an excellent way is, if a number of plants are set out too formally—as in most cases they are—to

pull up a number here and there replanting them on the outer fringes of the groups or elsewhere.

WALL GARDENS.—Those who have observed alpine plants must have noticed in what arid places many flourish, and what fine plants may spring from a chink in a boulder. They are often stunted and small in such crevices, but longer-lived than when growing upon the ground. Now, numbers of alpine plants perish if planted in the ordinary soil of our gardens from over-moisture and want of rest in winter. But if placed where their roots are dry in winter, they may be kept in health. Many plants from countries a little farther south than our own, and from alpine regions, will find on walls, rocks, and ruins that dwarf, sturdy growth which makes them at home in our climate. There are many alpine plants now cultivated with difficulty in frames that may be grown on walls with ease:

The Cheddar Pink, for example, grows on walls at Oxford much better than I have ever known it do on rockwork or on level ground. A few seeds of this plant, sown in an earthy chink and covered with a dust of fine soil, soon grow, living for years on the wall and increasing.

In garden formation, especially in sloping or diversified ground, what is called a dry wall is often useful, and may answer the purpose of supporting a bank or dividing off a garden quite as well as masonry. Where the stones can be got easily, men used to the work will often make gently ‘battered’ walls which, while fulfilling their object in supporting banks, will make homes for many plants which would not live one winter on a level surface in the same place. In my own garden I built one such wall with large blocks of sandstone laid on their natural “bed,” the front of the stones almost as rough as they come out, and chopped nearly level between, so that they lie firm and well. No mortar was used, and as each stone was laid slender rooted alpine and rock plants were placed along in lines between with a sprinkling of sand or fine earth enough to slightly cover the roots and aid them in getting through the stones to the back, where, as the wall was raised, the space behind it was packed with gritty earth. This the plants soon found out and rooted firmly in. Even on old walls made with mortar rock plants and small native ferns very often establish themselves, but the “dry” walls are more congenial to rock plants, and one may have any number of beautiful alpine plants in perfect health on them.

Pansy on dry brick wall.

One charm of this kind of wall garden is that little attention is required afterwards. Even on the best rock gardens things get over-run by others, and weeds come in ; but in a well-planted wall we may leave plants for years untouched beyond pulling out any interloping plant or weed that may happen to get in. So little soil, however, is put with the plants that there is little chance of weeds. If the stones were stuffed with much earth weeds would get in, and it is best to have the merest dusting of soil with the roots, so as not to separate the stones, but let each one rest firmly on the one beneath it.

Androsace. Chaddlewood, Plympton.

Among the things which do well in this way almost the whole of the beautiful rock and alpine flowers may be trusted, such things as *Arabis*, *Aubrietia*, and *Iberis* being among the easiest to grow ; but as these can be grown without walls it is hardly worth while to put them there, pretty as some of the newer forms of the *Aubrietia* are. Between these stones is the very place for mountain Pinks, which thrive better there than on level ground ; the dwarf alpine Harebells, while the alpine Wallflowers and creeping rock plants, like the Toad Flax (*Linaria*), and the Spanish *Erinus*, are quite at home there.

The gentianella does very well on the cool sides of such walls, and we get a different result according to the aspect. All our little pretty wall ferns, now becoming so rare where hawkers abound, do perfectly on such rough walls, and the alpine Phloxes may be used, though they are not so much in need of the comfort of a wall as the European alpine plants, the Rocky Mountain dwarf Phloxes being very hardy and enduring in our gardens on level ground. The advantage of the wall is that we can grow things that would perish on level ground, owing to excitement of growth in winter, or other causes. The Rock-foils are charming on a wall, particularly the silvery kinds, and the little stone covering sandwort (*A. balearica*) will run everywhere over such a wall. Stonecrops and Houseleeks would do too, but are easily grown in any open spot of ground. In many cases the rare and somewhat delicate Alpines, if care be taken in planting, would do far better on such a wall than as they are usually cultivated. Plants like Thymes are quite free in such conditions, though it may be too free for the rare kinds; also the Alpine Violas, and any such pretty rock creepers as the blue Bindweed of North Africa.

There is in fact no limit to the beauty of rock and alpine flowers we may enjoy on the rough wall so often and most easily made about gardens in rocky and hilly districts, dressed or expensive stone not being needed. In my own garden there are three wholly different kinds of walls thick set with plants; and the easiest way to the enjoyment of the most interesting and charming of the mountain flowers of the north is by the aid of walls.

ALPINE AND ROCK-PLANTS FOR BRITISH GARDENS.

Where the name of a large and varied family is given, as in Phlox, Iris, Rhododendron, Pentstemon, Salix, Antirrhinum, it is the alpine, or dwarf mountain kinds, that are meant.

Acaena	Chimaphila	Globularia	Myosotis	Sanguinaria
Acantholimon	Colchicum	Helianthemum	Narcissus	Saponaria
Achillea	Cornus	Helleborus	Nertera	Saxifraga
Acis	Coronilla	Houstonia	(Enothera	Scilla
Æthionema	Crocus	Hutchinsia	Omphalodes	Sedum
Alyssum	Cyclamen	Hyacinthus	Ononis	Sempervivum
Andromeda	Cypripedium	Iberis	Onosma	Senecio
Androsace	Daphne	Iris	Ophrys	Silene
Anemone	Dianthus	Isopyrum	Orchis	Smilacina
Antennaria	Diapensia	Jasione	Orobus	Soldanella
Anthyllis	Dodecatheon	Leiophyllum	Oxalis	Spigelia
Aquilegia	Draba	Leontopodium	Papaver	Statice
Arabis	Dracocephalum	Leucojum	Parnassia	Thalictrum
Arenaria	Dryas	Linaria	Petrocallis	Thlaspi
Armeria	Epigæa	Linnæa	Phlox	Thymus
Asperula	Erigeron	Linum	Polemonium	Trientalis
Astragalus	Erinus	Lithospermum	Polygala	Trillium
Aubrietia	Erodium	Loiseleuria	Potentilla	Triteleia
Bellis	Erpetion	Lychnis	Primula	Tulipa
Bryanthus	Erysimum	Lycopodium	Puschkinia	Tunica
Bulbocodium	Erythronium	Mazus	Pyrola	Vaccinium
Calandrinia	Galanthus	Meconopsis	Pyxidantha	Veronica
Campanula	Gaultheria	Menziesia	Ranunculus	Vesicaria
Cardamine	Genista	Mertensia	Rhexia	Viola
Cerastium	Gentiana	Muscari	Rhododendron	Waldsteinia
Cheiranthus	Geranium

Poet's Narcissus in the grass at Belmont, Ireland. From a photograph sent by Mr. J. H. Thomas.

CHAPTER XII.

THE WILD GARDEN.

O universal Mother, who dost keep
From everlasting thy foundations deep,
Eldest of things, Great Earth, I sing of thee.

IN a rational system of flower-gardening one of the first things to do is to get a clear idea of the aim of the "Wild Garden." When I began to plead the cause of the innumerable hardy flowers against the few tender ones put out in a formal way, the answer sometimes was, "We cannot go back to the mixed border"—that is to say, to the old way of arranging flowers in borders. Thinking, then, much of the vast world of plant beauty shut out of our gardens by the "system" then in vogue, I was led to consider the ways in which it might be brought into them, and of the "Wild Garden" as a home for numbers of beautiful hardy plants from other countries which might be naturalised, with very little trouble, in our gardens, fields, and woods—a world of delightful plant beauty that we might make happy around us, in places bare or useless. I saw that we could grow thus not only flowers more lovely than those commonly seen in what is called the flower garden, but also many which, by any other plan, we should have little chance of seeing.

The term "Wild Garden" is applied to the placing of perfectly

hardy exotic plants in places where they will take care of themselves. It has nothing to do with the "wilderness," though it may be carried out in it. It does not necessarily mean the picturesque garden, for a garden may be picturesque and yet in every part the result of ceaseless care. What it does mean is best explained by the winter Aconite flowering under a grove of naked trees in February; by the Snowflake abundant in meadows by the Thames; and by the Apennine Anemone staining an English grove blue. Multiply these instances by adding many different plants and hardy climbers from countries as cold as our own, or colder, and one may get some idea of the wild garden. Some have thought of it as a garden allowed to run wild, or with annuals sown promiscuously, whereas it does not meddle with the flower garden proper at all.

I wish the idea to be kept distinct from the various important phases of hardy plant growth in groups, beds, and borders, in which good culture may produce many happy effects; from the rock-garden or borders reserved for choice hardy flowers; from growing hardy plants of fine form; from the ordinary type of spring garden. In the smaller class of gardens there may be little room for the wild garden, but in the larger gardens, where there is often ample room on the outer fringes of the lawn, in grove, park, copse, or by woodland walks or drives, new and beautiful effects may be created by its means.

Among reasons for advocating this system are the following:—

1. Because many hardy flowers will thrive better in rough places than ever they did in the old border. Even small ones, like the Ivy-leaved Cyclamen, are naturalised and spread all over the mossy surface of woods.
2. Because, in consequence of plant, fern and flower and climber, grass, and trailing shrub, relieving each other, they will look infinitely better than in stiff gardens.
3. Because no ugly effects will result from decay and the swift passage of the seasons. In a semi-wild state the beauty of a species will show in flowering time; and when out of bloom they will be succeeded by other kinds, or lost among the numerous objects around.
4. Because it will enable us to grow many plants that have never yet obtained a place in our "trim gardens"—multitudes that are not showy enough to be considered worthy of a place in a garden. Among the plants often thought unfit for garden cultivation are a number like the coarser American Asters and Golden Rods, which overrun the choicer border-flowers when planted among them. Such plants would be quite at home in neglected places, where their blossoms might be seen in due season. To these might be added plants like the winter Heliotrope, and many others, which, while interesting in the garden, are apt to spread so rapidly as to become a nuisance.
5. Because in this way we may settle the question of spring flowers, and the spring garden, as well

as that of hardy flowers generally; and many parts of the grounds may be made alive with spring flowers, without in the least interfering with the flower garden itself. The blue stars of the Apennine Anemone will be seen to greater advantage when in half-shady places, under trees, or in the meadow grass, than in any flower garden, and this is but one of many of sweet spring flowers that will succeed in like ways.

Group of Mullein, near Scotch Firs, in Surrey Heath.

Narcissi in the Wild Garden.—Perhaps an example or two of what has already been done with Daffodils and Snowdrops may serve to show the way, and explain the gains of the wild garden, and there is no more charming flower to begin with than the Narcissus, which, while fair in form as any Orchid or Lily of the tropics, is as much at home in our climate as the Kingcups in the marsh and the Primroses in the wood. And when the wild Narcissus comes with these, in the woods and orchards of Northern France and Southern England it

has also for companions the Violet and the Cowslip, hardiest children of the north, blooming in and near the still leafless woods. And this fact should lead us to see that it is not only a garden flower we have here, but one which may give glorious beauty to our woods and fields and meadows as well as to the pleasure grounds.

In our country in a great many places there is plenty of room to grow them in other ways than in the garden proper, and this is not merely in country seats, but in orchards and cool meadows. To chance growth in such places we owe it already that many Narcissi or Daffodils which were lost to gardens, in the period when hardy plants were wholly set aside for bedding plants, have been preserved to us, at first probably in many cases thrown out with the garden refuse. In many places in Ireland and the west of England Narcissi lost to gardens have been found in old orchards and meadows.

There is scarcely a garden in the kingdom that is not disfigured by vain attempts to grow trees, shrubs, and flowers that are not really hardy, and it would often be much wiser to devote attention to things that are absolutely hardy in our country, like most Narcissi to which the hardest winters make no difference, and, besides, we know from their distribution in Nature how fearless they are in this respect. Three months after our native kind has flowered in the weald of Sussex and in the woods or orchards of Normandy, many of its allies are beneath the snow in the mountain valleys of Europe, waiting till the summer sun melts the deep snow. On a high plateau in Auvergne I saw many acres in full bloom on July 16, 1894, and these high plateaux are much colder than our own country generally. Soils that are cool and stiff and not favourable to a great variety of plants suit Narcissi perfectly. On the cool mountain marshes and pastures, where the snow lies deep, the plant has abundance of moisture—one reason why it succeeds better in our cool soils. In any case it does so, and it is mostly on dry light soils that Narcissi fail to succeed. Light, sandy or chalky soils in the south of England are useless, and Narcissus culture on a large scale should not be attempted on such soils. We must not court failure, and however freely in some soils Narcissi grow in turf, there is no law clearer than that all plants will not grow in any one soil, and it is a mercy, too, for if all soils were alike, we should find gardens far more monotonous than they are now. Gardening is an art dealing with living things, and we cannot place these with as little thought as those who arrange shells, or coins, or plates. At the same time we may be mistaken as to failures which now and then arise from other causes than the soil. I planted years ago some Bayonne Daffodils on the northern slope of a poor field, and thought the plants had perished, as so little was seen of them after the first year. Despairing of the slope, it was planted

Narcissus in turf at Warley Place.

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Snowdrops in grass, Straffan, Kildare.

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with Alder, a tree that grows in any cool soil. Years afterwards, walking one day through the Alder, I found the Bayonne Daffodil in perfect bloom. The roots had doubtless been weak and taken time to recover.

Ten years ago I planted many thousands of Narcissi in the grass, never doubting that I should succeed with them, but not expecting I should succeed nearly so well. They have thriven admirably, bloomed well and regularly; the flowers are large and handsome, and in most cases have not diminished in size. In open rich, heavy bottoms, along hedgerows, banks, in quiet open loamy fields, in every position they have been tried. They are delightful seen near at hand, and also effective in the picture. The leaves ripen, disappear before mowing time, and do not in any way interfere with the farming. The harrowing and rolling of the fields in the spring hurt the leaves a little, but the plants are free from this near wood walks, by grass walks and open copses and lawns which abound in so many English country places.

As to the kinds we may naturalise with advantage, they are almost without limit, but generally it is better to take the great groups of Star Narcissi, the Poet's, and the wild Daffodil, of which there are so many handsome varieties. We can be sure that these are hardy in our soils; and, moreover, as we have to do this kind of work in a bold and rather unsparing way, we must deal with kinds that are easiest to purchase. There is hardly any limit except the one of rarity, and we must for the most part put our rare kinds in good garden ground till they increase, though we have to count with the fact that in some cases Narcissi that will not thrive in a garden will do so in the grass of a meadow or orchard.

The fine distant effect of Narcissi in groups in the grass should not be forgotten. It is distinct from their effect in gardens, and it is most charming to see them reflect, as it were, the glory of the spring sun. It is not only their effect near at hand that charms us, but as we walk about we may see them in the distance in varying lights, sometimes through and beyond the leafless woods or copses. And there is nothing we have to fear in this charming work save the common sin—overdoing. To scatter Narcissi equally over the grass everywhere is to destroy all chance of repose, of relief, and of seeing them in the ways in which they often arrange themselves. It is almost as easy to plant in pretty ways as in ugly ways if we take the trouble to think of it. There are hints to be gathered in the way wild plants arrange themselves, and even in the sky. Often a small cloud passing in the sky will give a very good form for a group, and be instructive even in being closer and more solid towards its centre, as groups of Narcissi in the grass should often be. The regular

garden way of setting things out is very necessary in the garden, but it will not do at all if we are to get the pictures we can get from Narcissi in the turf, and it is always well to keep open turf here and there among the groups, and in a lawn or a meadow we should leave a large breadth quite free of flowers.

SNOWDROPS NATURALISED.—The illustration is from a photograph taken by Mr. John McLeish at Straffan, Co. Kildare, and from it one may gain a glimpse of the pretty and natural way in which these flowers have grouped themselves on the greensward beneath the red-twigged Limes and on the soft and mossy lawns. Originally no doubt the Snowdrops were planted, but they have seeded themselves so long that they are now thoroughly naturalised, and one of the sights to see at Straffan Gardens is the Snowdrops at their best under the leafless trees. The common single and double forms are still the best for grouping in quantity and for naturalisation everywhere. There are finer varieties, but none grow and increase so well in our gardens as do these northern kinds. The best of the eastern Snowdrops are very bold and beautiful, they are unsurpassed for vigour of leafage and size of bloom if carefully cultivated, but they do not grow and increase on the grass as do *G. nivalis* and all its forms.

For solid green leafage and size and substance of flower, *G. Ikariæ* when well grown is, as I believe, the finest of all Snowdrops, but it is from Asia Minor, and does not really love our soil and climate, nor is it likely to naturalise itself with us as *G. nivalis* has done. The best of all the really hardy and truly northern Snowdrops is a fine form of *G. nivalis*, leaning to the broad-leaved or *G. caucasicus* group, which was found in the Crimea in 1856 and introduced from the Tchernaya valley to Straffan. It is called *G. nivalis grandis*, or the Straffan Snowdrop, or *G. caucasicus* var. *grandis*, and to see it at its best is a great pleasure. It is really a tall, vigorous-habited, and free-flowering form of the wild Snowdrop (*G. nivalis*) as found in the Crimea. The flowers are very large and pure in colour, and being borne on stalks a foot or more in length they bunch better than do those of the common type. *G. plicatus* is also from the Crimea, but is, as I have said, quite different, having much broader plicate leaves and smaller flowers.

Snowdrops generally like deep, moist soils and half shade, as their flowers wither and brown quickly on dry, light soils in full sunshine. In damp woods, copses, and hedgerows they seem most at home, and, like Narcissi and many other early-flowering bulbs, they rather enjoy flooding or occasional irrigation after root and top growth have begun. At Straffan the lawn lies low down near the river Liffey, and it is sometimes submerged for a day or two after the snow melts in early spring or after heavy rains. From May until September, however, the bulbs are dry among the tree roots with the dense canopy of Lime

leafage overhead, as are also the roots of the sky-blue Apennine Anemone that bear them company. We are beginning to perceive that, as a broad rule, some bulbous plants enjoy growing amongst the roots of other plants, or of trees and shrubs, or in the grass of lawn or meadow. The wild Daffodil and Bluebells do this as well as the Snowdrop, and those who have tried to dig up bulbs of any kind abroad with a knife or even with a botanical trowel, will remember how tightly wedged they frequently are in roots of various kinds, or jammed tightly in both roots and stones.

F. W. B.

HOW TO PLANT.—I usually plant Narcissi in grass by turning back the sod, making two cuts with the spade at right angles, and then pressing up and back the sod, laying it back on a hinge, as it were, putting in a few bulbs, mostly round the sides of the hole, turning the sod back and treading firmly upon it. The question is largely one of convenience and the ground one has to plant. If one could improve the subsoil it would be better for some soils, no doubt, but if the work is done in a bold way and there is much other planting going on, it is not easy to get time to plant things in the grass with care. Sometimes in breaking new ground or carrying out changes one gets a chance of throwing in some bulbs before the surface is levelled up. Once in planting Grape Hyacinths in an uneven grassy slope they were placed on the turf in the hollows and then levelled up with earth, and both grass and bulbs soon came through. Once some bullocks passed an evening where they "didn't ought to" in a grassy enclosure near the house, and their footmarks suggested a group of the Apennine Windflower, and a few of its roots were put in and the holes filled up. A wily man will see odd ways now and then of getting bulbs or seeds in. When the men are making sod banks for the only true field fence—a live one—is a very good time to put in Sweet Briars in the bank. In certain soils seeds may be sown betimes—seeds of Foxglove, Evening Primrose, and stout biennials. Fragile bulbs will want more care and less depth than the bolder Narcissi. Many ways are good, though far more important than any way of planting is thought as to the wants of the thing we plant, not only as to soil, but association with the things that will grow about it in grass, in hedgerows and rough places, for plants are not all garotters like the great Japanese Knotworts and the big Moon Daisies; and little ducks must not be left among barn rats or we may not see them again.

All planting in the grass should be in natural groups or prettily fringed colonies, growing to and fro as they like after planting. Lessons in this grouping are to be had in the woods, copses, heaths, and meadows, by those who look about them as they go. At first many will find it difficult to get out of formal masses, but they may

be got over by studying natural groupings of wild flowers. Once established, the plants soon begin to group themselves in pretty ways.

The Secret of the Soil.—In the cultivation of hardy plants and especially in wild gardening the important thing is to find out what things really do in the soil, without which much good way cannot be made. Many people make errors in planting things that are notoriously tender in our country and very often fail in consequence; but apart from such risky planting perfectly hardy plants may disappear owing to some dislike of the soil. They flower feebly at first and afterwards gradually wane in spite of all our efforts. I have made attempts to establish spring Snowflakes in grass, none of which succeeded, owing to the cool soil, yet one of the Snowflakes in the Thames Valley grows with the vigour of a wild plant. I have put thousands of Snowdrops in places where I could hardly see a flower a few years later, yet in some places it establishes itself in friable soil by streamlets and in many other situations. So it is with the Crocus. I find it difficult to naturalise, taking but slowly and gradually diminishing, and yet I have seen it in places cover the ground. The Narcissus, which is so free and enduring in cool damp soil does little good on warm, light or chalky soil. What will do or will not do is often a question of experience, but the point is when we see a thing doing well to take the hint. People often complain of the texture of the grass as a cause of failure, yet I have thousands of the Tenby Daffodil for ten years in rich and rank masses of Cocksfoot and other coarse grasses in coverts—never mown or the old grass taken away at any time, and the Narcissus gets better year by year. So it is a question of finding out the thing the soil will grow, and we shall perhaps only arrive at that knowledge after various discouragements. Some things are so omnivorous in their appetites that they will grow anywhere, but some, the more beautiful races of bulbous and other early flowers, will only thrive and stay with us where they like the soil. It should be clearly seen therefore that what may be done with any good result in the wild garden cannot be determined beforehand, but must depend on the nature of the soil and other circumstances which can be known only to those who study the ground.

Flowers beneath Trees.—Where the branches of trees, both evergreen and summer-leaving, sweep the turf in pleasure-grounds many pretty spring-flowering bulbs may be naturalised beneath the branches, and will thrive without attention. It is chiefly in the case of deciduous trees that this can be done; but even in the case of Conifers and Evergreens some graceful objects may be dotted beneath the outermost points of their lower branches. We know that a great number of our spring flowers and hardy bulbs mature their foliage and go

to rest early in the year. In spring they require light and sun, which they obtain abundantly under the summer-leaving tree ; they have time to flower and grow under it before the foliage of the tree appears ; then, as the summer heats approach, they are overshadowed, and go to rest ; but the leaves of the tree once fallen, they soon begin to reappear and cover the ground with beauty.

Some Plants for the Wild Garden.

The following are the chief families of plants that may be used in the wild garden. Where families are named which are British as well as natives of the Continent of Europe, as in the case of, say, Scilla, the foreign kinds are meant. In considering what may be done in naturalising plants in a given position, it may be well to cast the eye over the families available. Success will depend on how the plants are chosen to go in any one position, but about country seats soils are so much varied that it is not easy to generalise.

Acanthus	Crane's-bill	Honesty	Narcissus	Snapdragon
Aconite, Winter	Crocus	Honeysuckle	Omphalodes	Snowdrop
Asphodel	Cyclamen	Houseleek	Ox-eye Daisy	Snowflake
Aubrietia	Daffodil	Iris	Pæony	Solomon's Seal
Barrenwort	Day Lily	Knotwort	Pea, Everlasting	Star of Bethlehem
Bee Balm	Dog's tooth Violet	Lavender	Periwinkle	Starwort
Bellflower	Ferns, Hardy	Leopard's-bane	Phlox	Stoncrop
Bindweed	Forget-me-not	Lily	Plantain Lily	Sun Rose
Blood Root	Foxglove	Lily-of-the-valley	Pond-flower	Sun flower (Perennial)
Borage	French Willow	Loosestrife	Poppy	Thyme
Broom	Giant Fennel	Lungwort	Primrose, Evening	Tulip
Christmas Rose	Giant Scabious	Lupine	Rest Harrow	Viola
Clematis	Globe Flower	Mallow	Rocket	Virginian Creeper
Columbine	Globe Thistle	Meadow Rue	Rose, wild kinds	Virginian Poke
Comfrey	Golden Rod	Meadow Saffron	St. Bruno's Lily	Wallflower
Compass Plant	Grape Hyacinth	Meadow Sweet	St. John's Wort	Water Lily
Cornflower	Heath	Mimulus	Sandwort	Windflower
Coronilla	Heliotrope, Winter	Monk's hood	Scabious	Wistaria
Cotton Thistle	Hepatica	Mountain Avens	Scilla	Wood Lily
Cow Parsnip	Holly, Sea	Mullein	Snake's head

Wreath of old Wistaria, Efford Manor.

CHAPTER XIII.

SPRING GARDENS.

I have seen foreign flowers in hothouses of the most beautiful nature, but I do not care a straw for them. The simple flowers of our spring are what I want to see again."—JOHN KEATS (Letter to James Rice).

IN our islands, swept by the winds of iceless seas, spring wakes early in the year, when the plains of the north and the mountains of the south and centre are cold in snow. In our green springs the flowers of northern and alpine countries open long before they do in their native homes; hence the artistic error of any system of flower-gardening which leaves out the myriad flowers of spring. It is no longer a question of gardens being bare of the right plants; nurseries and gardens where there are many good plants are not rare, but to make effective use of these much thought is seldom given. Gardens are often rich in plants but poor in beauty, many being stuffed with things, but in ugly effect.

If we are to make good use of our spring garden flora we should avoid much annual culture, though it is not well to get rid of it altogether, as many plants depend for their beauty on rich ground and frequent cultivation. But many grow well without these, and the most delightful spring gardens can only be where we grow many spring blooming things that demand no annual care, from Globe-flowers to Hawthorns.

A common kind of "spring gardening" consists of "bedding out" Forget-me-nots, Pansies, Daisies, Catchflies, and Hyacinths; but this way is only one of many, and the meanest, most costly, and inartistic. It began when we had few good spring flowers, now we

have many ; and hence this chapter must deal with other and better ways.

The fashion of leaving beds of Roses and choice shrubs bare of all but one subject should be given up. The half-bare Rose and choice shrub beds should be a home for the prettiest spring flowers—Pansies, Violets, early Irises, Daffodils, Scillas, and many other dwarf plants in colonies between the Roses or shrubs. Double Primroses are happy and flower well in such beds. The slight shade such plants receive in summer from the other tenants of the bed assists them. Where Rhododendrons are planted in an “open way (and these precious bushes never ought to be jammed together), a spring garden of another kind may be made, as the peat-loving plants (and there are many fair ones among them) will be quite at home there. The White Wood Lily of the American woods (*Trillium*), the Virginian Lungwort, the Canadian Bloodroot (*Sanguinaria*), the various Dog’s-tooth Violets, double Primroses, and many early-flowering bulbous plants enjoy the partial shade and shelter and the soil of the beds for “American” shrubs.

In the kitchen garden, in its usual free and rich soil, simple beds of favourite spring flowers, such as Polyanthuses, Bunch Primroses in their coloured forms, self-coloured Auriculas, and Pansies of various kinds, are a good way of enjoying such plants, and more easily managed than the “bedding out” of spring flowers. That may follow the fashion of the hour, and with such plants as Forget-me-nots, Daisies, *Silene*, Pansy, Violet, Hyacinth, *Anemone*, and Tulip showy effects may be formed ; but without any of these pattern beds under the windows, fair gardens of spring flowers may be made in every place, and the problem of the design for the few set beds of the “spring parterre” will not be so serious a matter as in the past, there being so many aids in other ways, as we shall see.

ROCK AND ALPINE PLANTS.—There are so many hardy plants among these that flower in spring (many alpine plants blooming as soon as the snow goes), that there is not room to name them all in an essay devoted to the more effective groups and their best garden use. We must omit any detailed notice of plants like *Adonis*, *Cyclamen*, *Draba*, *Erodium*, and the smaller Rockfoils and Stonecrops, *Dicentra*, *Fumaria*, *Orobis*, *Ramondia*, *Silene*, and many other flowers of the rocks and hills, which though beautiful individually do not tell so well in the picture as many here named.

ROCK CRESSES AND WALLFLOWERS.—Among rock plants the first place belongs to certain mountain plants of the northern world, which, in our country, come into bloom before the early shrubs and trees, and among the first bold plants to cheer us in spring are those of the Wallflower order—the yellow *Alyssum*, effective and easy to

grow, the white Arabis, even more grown in northern France than in England (it well deserves to be spread about in sheets and effective groups), and the beautiful purple Rock Cresses (*Aubrietia*), lovely plants of the mountains of Greece and the countries near, which have developed a number of varieties even more beautiful in colour than the wild kinds. Nothing for gardens can be more precious than these plants, the long spring bloom being effective in almost every kind of flower gardening—banks, walls, edgings, borders of evergreen, rock plants, or carpets beneath sparsely set shrubs. The white evergreen Candytufts are also effective plants in clear sheets for borders, edgings to beds, tops of walls, and the rougher flanks of the rock garden. These are among the plants that have been set out in hard lines in flower gardens, but it is easy to have better effects from them in groups, and even in broken lines and masses, or as carpets beneath bushes, thus giving softer and more beautiful, if less definite, effects. Happy always on castle wall and rocks, the Wallflower is most welcome in the garden, where, on warm soils and in genial climates, it does well, but hard winters injure it often in cold and inland districts, and it is almost like a tender plant in such conditions. Yet it must ever be one of the flowers best worth growing in sheltered and warm gardens; and even in cold places one may have a few under the eaves of cottages and on dry south borders. It is where large masses of it are grouped in the open and are stricken—as the greens of the garden are stricken—in cold winters, that we have to regret having given it labour and a place which might have been better devoted to things hardy everywhere. The various old double Wallflowers are somewhat tender too and rarely seen in good character, save in favoured soils, which is all the more reason for making the most of them where the soil and air favour them. Certain allies of the Wallflower, mountain plants for the most part, such as the alpine Wallflower, also give good effects where well done and grouped on dry banks or warm borders.

THE WINDFLOWERS are a noble group among the most beautiful of the northern and eastern flowers, some being easily naturalised (like the blue Italian and Greek Anemones), while the showy Poppy Anemones are easily grown where the soils are light and warm, and in genial warm districts; but they require some care on certain soils, and are among the plants we must cultivate and even protect on cold soils in hard winters. The same is true of the brilliant Asiatic *Ranunculus* and all its varied forms—Persian, Turkish, and French, as they may be called, all forms of one wild North African buttercup, unhappily too tender to endure our winters in the open air, but they should be abundantly grown on the warm limestone and other soils which suit them, as about our coasts

Lilies and Rhododendrons. Warley Place.

and in Ireland. There is no more effective way of growing these than in simple 4-foot beds in the kitchen or reserve garden. The Wood Anemone is so often seen in the woods that there is rarely need to grow it; but some of its varieties are essential, most beautiful being *A. Robinsoniana*, a flower of lovely blue colour, and a distinct gain in the spring garden grown in almost any way. The Hepatica is a lovely little Anemone where the soil is free, though slow in some soils, and where it grows well all its varieties should be encouraged, in borders and margins of beds of American bushes as well as in the rock garden. The Snowdrop Windflower (*A. sylvestris*) is most graceful in bud and bloom, but a little capricious, and not blooming well on all soils, unlike in this way our Wood Windflowers, which are as constant as the Kingcups. The Pasque-flower is lovely on the chalk downs and fields of Normandy and parts of England in spring, but never quite so pretty in a garden. It would be worth naturalising in chalky fields and woods or banks.

COLUMBINE, MARSH MARIGOLD, CLEMATIS, LENTEN ROSE, AND GLOBE-FLOWER.—Columbines are very beautiful in the early part of the year, and if we had nothing but the common kind (*Aquilegia vulgaris*) and its forms, they would be precious; but there are many others which thrive in free soils, some of which are very graceful in form and charming in colour. The Kingcup or Marsh Marigold, so fine in wet meadows and by the riverside, should be brought into gardens wherever there is water, as it is a most effective plant when well grown, and there are several forms, double and single. The Clematis, the larger kinds, are mostly for the summer, but some (*C. montana*, *C. alpina*, *C. cirrhosa*) are at their best in the spring; they should be made abundant use of on house walls and over banks, trees and shrubs. The Winter Aconite (earliest of spring flowers) naturalises itself in some soils, but on others dwindles and dies out, and it should not be grown in the garden, but in shrubberies, copses, or woods where the soil suits it. Some kinds of hardy *Ranunculus*, the herbaceous double kinds, are good in colour, and in bold groups pretty; but taller and bolder and finer in effect are the Globe-flowers, easily naturalised in moist, grassy places or by water, and also free and telling among stout herbaceous plants. The most distinct addition to the spring garden of recent years is the Oriental Hellebore in its many beautiful varieties, of which some have been raised in gardens. They are handsome and stately plants, with large flowers, often delicately marked. With the usual amount of garden shelter and fairly good soil they grow bold and free, and have a stately habit and fine foliage, as well as beautiful flowers excellent for cutting. They are most effective, sturdy, impressive plants for opening the flower year with, often blooming abun-

dantly at the dawn of spring, and have the essential merit of not requiring annual culture, tufts remaining in vigour in the same spot for many years.

DOG'S-TOOTH VIOLETS, SNOWDROP, SNOWFLAKE, CROCUS, SCILLA, FRITILLARY, AND HYACINTH.—The European Dog's-tooth Violet is pretty in the budding grass, where it is free in growth and bloom. The Fritillary is one of the most welcome flowers for grass, and is best in moist meadows; the rarer kinds do well in good garden soil, those with pale yellow bells being beautiful. Every plant such as these, which we can so easily grow at home in grassy places, makes our cares about the spring garden so much the less, and allows of keeping all the precious beds of the flower garden itself for the plants that require some care and rich soil always.

The Hyacinth, which is often set in such stiff masses in our public gardens, gives prettier effects more naturally grouped, but it is not nearly so important for the open air as many flowers more easy to grow and better in effect, though some of the more slender wild species, like *H. amethystinus*, are beautiful and deserve a good place. The Snowdrop is of even greater value of late years, owing to new forms of it, some of which have been brought from Asia Minor and others raised in gardens. In some soils it is quite free and becomes easily naturalised, in others it dwindles away, and the same is true of the vernal Snowflake (*Leucojum vernal*), a beautiful plant. The larger Snowflakes are more free in ordinary soils, and easily naturalised in river bank soil. The Crocus, the most brilliant of spring flowers, does not always lend itself to growing naturally in every soil, but on some it is quite at home, especially those of a chalky nature, and will naturalise itself under trees, while in many garden soils it is delightful for edgings and in many ways.

To the Scilla we owe much, from the wild plant of our woods to the vivid Siberian kind; some kinds are essential in the garden, and some, like the Spanish Scilla (*S. campanulata*), may be naturalised in free soils. Allies of these lovely early flowers have come of recent years to our gardens—the beautiful *Chionodoxa* from Asia Minor, of about the same stature and effect as the prettiest of the Scillas, and some of them even more precious for colour. These are among the plants which may be planted with best results in bold groups on the surface of beds planted with permanent flowers, such as Roses—where Rose beds are not surfaced with manure, as all Rose-growers unwisely advise.

IRIS, GRAPE HYACINTH, NARCISSUS, AND TULIP.—In warm soils some of the more beautiful of the flowers of spring are the early Irises, but in gardens generally the most beautiful of Irises come in late spring with the German Iris, which is so free and hardy

throughout our country. Orchid-houses themselves cannot give any such array as these when in bloom, and they are often deserving of a little garden to themselves, where there is room for it, while they are useful in many ways in borders and as groups. About the same time come the precious Spanish Iris in many colours, lovely as Orchids, and very easily grown, and the English Iris. The Grape Hyacinths are pretty and early plants of Southern Europe, beautiful in colour. They increase rapidly, and some kinds do very well in the grass in free and peaty soils ; but the rarer ones are best on warm borders and groups in the rock garden. The Narcissus is worth growing in every way—the rarer kinds in prepared borders or beds and the many that are plentiful in almost any cool soil in the grass. In our country, where there are so many cool and rich soils allowing of the Narcissus being naturalised and grown admirably in many ways, it is, perhaps, on the whole, the most precious of all our spring flowers. But the Tulip is the most gorgeous in colour of all the flowers of spring, and for its effectiveness is better worthy of special culture than most—indeed, the florists' kinds and the various rare garden Tulips must be well grown to show their full size and beauty. Replanting now and then is almost essential with a Tulip garden if we are to keep the bulbs free from disease ; the wood Tulip and certain wild species may be naturalised, and in that state are as beautiful, if not so large, as the cultivated bulbs. The Tulip deserves a far better place among spring flowers than it has ever had, as, apart from the two great groups of early and late Tulips hitherto cultivated in European gardens, a number of handsome wild kinds are being introduced from Central Asia and other countries, many of them having early flowers of great beauty and fine colour, and if they will only take kindly to our climate the Tulip garden will soon leave all hot-house brilliancy a long way in the rear.

PÆONY, POPPY AND LUPIN.—Pæonies are nobly effective in many ways. Where single or other kinds are plentiful they may be well used as broad groups in new plantations, among shrubs and low trees, and as to the choice double kinds, no plants better deserve a little garden or border to themselves, while the tree kinds make superb groups on the lawn and are safer from frost on high ground. The great scarlet Poppies are showy in spring, and best grown among trees and in the wild garden, and with them may be named the Welsh Poppy, a very effective plant in spring as well as summer, and often sowing itself in all sorts of places. The various garden forms of the opium Poppy and of the field Poppy, both double and single, are very showy where any space is given to annual flowers.

The common perennial Lupin is a very showy, pretty plant grown in a free way in groups and masses, and may sometimes be

naturalised, and, associated with Poppies and free-growing Columbines in the wild garden, it is very effective.

· PRIMROSE, TULIP, COWSLIP, POLYANTHUS AND AURICULA.—

The Yulan (*Magnolia conspicua*) at Gunnersbury House.

Primroses are a lovely host for the garden, especially the garden varieties of the common Primrose, Cowslip, and Oxlip. Few things

deserve a better place, or are more worthy of good culture in visible groups and colonies or rich garden borders. Apart from the lovely races of garden forms raised from the Primrose, the Cowslip, and the Oxlip, and also the Alpine Auriculas, double Primroses should not be forgotten, as in all moist districts and in peaty and free soil they give such tender and beautiful colour in groups, borders, or slightly shaded among dwarf shrubs. Primroses and Polyanthus of native origin, are well backed up by the beautiful Indian Primrose (*Primula rosea*), which thrives apace in cool soils in the north of England and in Scotland, and which, when grown in bold groups, is very good in effect, as are the purplish Indian Primroses under like conditions.

ROCKFOIL, GENTIAN, AND ALPINE PHLOX.—The large-leaved Indian Rockfoils (*Saxifraga*) are in many soils very easily grown, and they are showy spring flowers in bold groups, especially some of the improved varieties. Although it is only in places where there is rocky ground or large rock gardens that one can get the beauty of the smaller Mountain Rockfoils (*Saxifraga*), we cannot omit to notice their beauty—both the white, yellow, and crimson-flowered kind—when seen in masses. The same may be said of Gentians; beautiful as they are in the mountains, few gardens have positions where we can get their fine effect, always excepting the old *Gentianella* (*G. acaulis*), which in old Scotch and English gardens used to make such handsome broad edgings, and which is easily grown in a cool soil, and gives, perhaps, the noblest effect of blue flowers that one can enjoy in our latitudes in spring. The tall Phloxes are plants of the summer, but there is a group of American dwarf alpine Phloxes of the mountains which are among the hardiest and most cheery flowers of spring, thriving on any dry banks and in the drier parts of rock gardens, forming mossy edgings in the flower garden, and breaking into a foam of flowers early in spring.

PANSIES.—The *Viola* family is most precious, not only in the many forms of the sweet Violet, which will always deserve garden cultivation, but in the numerous varieties of the Pansy, which flower so effectively in the spring. The best of all, perhaps, for artistic use are the Tufted Pansies, which are delightfully simple in colour—white, pale blue, or lavender, and various other delicate shades. Almost perennial in character, they can be increased and kept true, and they give us distinct and delicate colour in masses as wide as we wish, instead of the old “variegated” effect of Pansies. Though the separate flowers of these were often handsome, the effect of the Tufted Pansies with their pure and delicate colours is more valuable, and these also, while pretty in groups and patches, will, where there is space, often be worth growing in little nursery beds.

FORGET-ME-NOTS are among the most welcome flowers of spring.

Before the common and most beautiful of all—the marsh Forget-me-not—comes, there are the wood Forget-me-not (*M. sylvatica*) and *M. dissitiflora* and *M. alpestris*, all precious early flowers. Allied to the ever-welcome Forget-me-not is the common *Omphalodes*, or creeping Forget-me-not, valuable for its freedom in growth in half shady or

Rhododendron garden, Bidston, Cheshire.

rough places in almost any soil—one of the most precious of the early flowers which take care of themselves if we take a little trouble to put them in likely places. Among

ANNUAL FLOWERS that bloom in spring where the soil is favourable, excellent results are often obtained by sowing Sweet Peas in Autumn. Where this is done, and they escape the winter, they give

welcome hedges of flowers in the early year. So, too, the Cornflower, a lovely spring flower, and perhaps the finest blue we have among annual plants; but to have it good and early it should be always sown in Autumn, and for effect it should be in broad masses, sometimes among shrubs or in recently broken ground which we desire to cover. Some of the Californian annuals are handsome and vigorous when sown in autumn, always provided they escape the winter. The White Godetia is very fine in this way. In all chalky, sandy, and warm soils the Stocks for spring bloom are handsome and fragrant, but it is a waste of time to attempt to grow them on cold soils. It would be taking too narrow a view to omit from our thoughts of spring gardens the many beautiful flowering.

SHRUBS AND TREES THAT BLOOM IN SPRING, as some of the finest effects come from the early trees and shrubs. Among the most stately are the Chestnuts, particularly the red kinds, fine in all stages, but especially when old. The snowy Mespilus is a hardy, low-sized tree, blooming regularly, and well deserves a place in the pleasure garden or the fringes of shrubberies. The Almonds, more than any shrubs, perhaps, in our country and in France, light up the earliest days of Spring, and, like most southern trees, are best in warm valley soils, growing more slowly in cool heavy soils. They should be in groups to tell in the home landscape. The double Peaches are lovely in France, but as yet rarely so with us, owing, perhaps, to some defect of the stock used. Perhaps of all the hardy shrubs ever brought to our country the Azaleas are the most precious for effect. They are mostly wild on the mountains of America, and many forms have been raised in gardens which are of the highest value. Many places do not as yet show the great beauty of the different groups of hardy Azalea, particularly the late kinds raised of recent years. A neglected tree with us is the Judas-tree, which is very handsome in groups, as it ought always to be grown, and not as a starved single tree. The various double Cherries are noble flowering trees, being showy as well as delicate in bloom, and the Japanese kinds do quite as well as the old French and English double Cherries, though the trees are apt to perish from grafting. The American Fringe-tree (*Chionanthus*) is pretty, but some American flowering trees do not ripen their wood well enough in England generally to give us the handsome effects seen in their own country. Hawthorns are a host in themselves; those of our own country make natural spring gardens of hills and rocky places, and should teach us to give a place to the many other species to be found in the mountains of Europe and America, which vary the bloom and prolong the season of early-flowering trees. There are many varieties of our native hawthorn—red, pink, double, and weeping. The old Laburnum has

for many years been a joy with its golden rain, and of late we are doubly well off with improved forms, with long chains of golden flowers. These will become noble flowering trees as they get old ; hence the importance of grouping Laburnum trees to get the varieties together.

Among the early charms in the spring garden are the slender wands of the Forsythia, hardy Chinese bushes, pale yellow, delightful in effect when grown in picturesque ways ; effective also on walls or grouped in the open air on banks. Another plant of refined beauty, but too little planted, is the Snowdrop-tree (*Halesia*). Unlike other American trees, it ripens its wood in our country, and often flowers well. The Mountain Laurel of America (*Kalmia*) is one of the most beautiful things ever brought to our country, and as a late spring flower is precious, thriving both in the open and in half shady places.

BROOM AND FURZE.—There is no more showy plant or one more beautiful in effect in masses than the common Broom and all its allies that are hardy enough, even the little Spanish Furze giving fine colour. The common Broom should be encouraged on bluffs and sandy or gravelly places, so as to save us the trouble of growing it in gardens, for in effect there is nothing better. The same may be said of the Furze, which is such a beautiful plant in England and the coast regions of France, and the double Furze deserves to be massed in the garden in picturesque groups. In country seats, especially those commanding views, its value in the foreground is very great, and it is so easily raised from seed that fine effects are very easily secured, though it may be cut down now and then in hard winters.

RHODODENDRON AND MAGNOLIA.—The glory of spring in our pleasure grounds is the Rhododendrons ; but they are so overmastering in their effect on people's minds that very often they lead to neglect of other things. It would be difficult to overrate their charms ; but even amongst them we require to discriminate, and avoid the too early and tender kinds. Many of the kinds raised from *R. ponticum* and the Indian Rhododendron, while they thrive in mild districts in the south of England and West of France, near the sea, are not hardy in the country generally. Some of these tender hybrids certainly flower early, but we get little good from that. The essential thing, when we give space to a hardy shrub, is that we should get its bloom in perfection, and therefore we should choose the broad-leaved hardy kinds, which are mostly raised from the very hardy North American *R. catawbiense*, and be a little particular in grouping the prettiest colours, never using a grafted plant. For many years the Yulan Magnolia has, when well grown, been one of the finest trees in English southern gardens, and nothing is more effective than the Lily-

tree in gardens like Syon and others in the Thames valley ; while of late years we have seen precious additions to this, the noblest family of flowering trees. Some of these, like *M. stellata*, have proved to be valuable ; all are worth a trial, and, as to the kinds we are sure of, the great thing is to group them. Even in the case of the common Lily-tree (*M. Yulan*) it makes a great difference whether there are four or five trees or one.

Amongst the most beautiful of the smaller alpine bushes ever brought to our country is the alpine forest Heath, which is cheery and bright for weeks in spring. It is one of the plants that never fails us, and only requires to be grown in bold ways to be effective—in groups and masses fully exposed to the sun. Other Heaths, like the Mediterranean Heath, are also beautiful in some favoured parts of the country, but not so hardy generally as the little alpine forest Heath which has the greatest endurance and most perfect hardiness, as becomes a native of the Alps of Europe.

Pyrus japonica, a handsome old shrub often planted on cottage garden walls, may in many soils be used with good effect in groups and hedges. The evergreen Barberries in various forms are beautiful early shrubs, with soft yellow flowers, and excellent when grouped in some quantity. Two very important families are the *Deutzias* and *Syringas* which are varied and beautiful, mostly in white masses. They should never be buried in the common shrubbery, but grouped in good masses of each family. The flowering Currant (*Ribes*) of the mountains of N.W. America is in all its forms a very cheery and early bush, which tells well in the home landscape if rightly placed ; but perhaps the most welcome and important of all early trees and shrubs is the Lilac which in Britain is often grown in a few kinds only, when there are many in France. Beautiful in almost any position, Lilacs are most effective when planted together, so as to enjoy the full sun to ripen their wood ; the danger of thick planting can be avoided by putting Irises or other hardy flowers over the ground between the shrubs, which should never be crowded.

CRAB BLOOM.—Apart from the many orchard trees grown for their fruit, we have in our own day to welcome some of their allies—lovely in flower, if often poor in fruit. Our country has never been without some of this kind of beauty, as the Crab itself is as handsome a flowering tree as are many of the Apples which are descended from it in all the countries in Europe, from Russia to Spain, and in our gardens there were for many years the old Chinese double *Pyrus*, a handsome tree which became popular, and the American Crab, which never became so. But of late years we have been enriched by the Japan Crab, a lovely tree for some weeks in spring and other handsome kinds including Parkman's Crab, which comes to us under

more than one name, and a red form of the Japanese flowering Crab before mentioned. All these trees are as hardy as our native Crab, and differ much in colour and sometimes also in form. It is difficult to describe how much beauty they give where well grown and well placed; they are not the kind of things we lose owing to change of fashion, and in planting them it is well to put them in groups where they will tell. Apart from these more or less wild species there are numbers of hybrid Crabs—raised between the Siberian and some common Apples in America and in our country—that are beautiful also in flower, and remarkable too for beauty of fruit, so that a beautiful grove of flowering trees might be formed of Crabs alone. With these many fine things, and the various Honeysuckles, we are carried bravely down to the time of Rose and Lily—summer flowers, though Roses often come on warm walls in spring.

SPRING FLOWERS IN SUN AND SHADE AND NORTH AND SOUTH ASPECTS.—It is worth while thinking of the difference in the blooming of spring flowers in various aspects, as differences in that way will often give us a longer season of bloom of some of our most precious things. Daffodils do better in half shade than in full sunshine, and Scillas and other bulbs are like the Daffodils in liking half shady spots; so also Crown Imperials, which, like the Scillas, bleach badly if fully exposed to the sun. We may see the Wood Hyacinth pass out of bloom on the southern slopes of a hill, and in fresh and fair bloom on its northern slopes. Flowering shrubs, creepers on walls, and all early plants are influenced in the same way. Such facts may be taken advantage of in many ways, especially with the nobler flowers that we make much use of. If different aspects are worth securing for hardy flowers generally, they are doubly so for those of the spring, when we often have storms of snow and sleet that may destroy an early bloom. If fortunate enough to have the same plant on the north side of the hill or wall, we have still a chance of a second bloom, and a difference of two or three weeks in the blooming of a plant.

Let all who love the early flowers look at this list, not of the kinds of spring flowers (which are innumerable), but of the families; some of these, such as Narcissus and Rockfoil, comprise many species of lovely flowers, and the story of these, too, is the story of the spring:—

Some Spring and Early Summer Flowers Hardy in English Gardens.

Adonis	Convallaria	Fritillaria	Muscari	Sanguinaria
Alyssum	Crocus	Fumaria	Myosotis	Saponaria
Androsace	Cyclamen	Galanthus	Narcissus	Saxifraga
Anemone	Dentaria	Geum	Omphalodes	Scilla
Aquilegia	Dianthus	Gypsophila	Ornithogalum	Sedum
Arabis	Dicentra	Helleborus	Orobis	Silene
Arenaria	Dodecatheon	Hepatica	Pæonia	Trillium
Armeria	Doronicum	Hesperis	Papaver	Triteleia
Asperula	Draba	Hyacinthus	Phlox	Trollius
Asphodelus	Epimedium	Iberis	Polemonium	Tulipa
Aubrietia	Eranthis	Iris	Potentilla	Uvularia
Bellis	Erinus	Leucojum	Primula	Veronica
Caltha	Erodium	Linum	Pulmonaria	Vinca
Centaureæ	Erythronium	Lychnis	Ramondia	Viola
Clematis	Ficaria	Meconopsis	Ranunculus	

Spring-flowering Trees and Shrubs.

Æsculus	Cratægus	Genista	Mespilus	Styrax
Amelanchier	Cydonia	Halesia	Philadelphus	Syringa
Amygdalus	Cytisus	Kerria	Prunus	Tamarix
Andromeda	Daphne	Laburnum	Pyrus	Ulex
Azalea	Deutzia	Lonicera	Rhododendron	Viburnum
Berberis	Erica	Magnolia	Ribes	Weigela
Cerasus	Exochorda	Mahonia	Spartium	Wistaria
Cercis	Forsythia	Malus	Spiræa

Climbing Rose on cottage porch, Surrey.

THE SUMMER GARDEN BEAUTIFUL.

CHAPTER XIV.

THE NEW ROSE GARDEN.

WHATEVER may be thought of the reasoning in this chapter, of one fact there can be no doubt, namely, that the nobler flowers have been rejected as unfit for the flower garden in our own day, and first among them the Rose. Since the time when people went in for patterned colour many flowers were set aside, like the Rose, the Carnation, and the Lily, that did not lend themselves to flat colour; and thus we see ugly, bare, and at the same time costly gardens round country houses; and therefore I begin the summer garden with the Rose, too long left out of her right place, and put in the background.

There is great loss to the flower-garden from the usual way of growing the Rose as a thing apart, and its absence at present from the majority of flower gardens. It is surprising to see how poor and hard many places are to which the beauty of the Rose might add delight, and the only compensation for all this blank is what is called the rosery, which in large places is often an ugly thing with plants that usually only blossom for a few weeks in summer. This idea of the Rose garden arose when we had a much smaller number of Roses, and a greater number of these were kinds that flowered in summer mainly. The old standard Rose had something to do with this separate growth of Roses, it being laid down in the books that

the standards did not "associate" with other shrubs, and so it came about that all the standards grafted were placed in the rosery and there held up their buds to the frost! The nomenclature, too, in use among Rose-growers—by which Roses that flower the shortest time were given the name of Hybrid Perpetuals—has had something to do with the absence of the Rose from the flower garden. Shows, too, have had a bad effect on the Rose in the garden, where it is many times more important than as a show flower. The whole aim of the man who shows Roses, and who is too often followed as a leader, was to get a certain number of large flowers grown on the Dog Rose, Manetti, or any stock which enabled him to get this at the least cost; so, if we go to any Rose-showing friend, we shall probably find his plants for show grown in the kitchen garden with a deep bed of manure on the surface of the beds, and as pretty as so many broomsticks. This idea of the Rose as a show flower leads to the cultivation of Roses that have not a high value as garden flowers, and Roses that do not open their flowers well in our country in the open air, and are not really worth growing, are grown because they happen to produce flowers now and then that look well on a show bench. So altogether the influence of the shows has been against the Rose as a garden flower, and a cause why large gardens are, in the flower garden, quite bare of the grace of the queen of flowers.

THE ROSE NOT A "DECORATIVE" PLANT!—It is instructive to study the influence of rose books upon the Rose as well as that of the Rose exhibitions, as they brought about an idea that the Rose was not a "decorative" plant in the language of recent days. In these books it was laid down that the Rose did not associate properly with other flowers, and it was therefore better to put it in a place by itself, and, though this false idea had less influence in the cottage garden, it did harm in all large gardens. In a recent book on the Rose, by Mr. Foster-Melliar, we read:

I look upon the plant in most cases only as a means whereby I may obtain glorious Roses. I do not consider the Rose pre-eminent as a decorative plant; several simpler flowers, much less beautiful in themselves, have, to my mind, greater value for general effect in the garden, and even the blooms are, I imagine, more difficult to arrange in water for artistic decoration than lighter, simpler, and less noble flowers.

It must be remembered that the Rose is not like a bedding plant, which will keep up continual masses of colour throughout the summer, but that the flush of flowers is not for more than a month at most, after which many sorts, even of the Teas will be off bloom for a while, and the general effect will be spoiled.

This is not a statement peculiar to the author as he is only embodying here the practice and views of the Rose exhibitors which most

unfortunately ruled the practice of gardeners, and it is very natural many should take the prize-takers as a guide.

There was some reason in the older practice, because until recent years the roses most grown were summer flowering, that is to say, like our wild roses, they had a fixed and short time of bloom, which usually did not last more than a few weeks; but in our days, and within the last fifty years, there have been raised mainly by crossing with the Bengal Rose and some others a number of beautiful Roses, which flower for much longer periods. There are, for example, the monthly Roses and the lovely Tea Roses, which also come in some way from the Indian Rose, and which, when well grown, will flower throughout the whole summer and autumn; not every kind, perhaps, but in a collection of the best there is scarcely a week in which we have not a variety of beautiful flowers. So that, while our forefathers might have been excused for taking the view that Roses are only fit to plant in a place apart, there is no need for the modern grower to do so, who is not tied to the show bench as his one ideal and aim, and nothing could be more untrue and harmful than this ideal from a garden point of view.

THE ROSE TO COME BACK TO THE FLOWER GARDEN.—The Rose is not only “decorative” but is the queen of all decorative plants, not in one sort of position or garden, but in many—not in one race or sort, but in many, from Anna Olivier, Edith Gifford, and Tea Roses of that noble type in the heart of the choicest flower-garden, to the wild Rose that tosses its long arms from the hedgerows in the rich soils of midland England, and the climbing Roses in their many forms, from the somewhat tender Banksian Rose to climbing Roses of British origin. And fine as the old climbing Roses were, we have now a far nobler race—finer indeed than one ever expected to see—of climbing teas which, in addition to the highest beauty, have the great quality of flowering, like Bouquet d’Or, throughout the fine summer and late into the autumn. Of these there are various climbing Roses that open well on walls, and give meadows of beauty, the like of which no other plant whatever gives in our country. See, too, the monthly Roses in cottage gardens in the west and cool coast country, beautiful through the summer and far into the cool autumn, and consider the fine China Roses, such as Laurette Messimy, raised in our own day, all decorative in the highest sense of that poor word.

The outcome of it all is that the Rose must go back to the flower garden—its true place, not only for its own sake, but to save the garden from ugliness and hardness, and give it fragrance and dignity of leaf and flower. The idea that we cannot have prolonged bloom from Roses is not true, because the finer monthly and Tea Roses

flower longer than any bedding plants, even without the advantage of fresh soil every year which bedding plants enjoy. I have Roses growing in the same places for seven years, which have the fine quality of blooming in autumn, and even into winter. And they must come back not only in beds, but in the old ways—over bower and trellis and as bushes where they are hardy enough to stand our winters, so as to break up flat surfaces, and give us light and shade where all is usually so level and hard. But the Rose must not come back in ugly ways, in Roses stuck—and mostly starving—on the tops of sticks or standards, or set in raw beds of manure, and pruned hard and set thin so as to develop large blooms; but, as the bloom is beautiful in all stages and sizes, Roses should be seen closely massed, feathering to the ground, the queen of the flower garden in all ways.

The Rose is not only a “decorative” plant of the highest order, but no other plant grown in European gardens in any way approaches it in this quality. The practice of exhibitors of any kind is of slight value from the point of view of beauty of the garden, and not always of the very flower itself, as we see in the case of the Dahlia. Thirty years ago the florists, like the late Mr. Glenney, who had the law in their own hands as regards the Dahlia, would have knocked a man on the head who had the audacity to dissent from their lumpy standard of beauty. It was really a standard of ugliness as so many of these “florists’” rules are. Then came the Cactus Dahlias, of free and distinct form, and the single Dahlias, and now we see proof in cottage gardens even that the Dahlia is a nobler thing by a long way than the old florist’s idea of it. And so we shall find with the Rose, that, brought back to its true place in the flower garden, it will be a lovelier thing than ever it has been on the show bench, seen set in the finely coloured and graceful foliage of the “Teas,” and with their many buds and charming variations as to flower and bud, from week to week, until the first days of winter.

THE STANDARD ROSE.—A taking novelty at first, few things have had a worse influence on gardening than the Standard Rose in all forms. Grown throughout Europe and Britain by millions, it is seen usually in a wretched state, and yet there is something about it which prevents us seeing its bad effect in the garden, and its evil influence on the cultivation of the Rose, for we now and then see a fine and even a picturesque Standard, when the Rose suits the stock it is grafted on, and the soil suits each; but this does not happen often. The term grafting is used here to describe any modes of growing a Rose on any stock or kind, as the English use of the term budding, as distinct from grafting, is needless, budding being only one of the many forms of grafting. There is no reason why

those who like the form of the Standard should not have them if they can but get them healthy and long-lived; but in that case they should train hardy and vigorous Roses to form their own stems.

While of the evil effect of the Standard Rose any one may judge in the suburbs of every town, its other defects are not so clear to all, such as the exposure high in the air to winter's cold of varieties

Climbing cluster Rose at Belmont.

more or less delicate. On the tops of their ugly stick supports they perish by thousands even in nurseries in the south of England (as in Kent). If these same varieties were on their own roots, even if the severest winter killed the shoots, the root would be quite safe, and the shoots come up again as fresh as ever; so that the frost would only prune our Rose bushes instead of killing them and leaving

us a few dead sticks from the Dog Rose. Even if "worked" low on the "collar" of the stock, grafted Roses have a chance of rooting and keeping out of the way of frost, which they never have when stuck high in the air. Then there is the fact of certain Roses disliking stocks, or certainly some stocks, as all buyers of Roses may see certain varieties always "growing backwards" so to say, and soon dying. This happens even where the first year's growth and flower are all we could desire. The question for the seller is how his stocks look the year of sale no doubt, but the buyer should see whether his Roses improve or not after the first year, and it is certain that many varieties do go back when "worked" as the term is.

Another element of uncertainty is the kind of stock used. Even if the propagator knows the right stock for the sort he may not for some reason use it, as many have found to their cost who have bought Tea Roses grafted on the Manetti stock—a stock that in any case has no merit beyond giving a few large blooms for a show the first year. And in many cases it paralyses all growth in the kind grafted on it.

There is a way to solve the question as to any kinds we are really interested in—say Gloire Lyonnaise, Princess Marie d'Orleans and Bouquet d'Or, or any other hardy and good Roses we fancy, old or new. It is easy to try a few of each kind in the same soil in the natural way on own roots, and also grafted on the wild Dog Rose or any other stock that may be recommended for a given variety, using the "worked" kinds both as Standards and half Standards or dwarfs as may be preferred. The first care should be to get plants on own roots about as strong as those worked, and it is not difficult to do this with a little patience, as some gardeners and even cottagers strike Roses from cuttings very successfully. But no trial would be of any use which did not go over the first year or two, because of the dread phase of the grafting humbug above alluded to, that the things are grown to sell, and although they look well when they come to us, after a year or two they perish, and we are as much in want of Roses as ever. This may look very "good for trade," but any practice which leads to the vexation and disappointment of the grower is not good for trade, as many people give the Rose up as hopeless on their soil when they get a poor result.

If we go into the Rose garden of the Luxembourg at Paris or any of the regular roseries in England, we shall find more than half the plants in a sickly, flowerless state. So sickly are the bushes, or what remains of them, that it is common to see a rosery without any Roses worth picking after the first flush of bloom is past, and this is a great waste of time and temper. When we think of the number of beautiful things which this has to do with to their harm:—the

flowers fairest of all in form, colour, and odour, from the more beautiful tea-scented Roses raised in our own days to the oldest Roses—the Moss and Provence Roses—these, too, being often seen in a

Rose La Marque on south wall, July, 1899.

miserable state in the rosery, though by nature vigorous and quite hardy, there is surely some reason for looking into ways of Rose growing that have led to this end.

Even where the Rose thrives as a Standard, on deep, good loamy

soils, there would be other things of interest to determine—length of bloom and endurance of the grafted plant, as compared with plants on their own roots—my own view being that own root plants generally would give the most continuous and finest bloom in the end, good cultivation and soil being understood in each case, and that in hot seasons, of which we have had severe examples of late years, the own root plants are far the best.

THE MANETTI STOCK.—Often I have reason to wish that Signor Manetti of Naples had never been born or given his name to the wretched Rose stock that bears it, as among my blighted hopes is a wall of Maréchal Niel Rose, the plants on which have remained “as they were” at first for the last five years; but this year beside one of them is in bloom the poor Manetti Rose, on which the Maréchal was grafted, and, as the Tea Rose will not grow, the Manetti begins to take its place. In some soils and conditions, the Manetti may give some apparent advantages for the first year in making the plant grow rapidly, and perhaps giving one or two flowers to be cut off for a show, but afterwards it is all the other way; the Rose fails on it and Tea Roses do not grow on it at all. It is quite distinct in nature from them, and nurserymen who use the Manetti for Tea Roses do no good to their own art or to gardens. People ordering Tea Roses should be careful to order them never to be sent on Manetti stock. But even if they do so they may be disappointed, as the large growers have often to buy from others and so send out Tea Roses on the Manetti stock, an absolutely sure way to prevent the Roses growing or ever showing their extraordinary beauty.

Why do trade-growers do this sort of thing to the injury of their own art and the loss to the buyer who supports them? Unfortunately routine takes hold of every business and has taken deep hold of this to its real injury. Roses are not only propagated by the trade for the garden, but also for forcing, for sale, and for showing; and it is the quickest way to make a presentable growth that is taken. In various cases the plant is only wanted for one year, as when florists want to get strong blooms and throw the plants away afterwards. In this case the life of the plant does not matter, but to the private grower the result could not be worse.

ROSES AND MANURE.—In most gardens where people pay any attention to Roses the ground in which they grow is in winter densely coated with manure, often raw and ugly to see in a flower-garden—perhaps under the windows of the best rooms of the house. This is the regulation way of catalogues and books, but it is needless and impossible in a beautiful Rose garden. Most of our garden Roses being grafted on the Dog Rose of our hedgerows, which does best in the heavy, cool loams of the midlands, if we want the

Climbing and Bush Tea Roses in Rose Garden, July.

ordinary grafted garden Rose to do well we must give it not less than 30 inches in depth of like soil. This is often of a rich nature, and it is very easy to add, in putting the soil in, all the manure which the Rose may want for some years, so that the surface of the bed might be planted with light-rooting rock and like plants, one of the prettiest ways being to surface it with Pansies and Violets. I have beds of Tea Roses over which the Irish mossy Rockfoil has been growing for years without the roses suffering. Beautiful groups of mossy plants of all sorts, or pretty little evergreen alpine plants associated with the earliest flowers, show that the surface of the Rose garden itself might be a charming garden of another kind, and not a manure heap. In the old way of having what is called a "roserie" it did not matter so much about covering the surface with manure, but where we put our Rose beds in the centre of the very choicest flower garden or under the windows of the house it is a very ugly practice. The Rose can be nourished for six or eight years without adding any manure to the surface, and after six, eight, or ten years most beds will probably require some change, or we may change our view as regards them.

If we free our minds from the incubus of these usual teachings and practices, many beautiful things may be done with Roses for garden adornment. What is wanted mainly is that the very finest Roses, and above all long-blooming ones like Monthly Roses and such Tea Roses as George Nabonnand, Marie Van Houtte, and Anna Olivier, should be brought into the flower garden in bold masses and groups to give variety and prolonged bloom, using the choicest Tea Roses in the flower beds, with wreaths of yellow climbing Roses swinging in the air, and on walls, especially the climbing Tea Roses. Perhaps it may be worth while, to encourage others, to tell the story of

MY ROSE GARDEN, as a record of a trial that succeeded may be of more use to the beginner. My idea was to get the best of the Roses into the flower garden instead of bedding plants or coarse perennials, to show at the same time the error of the common ways of growing Roses, and also the stupidity of the current idea that you cannot near the house (and in what in the needless verbiage of the day is called the "formal" garden) set flowers out in picturesque and beautiful ways. Another point was to help to get the flower garden more permanently planted instead of the eternal ups and downs of the beds in spring and autumn and the ugly bareness of the earth at these seasons, and to see if one could not make a step towards the beautiful permanent planting of beds near the house and always in view. Tea Roses only were used for the sake of their great freedom of bloom, and these were all planted in large groups, so that one might judge of their effect and character much better than by the usual way

of mixed ineffective planting of one kind in a place. The success of the plan was remarkable both for length of bloom and beauty of flower and foliage, variety of kind and charming range of colour, and also curious and unlooked for variety in each kind. That is to say, each Tea Rose varied as the weather varied, and the days passed on: the buds of Anna Olivier in June were not the same as the buds of the same rose in September, and all kinds showing ceaseless changes in the beauty of bud or bloom from week to week.

NO STANDARDS.—It was easy to abolish the standard as hopeless and diseased in many cases and ugly in effect, but not so easy to get out of the way of grafting on something else, which is the routine in nurseries, and here I had to follow the usual way of getting all the Tea Roses grafted on the common Dog Rose, but always getting the plants "worked" low either on the base of the stock or on the root, so that it is easy in planting to cover the union of the stock with the more precious thing which is grafted on to it, and so protect the often somewhat delicate kind from intense cold. There is also a chance in this way of letting the plant so grafted free itself by rooting above the union. If we plant firmly in the earth, slightly inclining it to one side, and scrape a little off the lower part of the stems of the Rose, we may encourage the rose to root itself above the stock, and in any case we escape the ravages of frost. Certainly it is so in my garden in a cool and upland district. For ten years or so, of the many kinds we have planted we have had no losses from cold. The Tea Roses were often cut down by the frost, but they came up again, often vigorously; some kinds undoubtedly go back or fail, but not, I think, because of cold, but rather through not liking the stock. Making all our beautiful and often tender roses grow on one wild stock only may have bad effects, just as grafting all the precious Rhododendrons on the wretched *R. ponticum* has bad effects. Some kinds flower, do well for a year or two, and then rapidly diminish in size and beauty; some are very vigorous the first year but die off wholly in the second. The Wild Rose stock has the power to push the Rose into great growth the first year, and then, owing to the stock and graft being of a wholly different origin and nature, there is a conflict in the flows of the sap, and death quickly ensues. There has been such a number of beautiful Tea Roses raised and lost that it is worth while inquiring if we have not lost many of them from this cause. Some Roses that grew freely did not open their buds in our country, and others broke away into small heads and buds which made them useless. However, out of the thousands planted some kinds did admirably, and quite enough of them to make a true garden of Roses, lasting in beauty throughout the summer and autumn.

PREPARATION OF THE ROSE BEDS.—Knowing that we had to face the fact of all the Roses being grafted on the Dog Rose it was important to give them a deep, cool loam, and the beds in most cases were dug out to a depth of thirty inches below the surface. Although a somewhat rocky and impervious bottom no drainage was used, no liquid manure was ever given, and no water even in the hot summers. The beds were filled with the cool heavy loam of our best fields, mixed with the old dark soil of the beds and raised gently above the surface, say, to an average height of not less than 6 inches, so that there was about 3 feet of good rich soil. And this

Summer Roses on cottage wall Surrey).

preparation was sufficient for years, the beds being in some cases quite vigorous after six and seven years' growth.

ROSE BEDS AND ALPINE FLOWERS.—Instead of mulching the beds in the usual way, and always vexing the surface with attentions I thought dirty and needless, we covered them with Pansies, Violets, Stonecrops, Rockfoils, Thymes, and any little rock-plants to spare. Carpeting these rose beds with life and beauty was half the battle. Every one asks us how we mulch. Well, we do not mulch except with these living plants, many of which are so fragile in their roots that they cannot have much effect in a bed of 3 feet of moist,

good soil. So that instead of the bare earth in hot days, the flower shadows are thrown on to soft carpets of green Rockfoil and Thyme, or any other fragile rock or mountain plant that we think worth growing for its own sake also. It may even be that these "mossy" plants prevent the great drying out of the soil in hot summers and autumns, such as we have had of recent years.

SHELTER.—The position was not at all protected in the direction of the prevailing winds, or by walls in any way, so that little was owing to the natural advantages of site. The first thing that occurred to people on seeing the Roses was that they were due to some peculiar merit of the climate or the soil; but the same things were carried out in several gardens formed by me in quite different soils and districts—Shrubland Park, and Hawley, in Hants, for instance—and the results were equally good in every case, in some cases better than in my own garden. It is very likely that working in the same way all should be able to grow Tea Roses—that is, the best of all Roses—on many warm soils which are supposed to be useless to grow Roses now. There is a limit no doubt as to how far north one would get these Roses to open, but over a large area of the country now roseless for half the summer, and in some dry soils with few or no roses at all, we could make a change towards a real Rose-garden. All who have hot and warm soils should enrich them as much as possible, but in view of the failure of the Rose in the brier they should never try any Standard Tea Roses, but grow these on their own roots or grafted low, and the point of the graft buried in the soil so as to allow of the plant rooting itself in a soil which it may be able to enjoy perfectly well without the aid of a horrid and corrupting "middle man" in the shape of a Dog Rose, longing all the time for its home in the clay.

CLIMBING ROSES.—In the sketch of Rose pillars taken by Miss Willmott in her garden at Warley Place, we see some of the grace of the Rose treated as a climber, in the flower garden. There are a great number of Roses that lend themselves to this, the old climbing Roses being now backed up by a splendid series of long-blooming climbing Tea Roses which are more valuable still, and much in want of planting in simple ways to break up the level of gardens and the chessboard appearance they usually have. Wreaths and garlands of this sort were very much more frequent before everything was cleared away for the flatness and hardness of bedding out, and this way of treating Roses ought to be practised more than ever. They should be trained abundantly over well-formed pergolas, covered ways, trellises, and fences. In countries a little warmer than ours we see what can be done with Roses as noble climbers; in Algeria, and in Madeira, the climbing Tea Roses running up trees in the loveliest

bloom, all of the finest sorts, seeming as free as the Monthly Rose is in the West of England. In our country we have to face hard winters, but we have many Roses which will stand the test of our hardest, and there is little difficulty in getting good effects from the Rose as a bold climber, and better than anything else able to break up the hardness and monotony too visible in flower-gardens.

“OVER PRUNING CLIMBING ROSES.—The way the unpruned Rose behaves is this: the plant, as soon as fairly established in a good soil, throws up plenty of strong shoots, and the following year these shoots break their buds freely along the stem, and each branch produces a mass of bloom, which, after a shower, weighs the branch almost down to the ground. They are often best let alone when among shrubs or in groups on the lawn, and it is the climbing Roses that show what the Rose is capable of when cultivated in this free and natural manner. One of my best rose bushes is an old double white Ayrshire Rose growing in a shrubbery for more than thirty years—sending out a shoot of white flowers sometimes on this side, and sometimes on that side of the clump of bushes, and sometimes scrambling up to the tops of the tallest branches, and draping them with blossoms throughout June and July. Some time ago I measured the ground covered by the plant and found it rather over 70 feet in circumference. It is growing in a deep dry loam, and this, together with head room, seems to be all it requires. There are far too few examples of this kind, for our efforts have not been in the direction of showing what could be done with the Rose as a tree or bush. The common Dog Rose teaches us a lesson in pruning and climbing. It forms a mighty mound of branches, the older stems dying down as the young ones grow till a large bush is formed, covered with flowers, and they are never the less for the absence of all pruning!

“Climbing and strong-growing Roses make handsome bushes in a few years on pleasure-ground lawns. I have seen bushes of this kind twenty years old in which the wood had accumulated about 2 feet or more deep, and yet nowhere was any dead wood to be seen, owing to the plants throwing out annually fresh shoots which covered the old ones. The plants, in fact, grow exactly in the same manner as the wild Brier, which keeps sending up from its centre long shoots, increasing its size every year. Except against walls and in similar situations, there is no occasion to prune climbing Roses. They make the finest display when left to themselves and it is only necessary to provide them with a deep, strong soil, and to let them have light on all sides. Whether planting be carried out with the object above described, or for the purpose of covering naked tree-stumps or branches, or for draping any unsightly object whatever, good soil in the first instance is the main thing.”—J. S.

WILD AND SINGLE ROSES.—Another way of attacking the monotony and barrenness of the “rosery” of the books, is to plant many of the wild roses, from which all the garden roses come. They do not, however, appear to advantage in shows; but on cool grass in the hot summer days there is nothing more delightful, whether they be those of our own country like the Sweet Brier, Dog and Field Roses, or those of other countries, such as the beautiful Altai Rose, the *Rosa gallica* and many others. As to growing wild Roses, the best way is not to put them in the flower-garden, but rather by grass walks or rough banks, or in newly made hedgerows. If their beautiful bloom does not last long, the fruit is pretty, and though they are not of the things that repay us well for garden cultivation, as the best garden Roses do, the wild Roses may often be used with good effect.

Among the wild Roses, not natives of Britain, that give us most pleasure there may be named the Needle Rose of Japan (*R. acicularis*); the Carolina Rose, charming for its distinct clusters and late bloom, the alpine Rose and its Pyrenean variety, excellent for rocky banks; the glossy Rose (*R. Lucida*), one of the most excellent in marshy or almost any ground, pretty in colour too in winter; the Austrian Brier, a native of Central Europe, and thriving even among wild Roses, *R. macrantha*, *R. brunonis* and the Musk Rose and all its forms, the many-flowered Rose *R. multiflora*, and the Japanese Roses (*R. rugosa*). The creeping Rose of China and Japan (*R. Wichuriana*) is quite distinct from any, and excellent for running about rocky banks and as a climber. These are but a small number of the Roses with which the northern and mountain world is clothed, and of which many have yet to come to our gardens.

Apart from the wild Roses of which there are so many, there are also the single and other roses of garden origin which were thrown away by raisers so long as the show standard was the only one thought of, but a few of which are now coming into use, such as the Paul's Carmine, Bardou Job, the hybrid sweet Briers and Japanese and other hybrids, and to such roses we may hope for many additions.

AN ESSEX ROSE GARDEN.

What causes the difference between the burnt up gardens of Sussex and Surrey and this Essex garden land? It can surely only be the open, dark, friable soil, that gives the trees their deep verdure, the hardy plants their handsome growth, the turf its fine texture and

good colour. In the fashionable flight to the country south of London garden lovers do not always know that they are turning

An Essex Garden, with border of Tea and Monthly Roses in the foreground.

their backs on the good soil ; chalky hills and sandy heaths and poor clays can never give anything like the same results, no matter how

we labour. The difference in soil values is very great, and a vital question for those who expect to get good results in flowers or fruit, and the worst of it is that on many poor soils no money or no manurial or any other additions can ever make them as good as a naturally good soil.

So here, on a good soil, we have a beautiful garden showing how Roses love the soil and air, especially the Tea and Monthly Roses, which have the precious quality of coming out again with ever so little encouragement—an hour or two of sun, or even without this in gentle rains. It may be noticed in the engraving that the border below the house at the bottom of a terraced-lawn is planted with Tea Roses of the best sorts, so that it comes into the garden-picture, and is convenient for cutting or seeing the flowers, and not thrust away into a separate corner out of the flower garden as Roses so often are. And well the Tea Roses repay for the good place, from the ever-constant Princess de Sagan to the rain-and-storm proof G. Nabonnand. To these ever-welcome Roses, as good for the house as the open garden, the best of the wild Roses are a great aid, all the more so when we come to the adornment of walls, pergola, or the house-walls, and here in August the Macartney, Prairie, and Japanese creeping Rose (*Wichuriana*) come in so well after the early wild Roses are past. Drooping from a pergola the Japanese creeping Rose is graceful in the toss of its branches and the purity of its flowers. And these late wild Roses go so well with the Clematis, Vine, Passion-flower, Jasmine, and the best climbers we have for house-walls, the good use of which does so much to grace the house.

And as we have seen that in this garden near the house the garden Rose occupies its true place (although a modest one compared with what it deserves), here, round the water-lilies the wild Roses are grouped. Now that the taste for these beautiful wild Roses from various countries is reviving, it is well to know what should be done with them. Their season is too short to entitle them to a place in the flower garden and a very good one is the margin of pools and small lakes which are now very rightly given up to precious water-lilies. The Roses for the flower garden are the long blooming Tea and Monthly Roses, which reward us by months of changeful flower.

The wild Rose is much better placed in the more picturesque parts of grounds where we neither expect nor look for continuous bloom, and all the more so because these wild Roses are hardy shrubs that want no attention for years at a time.

THE SUMMER GARDEN BEAUTIFUL

(continued).

CHAPTER XV.

CARNATION, LILY, IRIS, AND THE NOBLER SUMMER FLOWERS.

THE flowers of our own latitudes, when they are beautiful, are entitled to the first place in our gardens, and among these flowers, after the Rose, should come the Carnation, in all its brilliancy of colour, where the soil and climate are fitted for it, as is the case over a large area of our sea-girt land.

Our flower-gardens have to a great extent been void of beautiful flowers and plants ; but instead, acres of mean little sub-tropical weeds that happen to possess a coloured leaf—*Coleus*, *Alternanthera*, *Perilla*, &c.—occupy much of the ground which ought to be true flower-gardens, but which is too often set out with plants without fragrance, beauty of form, or good colour.

It is not enough that the laced, flaked, and other varieties of *D. Caryophyllus* should be grown in frames or otherwise ; we should show the flower in all its force of colour in our flower-gardens, and this is an entirely distinct question from the growth of kinds hitherto known as florists' flowers." Many who have not the skill, or the time, for the growth of the "florists'" flowers, would yet find the brilliant "self" Carnations delightful in their gardens in summer and autumn, and even in winter, for the Carnation, where it does well, has a fine colour-value of foliage in winter, which makes it most useful to all who care for colour in their gardens, adorning the garden throughout the winter and spring, and full of promise for the summer and autumn.

What Carnations are the best for the open air? The kinds of Carnations popular up to the present day are well known by what is seen at the Carnation shows, and in the florists' periodicals, like the *Floral Magazine*, *Harrison's Cabinet*, and, indeed, all similar period-

icals up to our own day, when I began to insist that all flowers should be drawn as they are. The artist should never be influenced by any "rules" or "ideals" whatever, but be allowed to draw what he sees. This all conscientious artists expect, and it is the barest justice. If we raise new forms, or what we consider "perfect" flowers, let the artist see them as they are, and draw them as he sees them, without the confusion of drawing impossible hybrids between what he sees and what he is told is perfection in a flower. It was the want of this artistic honesty which has left us so worthless a record in illustrated journals of the century, where the artist was always told to keep to the florist's "ideal" as to what the flower should be, and hence the number of plates of flowers of many kinds, all "drawn" with the compass. Behind the florists' plates of this century we have the pictures of the Dutch flower-painters containing fine Carnations, well grown and admirably drawn after nature. These artists were not confused by any false ideal to which they were to make the flower approach, and so we have a true record of what the Carnation was 200 years ago. In these pictures we generally see the finer striped and flaked kinds given the first place, which is natural, as such varieties are apt to strike people the most; and in those days little consideration had yet been given to the question of *effect* in open gardens, but in our own day this question has been forced upon us in very unpleasant ways by masses of crudely arranged, and not always pretty flowers. One of the aids in effect is the Carnation in its pure and lovely colours—colours which no other flowers possess. It would be a pity to use these lovely colours only for "button-holes" and for the house, when they may afford us such welcome colour in our summer and autumn gardens, in the days when people see and enjoy their gardens most.

Hitherto the effect of the Carnation in masses has been mostly judged of from the Clove Carnation, but fine as this is, it is not so good as other varieties which are better, stronger, flower longer, and are finer in form, such as "Murillo," "Carolus Duran," "Comte de Melbourne," "François Lacharme," "Madame Roland," "Paix d'Amiens," "Marquis de Dampierre," "Mdlle. Rouselle," "Alice, Aline Newmann," "Countess of Paris," and "George Maquay." These represent the Carnation of our own day in its finest form, perfectly hardy, if layered in the summer, and planted early. Rooting well before winter in easy and bold groups, they afford pretty effects of colour from foliage alone, and even in winter time adorn the garden. Some varieties are very continuous in bloom, like the "Countess of Paris," and these should be added to as time goes on.

Over a very large area of the United Kingdom Carnation culture may be carried out well, and perhaps most successfully near the sea.

The gentler warmth of the shore in some way influences this, and in any case the best results I have seen from out-door culture have been in places like Scarborough, Edinburgh, Anglesea, the shores of Dublin Bay, and in sea-shore gardens generally where the soil is warm and good. It is wonderful what one may do in such places as compared with what is possible, say, in the Weald of Kent. At Scarborough we may see Carnations almost forming a bush; near Edinburgh I have seen tufts of the Clove Carnation 5 feet in diameter, whereas in Sussex and Kent we have to plant annually. In our island the area for shore gardens being very large, we may see how important the flower in gardens in sea-shore districts may be, valuable as it is in any place where it happens to do well; but some sandy and warm soils, like that of the Bagshot sands for example, are singularly adverse to the Carnation.

In advocating an extension of ways of growing this noble flower, I may perhaps be permitted to state the results obtained in my own garden in Sussex, and in a garden in Suffolk, two districts widely different as regards soil and climate. In my own garden I collected all the kinds of Carnations of the self, or one colour, that could be got in France or England, and grew them in lines in a very exposed and quite unprotected situation, about five hundred feet above the sea; and also in groups and masses in the flower-garden, generally with very happy and distinct results both as to colour and beauty of bloom, the failures being mostly from late planting.

So far as hardiness is concerned, we had no trouble in proving the absolute hardiness of the plants—the harder the winter, the happier the flowers. An “open,” changeable winter is more against them, by exciting growth, than a hard winter. They were planted in large and simple flower-beds near the house, between groups of Tea Roses, occasionally running into the more open groups. In mixed beds where there are many Tufted Pansies and other hardy and half-hardy flowers, it is easy to get places for groups of Carnations in early autumn, and it is best to get enough of each kind to give a fair expression of its colour.

On the margins of mixed borders the same Carnations may be used with excellent effect, especially for those who frequent their gardens late in the summer and autumn. Beautiful effects of colour may occasionally be had in such borders by associating with the Carnations other grey-hued plants, such as Lavender and Rosemary, also planted in bold informal groups. The soil of my own garden was a deep unctuous loam, the rainfall of the district being rather higher than that of the surrounding country, and though successful, the experiment could not be said to have been made under the best conditions.

The next made was at Shrubland Park, in Suffolk, under conditions totally different, where Lord de Saumarez entrusted me with the remodelling of this garden, which was for long perhaps the most famous "bedding-out" garden in England. I had to consider the question of its embellishment with beautiful hardy flowers, the carpet and bedding systems, white gravel and broken coloured brick, having been given up. The soil here is a light warm friable loam, delightful for gardening ; and so I determined to plant to a great extent with the Carnation, Tea Rose, Tufted Pansy, Lavender, Rosemary, and all

Carnations and Roses in front of Tudor House.

the beautiful and hardy plants obtainable. Many of the self Carnations were used, and with excellent effect. The beds were simple and bold, and we had large masses, in groups, of the finest self Carnations known.

The climate, like that of the eastern counties generally, is colder than that of Sussex in winter, but brighter in summer, and a better result was obtained than in my own garden ; so that between these two very different districts we have evidence that the Carnation can

be used (not merely the Cloves, but many other handsome forms ranging through the best colours) with in every way satisfactory effects in the flower garden.

The hardiness of the flower is proved by the natural habitats of the plant, which is found in rocky upland places in many countries of Europe, and finds a substitute for its native rocks on Rochester Castle, and at Château Gaillard, in Normandy. It never suffers from cold, though alternations of mild and hard weather will often affect it on cold soils by starting the plants into growth at a time when on the mountains they are at rest under snow.

LILY AND IRIS AND THE NOBLER SUMMER FLOWERS.—The Lily had to go too from the flower-garden of our own day ; it was too tall, and no doubt had other faults, but like the Rose it must come back, and one of the gains of a free way of flower-gardening is that we are able to put Lilies or any other flowers in it at any season that suits their planting, and that their bloom is welcome whenever it comes, and leaves us content with brown stems when it goes. If in the large flower-garden we get some diversity of surface through groups of the rarer flowering evergreen shrubs, we have for these the very soil that our Lilies thrive in, and we break up in pretty ways these groups by planting Lilies among them, gaining thereby two seasons of bloom, light and shade in the masses, and diversity of form. •

The Iris too, with its Orchid-like beauty and flower, and with a higher value of leaf than either Lily or Orchid, is in summer flowering kinds fit to grace the flower-garden with some permanent beds. Some will tell us that we may not do these things in the set flower-garden under the windows, but from an artistic point of view this is not true and very harmful. There is no flower-garden, however arid or formal in its plan, which may not be planted in picturesque ways and without robbing it of fine colour either. But to do that in the face of ugly plans we must be free to choose among all beautiful things of the open air, not forgetting the best of the half-hardy plants that enjoy our summer—Heliotrope, great Blue Salvia, not forgetting Scarlet Geranium—no more than Cardinal Flower ; annual summer flowers, too, from Sweet Pea to Stocks, Mignonette, and Pansy. A true flower-garden is one which has a place for every flower its owner cares for.

There is no reason for excluding the best of the summer flowers from Hollyhocks to Sea Hollies, choosing always the best and those that give the most pleasure, and never coarse or weedy plants. For these the true place is the shrubbery and wild garden. It was the use of these coarse and weedy plants that did much harm in old mixed borders when they were allowed to eat up everything. In those days they had not the choice of fine plants we now have, many

of the finest we have coming in our day, like the Lilies of Japan and of Western America, and also the new Water Lilies. These last are above all flowers of the summer, and whenever there is any garden water, they add a distinct and enduring charm to the summer garden. We should not only represent them, but also the other water plants of the summer; and as shown in the chapter on the water garden, many handsome plants can be grown in rich soil that often occurs near water, massed in picturesque groups, like Loosestrife, Meadow Sweets, and Japanese Iris.

Basket of fine leaved plants in the Gardens, Regent's Park.

THE SUMMER GARDEN

(continued).

"Another thing also much too commonly seen, is an aberration of the human mind, which otherwise I should have been ashamed to warn you of. It is technically called carpet-gardening. Need I explain it further? I had rather not, for when I think of it, even when I am quite alone, I blush with shame at the thought."—W. MORRIS, HOPES AND FEARS FOR ART.

CHAPTER XVI.

SUMMER-BEDDING.¹

WHEN the bedding system first came into vogue, it was no doubt its extreme brightness, or what we should now call its "gaudiness," that caused it to hold the position it did; but it was soon done to death. Only scarlet Geraniums, yellow Calceolarias, blue Lobelias, or purple Verbenas were used; and the following year, by way of a change, there were Verbenas, Calceolarias, and Geraniums,—the constant repetition of this scarlet, yellow, and blue nauseating even those with little taste in gardening matters, whilst those with finer perceptions began to inquire for the Parsley bed, by way of relief. Such a state of things could not continue; but yet the system could not be given up for several reasons—a very good one being that the great bulk of hardy flowers had been ruthlessly swept out of the garden to make room for bedding plants, and so—gardeners being, as it were, in desperate straits—the development of the bedding system began, and foliage plants of various colours were mixed with the flowers. Then followed standard graceful foliage plants and hardy carpeting plants; and now dwarf-growing shrubs are freely associated with the

¹ As the aim of this book is to show in how many ways we can make a garden beautiful apart from the bedding system, that system is described by one who carries it out with great success.

commoner types of bedding plants. Indeed, the system improved so rapidly that its most relentless opponents admitted that it had some redeeming qualities. I think, however, that the strongest reason of all for its retention is its suitability to formal or geometrical parterres.

Most people have their own notions as to what constitutes perfection of colour in bedding arrangements. This perfection I have not attained to, nor have I, perhaps, any decided preference for one colour over another; but I have very decided notions that the various colours should be so completely commingled that one would be puzzled to determine what tint predominates in the entire arrangement. This rule I have followed for years, and have had a fair amount of success in working it out. I am even still learning, my latest lesson being that, if any colour at all may predominate, it is "glaucous," that is, a light gray or whitish green. Of this colour the eye never tires, perhaps because it is in harmony with the tints of the landscape, and particularly of the lawn. To carry out my rule as to colour successfully, there are other rules which must be studied. The first is that high colours, such as scarlet and yellow, must be used in much less proportion than colours of a softer tint, for high colours overweigh all others; the second is that there must be no violent transition from one colour to another—the contrast of colours must as far as possible be avoided in favour of their gradual intermingling or harmonising; the third, that the most decided or high colours, being the heaviest, ought to occupy the most central part of the beds, or be distributed in due proportion over the entire garden, so as to ensure an even balance throughout. Further, when dealing with such colours, use them in necessary proportion, and no more, and, if you err at all, err on the side of niggardliness. By close adherence to these rules, I have for years had no difficulty in producing a harmony of colour that has worn so well as to be as welcome at the end of the season as at the beginning; for the quieter the colouring the more lasting is the enjoyment of it. And it is pleasant to observe the great advance yearly made in favour of the quieter tints—gaudiness, in bedding-out, having become the exception rather than the rule. To fully carry out the ideal of colour here advocated, a great variety of plants is needed, though not more than is generally grown where bedding-out is practised to any extent. But there is *colour* and *colour*; and those who cannot have elaborate designs and variety in colour, may have an equivalent in graceful foliage and beautiful tinted shrubs of hues varying from deep green to bright yellow, and in habit tapering, weeping, or feathery. Cyresses, Yews, Yuccas, and many others, not only associate well with all kinds of bedding plants, but with the various kinds of hardy Sedums

Saxifrages, and Veronicas. These are all within the means of most owners of small gardens, and may be arranged in bedding-out form, the shrubs for centres and panels, and the dwarf hardy plants for massing and carpeting.

SOIL AND CULTIVATION.—Next to position, soil is the most important element in the formation of a garden. In selecting a soil, two things should be kept in view—first, that an open or well-drained soil assists climate (that is, the more porous a soil is the warmer is the ground, and the better able to withstand extreme cold are the plants); and secondly, that the soil should be deep. Unless there is depth, permanent things will not flourish satisfactorily. And for less permanent things, depth of soil is just as important, as it renders unnecessary frequent dressings of fresh soil to maintain fertility. Wherever these conditions of soil exist, flower-gardening is easy; but in many cases opposite conditions have to be dealt with, and though it is hopeless to attempt to rival a naturally suitable soil, a very near approach can be made to doing so. The best soil is good loam, that is, soil of a clayey nature, but sufficiently sandy not to be sticky. Of the two states, light and heavy, the light is the better, because it is the warmer, and the more easily cultivated. In dealing with heavy soil, we must have drainage, deep tilth, and the working-in of material rendering it more porous, such as half-decayed leaves, mortar or brick rubble, charcoal, and ashes. If manure be needed, it should be used in the long straw state as it comes from the stables. One mistake frequently made with regard to soil is, that sufficient attention is not paid to the kind of plants that the soil of a given district is best suited for. Were this always remembered, we should see fewer garden failures, and the gardening in different districts would possess an interest from variety. If each possessor of a garden were to strike out a line for himself, the question of suitability of soil would soon be settled, for a man would be too observant to plant a Rhododendron in chalky soil because he had admired a friend's Rhododendrons in peaty or vegetable soil. A healthy Yew or Box is infinitely preferable to a sickly Rhododendron. The annual dressing of flower-beds is needed to get the best effects; and by all means continue it, but not to the entire neglect of hardy flowers and shrubs. These though they will do a long time without fresh food, enjoy rich top-dressings of good soil or manure; it is only by so treating them that their best effects are developed.

Flower-beds occasionally require to be deeply dug. Trenching is perhaps the proper term, but it scarcely expresses what I mean. The time to do it is when the beds are empty. I trench up my flower-beds once in two years—in autumn, after the summer bedders

are removed, and before the spring-flowering plants are put in. Stirring flower-beds creates a wider field of action for the roots, and gives them an opportunity of getting out of the reach of drought in a dry season.

COLOURED FOLIAGE.—The use of coloured and fine-leaved plants in the flower garden has increased, the causes being, the introduction of a number of suitable plants; and the weather, which has often been so wet that, no sooner have ordinary bedding plants got into full flower, than they have been dashed to pieces by the rain. Hence the desire for plants that would withstand such washings, and yet give bright effects. As regards coloured-foliaged bedding plants in particular, I do not think that if half of the bedding plants used were what are termed foliage plants, it would be out of proportion; in such coloured foliage I would include the variegated Pelargoniums, together with hardy variegated plants, such as Japanese Honey-suckles, variegated Periwinkles, Ivies, and the hardy Sedums and Saxifrages. The effects to be had from this class of plants combined with variegated and coloured-leaved plants of the tender section, and with graceful-leaved plants, are better than any to be had from flowering plants alone, as they stand all weathers without injury. One of the brightest coloured beds I have ever seen planted in geometrical form for summer effect was composed of the following plants—viz. *Sedum acre elegans*, creamy white; *Sedum glaucum*, gray; *Herniaria glabra*, green; *Mesembryanthemum cordifolium variegatum*, light yellow; and the bright orange and scarlet *Alternantheras*, all dwarf plants; the standard or central plants being *Grevillea robusta* and variegated *Abutilons*.

BEDDING AND FINE-LEAVED PLANTS.—There can be no doubt that the use of the freer-growing green and graceful fine-leaved plants has done a great deal of good. In the South of England one may grow a great variety of plants of this kind. A number of greenhouse and even of stove plants may be placed in the open air without injury, and even with benefit to themselves. But some plants put out look sickly all the summer and make no good growth. Others always look well, even in the face of damaging storms. Where the climate is against the tenderer plants, a very good selection may be made from hardy things—from shrubs, plants like the *Yucca*, or young trees cut down and kept in a single-stemmed state. But there are errors in the system from which these things cannot save us. A geometrical bed is little the less geometrical because we place green-leaved or graceful plants in the middle of it. A more radical alteration is required, and that is the abolition of geometry itself, of formalism and straight lines and of all the hateful gyrations

which place the art of gardening on a level so much lower than it deserves to occupy. We can have all the variety, all the grace, all the beauty of form, all the glory of colour of the world of flowers and plants, without any of the pattern business which is now the rule. But we cannot make much progress in this direction except by suppressing the elaborate pattern beds as much as convenient, and by letting the vegetation tell its own story. The plants we must feed and the soil we must enrich; but finicking beds, reminding one of the art on fire-shovels and such productions, are not necessary. Let us then begin by adopting a bold, large, and simple type of bed, from which the flowers will spring and make us think more of them than of the pattern. By way of variety, succu-

Stone basket of flowers and fine-leaved plants (Heckfield Place).

lents are desirable plants for dry positions and under the shade of trees, where other bedding plants do not flourish satisfactorily. From their power of withstanding storms of wind and rain, and even drought and cold, they are always in good form; and they should have a place in summer flower-garden arrangements of any extent. They harmonise well with many hardy plants that may serve as cushions for them to display their quaintness on. The term "succulent" includes all plants of a fleshy character, the more common types being the Echeverias, Cotyledons, and Kleinias. Agaves and Aloes are more rare, but are none the less valuable for bedding.

VASES.—In their proper place, and in due proportion, vases and baskets are useful in flower gardens, but they are frequently to a great extent out of all harmony with the style of the garden and its surroundings. Perhaps the tendency to over-decorate in this way is due to the geometrical plan of many gardens, when vases are placed on every pedestal and at every corner to square with many meaningless angles. Happily, this style of gardening is giving place to one in which vases and baskets can be used or not, according to the taste of the owner. When vases are used in large numbers, much may be done by planting plants of a drooping character in them; indeed, vases look most natural when trailers or climbers droop over the sides. Basket-formed beds are well suited to almost any position in pleasure-grounds; but the best of all spots is in an isolated recess on the turf, and next, in the central bed of a flower garden, where the surrounding beds are circles or ovals. I have one, the extreme length of which is 16 feet; it is 8 feet wide in the middle, stands 2 feet 6 inches above the turf, and is made of Portland cement. The principal plants in it are Marguerites, Pelargoniums, Heliotropes, Fuchsias, Marvel of Peru, Abutilons, Castor-oils, Cannas, Japanese Honeysuckles, and Tropæolums. More rustic-looking baskets would be better suited for isolation on the turf and for distant parts of the pleasure-grounds; and very good ones can be formed of wirework, lined inside with zinc, or made of barked Oak boughs instead of wirework. In baskets and vases of this kind permanent plants should be used, such as the variegated Ivies, Periwinkles, Japanese Honeysuckles, Clematises, and climbing Roses—space being reserved for flowering plants in summer and for small shrubs in winter.

SUB-TROPICAL BEDDING.—There are four types of summer flower-gardening: 1, the massing (the oldest); 2, the carpet; 3, the neutral—quiet and low in colour, mainly through use of succulents; and 4, the sub-tropical, in which plants of noble growth and graceful foliage play the chief part. To my mind, a mixture of the four classes is the very ideal of flower-gardening. It is possible to plant a formal garden in such a manner that the severest critic could not complain of excessive formality; for, after all, it is the abuse of carpet bedding that has brought it into disrepute. And justly so, for when one sees bed after bed and arrangement after arrangement repeated without end, with no plants to relieve the monotony of flat surfaces, one has good reason to protest. I have charge of a terrace garden which has to be planted with a view to obtaining the best display from June to November, and I am therefore compelled to adopt the carpet-bedding system; but

I supplement it by dotting over the surface, of necessarily formal arrangements, plants of noble or graceful aspect, such as *Acacia*,

Flower-garden at Madresfield Court

Dracæna, and *Yucca*. In such arrangements a judicious blending of beds of flowering plants, principally *Pelargoniums*, adds brightness

to the whole; but, save under exceptional circumstances, flowers, and even fine-foliaged and flowering plants, should never be put in the same bed as succulents. The colour-massing or grouping style of summer-gardening is best adapted to a terrace or parterre that is well backed up or surrounded by evergreens, as these afford relief from the glare of brilliant colours, and at the same time set them off to advantage. A few plants of fine form distributed apart over the garden, and especially in beds of glaring colours, will be found to enhance the beauty of the whole. My view of sub-tropical gardening is, that it is only suitable for positions where it can be associated with water, or for sheltered nooks and dells, where the force of the wind is broken before it comes in contact with the plants. Where such positions are not at command, it is best to choose the hardier class of noble or handsome foliaged plants, many of which may be permanently planted, such as *Ailantus*, *Rhus*, *Arundo*, *Salisburia*, *Yuccas*, and the hardy Palm (*Chamærops humilis*). Of half-hardy plants that will withstand wind there are numbers, such as *Araucaria*, *Acacia*, *Ficus*, *Cycas*, *Dracæna*, *Aralia*. In planting sub-tropical plants, care should be taken that the beds when fully furnished do not have a "bunchy" appearance. To avoid this, plant thinly, and use as undergrowth dwarfer plants, of which there are many suitable kinds.

SUMMER AND WINTER BEDDING.—Now that there is such a wealth of plants suited for furnishing the flower-beds in winter, there can be no excuse for their remaining empty after the summer-bedding plants are cleared away. Much labour is required to carry out both summer and winter bedding; but I strongly recommend this kind of decoration. There are reasons why winter bedding should be encouraged. First, winter is the season when all around us is bleak, dull, and bare—leaden skies, leafless trees, flowerless meadows, and silent woods, all of which have a depressing effect on most temperaments. It therefore behoves us to endeavour to neutralise this prevailing dulness by making our gardens as cheerful as possible. Another reason—which to those fond of summer bedding should be the great reason for adopting winter bedding—is the short period during which summer bedding continues in perfection. The thought is continually haunting one that it will fade all too soon. The adoption of winter bedding, however, in my own case obliterates such thoughts, and one looks forward to real pleasure from both systems. Nor has this been the only result. It being necessary that summer and winter bedding should meet, ingenuity had to devise means to this end. This led to my using as summer bedders many hardy plants which otherwise I should not have thought of using, but which are just as effective as

tender exotics ; nay, in some cases, more so ; and which, when planted in the spring, serve till the following spring, when they are taken up, divided, and replanted for another year.

Principal Plants used for Bedding-out.

Abutilon	Cerastium	Gladiolus	Œnothera	Santolina
Agathæa	Cheiranthus	Gnaphalium	Oxalis	Saponaria
Ageratum	Chrysanthemum	Heliotropium	Pachyphytum	Sempervivum
Ajuga	Cineraria	Hollyhock	Pansies	Senecio
Alternanthera	Coleus	Iberis	Pelargonium	Silene
Alyssum	Convolvulus	Iresine	Pentstemon	Solanum
Amaranthus	Cotyledon	Lantana	Petunia	Stachys
Anagallis	Cuphea	Leucophyton	Phlox	Stocks
Anthemis	Dahlia	Lobelia	Plantain Lily	Tropæolum
Begonia	Daisies	Matricaria	Plumbago	Tussilago
Blue Marguerite	Dianthus	Mesembryanthemum	Polemonium	Verbena
Brugmansia	Echeveria	Mimulus	Pulmonaria	Veronica
Calceolaria	Erigeron	Myosotis	Pyrethrum	Viola
Canna	Fuchsias	Nertera	Salvia	Vittadena
Centaurea	Gazania	Nierembergia

Garden near Loch Kishorn, Ross. From a water-colour drawing by F. Stainton.

Orange-trees in tubs, Tuileries.

THE SUMMER GARDEN BEAUTIFUL

(continued).

CHAPTER XVII.

PLANTS IN VASES AND TUBS IN THE OPEN AIR.

IN old days and for ages it was not easy—not always possible to many—to have a garden in the open air. The need of mutual aid against the enemy threw people into closely-packed cities, and even small towns in what might seem to us now the open country. In our own country, free for many years from external enemies, we have spread our gardens over the land more than others; but in France farmers still go home to a town at night from the open, and often homeless and barnless plain, where they work. And so it came that the land of Europe was strewn with towns and cities, often fortified, and many of those most able to enjoy gardens had to do the best they could with little terraces, walls, tubs by the door, and even windows. And often in Italy and other countries of the south of Europe and north Africa we see beautiful plants in tubs, on balconies, on flat roofs, and every imaginable spot where plants can be grown in a house in a street. Happily, in our country, there is less need nowadays for the garden in tubs; but the custom is bound up with ways of growing plants which are still essential to us in some cases.

In many gardens plants in tubs are often used without good reason, for example, when hardy evergreen trees are grown in tubs, and in front of the Royal Exchange in London there are hardy Poplars in tubs! But some may pursue this sort of gardening with advantage

—first, those who have no gardens, and, secondly, those who have and who may desire to put half-hardy bushes in the open air, for example Myrtle or Oleander or Orange, which may not be grown out-of-doors throughout the year, and which yet may have fragrance or other charms for us. Many plants can be grown in the open air in summer which will not endure our winters, but which placed in a cellar, dry room, or cool greenhouse would be quite safe, and might then be put out-of-doors in summer. This way is commonly the case abroad with large *Datura*, Pomegranate, and Myrtles, and a great variety

Vase plants at Turvey Abbey.

of plants such as we see put out in tubs in certain old palace gardens, like those of Versailles. What was called the orangery, which has almost disappeared from English gardens, was for keeping such plants alive and well through the winter, and in old times, if not now, had a very good reason to be.

There are many charming plants too tender for the open altogether that are happy in tubs, and may be sheltered in an outhouse or greenhouse through the winter—such as the Pomegranate, the Myrtle, and *Romneya* (the White Bush Poppy). The blue African Lily is often happy in tubs, its blue flowers when seen on a terrace

walk having a distinct charm, but in England, generally, it must be kept indoors in winter.

Excellent use may be made of the great handsome oil-jars, which are used to bring olive oil from Italy to London, and the best things to put in them are half-hardy plants, which can be taken intact into the cool greenhouse or conservatory at the approach of frost. Even Seakale-pots can be filled with half-hardy plants, as scarlet Pelargoniums, which have a good effect in them. In some rich and moist soils the Pelargonium all grows to leaves and does not flower, and in such cases we can humour it into good bloom by growing it in pots or vases in the light soil that suits the plants.

ORANGE TREES IN TUBS.—One of the most curious examples of routine and waste I saw in the Tuileries gardens on the last day of September, 1896, when the Paris people were preparing for the Czar, and among their labours was the refurbishing of the old Orange trees in these gardens. There were a regiment of them set all along the gardens at regular intervals in immense and costly tubs, involving herculean labour to move in and out of the orangery. One might suppose this labour to be given for some beautiful end in perfecting the flower or fruit of the plant, but nothing of the kind; the trees being trained into mop heads, and when the plants make any attempt to take a natural growth they are cut sharply back, and often have an uglier shape than any mop. The ground was strewn with shoots of the orange trees which had been cut back hard. When the tree was in poor health, as it was often, the dark stems were the most visible things seen against the blue sky. This costly and ugly work is a survival of the time when the "golden apples" were a novelty, and it was not so easy to go and see them growing in the open air as it now is, and so what was worth doing as a curiosity hundreds of years ago is carried out still. Since the idea of growing these trees in such an ugly fashion arose we have had a noble garden flora brought to us from all parts of the earth, and it would be easy to take our choice of different ways of adorning this garden in more artistic ways with things in the open ground, and of far greater beauty. If this thing at its best and done with great cost has such a result, what are we to think of the English imitations of it, such as those at Panshanger, in which hardy shrubs are used, like Portugal laurels, and sham tubs placed around them?

I saw the vast orangerie terrace at Sans Souci in July 1897, and was deeply struck by its "ornaments" in tubs; the branches of the poor distorted trees like black skeletons against the summer sky showing that even with all the aids of artifice, no good result with tubbed oranges is got in northern Germany no more than in northern France. In the warmer south a little better result may be

had from trees in tubs, but a few days' journey brings us to orange trees growing as freely and gracefully as willows in Tunis and Algeria and the countries round the Mediterranean.

THE POET'S LAUREL IN TUBS.—The Laurel is a winter-garden

The Blue African Lily (*Agapanthus umbellatus*) in its summer quarters.

plant over a large area of northern and central Europe, where the true Laurel (our gardeners and nurserymen erroneously give the name to the vigorous evergreen Cherry, of which we have too much in England) is a tender evergreen, requiring the protection of a house

in winter, it is grown to a vast extent in tubs to place in the open garden, on terrace, or in courtyard during the summer. The cultivation of the Laurel for this purpose is carried on to such an extent that miles of handsome trees in various forms may be seen in one nursery. There is no plant more worthy of it than the true Laurel, which we usually call the Sweet Bay, and those who cannot enjoy the plant out of doors, as we may in many of the warmer districts of the British Isles, would do well to grow it in tubs, in which state they may enjoy it both in winter and summer. It would be worth while growing it in the same way in cold and northern districts, where it is killed or much hurt in winter, and this sometimes occurs in parts of southern England. Near the sea it may flourish, and twenty miles inland be cut down to the ground, or so badly hurt that it gives no pleasure to see. In gardens where one may have fine groups of the tree on sunny slopes, we should never think of it in any other way, and no evergreen tree gives us more beauty when old and untrained and unclipped. Growing in tubs, the need of storing away in winter, often in a small space, and keeping the plant in health in boxes not too heavy make some training necessary, and the shapes common in Continental gardens are as good as could be obtained under the circumstances, while the health of the bush in these artificial conditions is singularly good. It is often surprising to see what fine heads arise in good health from small tubs, the soil being helped now and then by a little weak liquid manure water not oftener than once a week. Once the plants are stored for the winter, sometimes in sheds with little light, it is best to give no water during the winter months. In the same way we may also enjoy the *Laurus-tinus* in districts where it is killed by frost out of doors which in hard winters happens, even in the southern countries which is all the more unfortunate as this shrub and its varieties flower so prettily. If grown well in tubs, we may flower them in the cool house and place them out of doors in summer.

CULTIVATION OF PLANTS IN ORANGERIES.—The old way of growing plants in the orangery is still much more practised in France than with us, and a few words as to the mode of culture in use may be useful. Though the orange from which the structure gets its name is not often happy in it, other plants like the Myrtle, Pomegranate, African Lily, and Hydrangea may often be kept with safety through the winter in such a house.

Among shrubs we have the Pomegranate, Oleander, Orange, Fuchsia, Myrtle, Camellia—in fact, all those that are commonly placed for shelter in greenhouses during winter. For shrubs like these the year has two seasons: (1) that during which they are placed for shelter in the orangery or the cool house, or, in the absence

of these, some place where the conditions of temperature, air, light, and construction are similar ; and (2) the summer season, when they are taken out into the open air and set in variously exposed situations in order that they may mature, grow, and bloom.

WINTER CULTIVATION.—In October the shrubs are removed to warm corners. The shedding of the leaf in some plants gets rid of one difficulty in their cultivation, that of their preservation during the winter, as the summer-leaving kinds are so easy to store away if the frost be kept out. Half-hardy evergreen shrubs require to be kept in a well-lighted house, but shrubs, which, like Fuchsias and Pomegranates, shed their leaves in autumn, can during winter be conveniently kept in any dark place, such as a cellar or warm shed,

Orangery, Holm Lacey, Hereford.

and in their case watering will scarcely be required. As a general rule, for orangery shrubs, the temperature may be such as will exclude frost ; some kinds, however, will be found to withstand a hard frost like the Oleander. Although the summer-leaving shrubs scarcely need water at all during the winter, it is needed for evergreen shrubs. Yet even here we shall have to make a distinction. For instance, the Orange-tree requires more water than the Myrtle, and the Myrtle more than the Proteads. In the majority of orangeries the plants are watered every two or three weeks during winter, and daily after the month of April, and those who cultivate Orange-trees are able to tell us that want of water, which is always prejudicial to this tree, may even result in a complete loss of leaf. There are two plans for

avoiding the ill effects of too-abundant watering, the former of which is to plant in soils which allow the water to run away freely; the second is to use boxes with sides that can be opened from time to time to enable the roots to be seen.

SUMMER CULTIVATION.—In May, and, if possible, during cloudy weather, all plants in the orangery are transferred to sunny and sheltered places outside. The pots, if small, will have to be plunged, as this keeps the roots in good condition. In this, as in other cases, where the plants are in pots or boxes, we shall have occasionally to give some manure, and weak liquid-manure gives good results. This is the Belgian method, and one of its effects is that it enables us to postpone the repotting of the plants and permits of the employment of smaller boxes and vases as compared with the size of the trees. So in the nurseries of Ghent and France, too, we often see Sweet Bays with heads more than a yard in width, whilst the tubs they are in scarcely measure twenty inches in diameter, and under such conditions the plants thrive for years without enlargement of the tubs or change of soil, thanks to feeding with liquid-manure.

The same things may be said of the plants in the cool house, or any house in which we store almost half-hardy Palms, Cycads, Tree-Ferns, or other plants which may with advantage pass a few months in the open air in summer. All of these, in fact, may be treated much as the Blue African Lily is treated, allowing always for the differences between evergreen shrubs, like the Orange, Eugenia, and Myrtle; herbaceous plants, like the sweet-scented Plantain Lily, grown in pots and in courtyards in France, and summer-leaving shrubs like Fuchsia, Justicia, and Pomegranate.

AN AMATEUR ON PLANTS IN TUBS FOR THE FLOWER GARDEN.—The need of the orangery strictly so-called, is now lessened by two causes; (1) our rich, hardy garden-flora with many things as lovely as any that grow in the tropics; (2) the nearly universal adoption of the greenhouse, in which many plants find shelter in winter that in old times would have been housed in the orangery. But notwithstanding these changes there are still some plants worth while to keep over the winter in any convenient way, and the following extract from *The Garden* shows how a good amateur gardener manages them as an aid to her flower-gardening.

“A great deal of real gardening pleasure is to be had from growing plants in pots and tubs or in vases and vessels of various kinds both in small and big gardens. I use large Seakale pots, when they are no longer wanted for the Seakale, by turning them over, putting two bits of slate in the bottom of the pot, some drainage, and a few lumps of turf, and then filling up with good garden mould. Another useful pot is one called a Rhubarb pot. If you live near a pottery they

will turn you out almost any shaped pot you fancy. Flat ones like those used by house painters, make a pleasant change, especially for small bulbs. Petroleum casks cut in two, burnt inside, then tarred and painted, are invaluable tubs. I use butter-casks treated in the same way, and have some little Oak tubs in which bullion came from America. These are very strong, and some water-loving plants do much better in wood, since the evaporation in summer is not nearly so rapid as from the earthenware. That is an important thing to remember both as regards sun and wind. If the plants are at all

Plants in Italian oil-jars, Woodlands, Surrey.

delicate and brought out of a greenhouse, the pots, when standing out, ought to be either quite sunk into the earth or shaded. This cannot be done in the case of pots placed on a wall or terrace or on a stand, and so they must not be put out in the open till the end of May. Constant care about watering is also essential. Even in wet weather they often want more water if the sun comes out, as the rain wets the leaves, but hardly affects the soil at all. On the Continent, where all kinds of pot cultivation have been longer practised than in England, flower-pots are often glazed outside, which keeps the plants much moister because of less evaporation, and makes less necessity for

frequent watering. The large red jars in which oil is still conveyed from Italy, covered with their delightful coarse wicker-work, are useful ornaments in some gardens. They are glazed inside, and boring a hole in the bottom of them is not very easy work. They have to be more than half filled with drainage, and plants do not do well in them for more than one season, as the surface of the earth exposed at the top is so small. In old days the oil merchants in the suburbs of London used to cut them in two vertically, and stick them against their houses, above their shops, as an advertisement or ornament. The enthusiastic amateurs will find that they get two very nice pots by sawing them in half horizontally just below the sham handles. The top part when reversed requires the same treatment as was recommended for the Seakale pots."

WHAT TO GROW.—The first rule, I think, is to grow in them those plants which do not grow well in your own local soil. To put into a pot what is flourishing much better in a bed a few yards off is, to my mind, a mistake. I grow large old plants of Geraniums in the open ground, and they are kept on in the greenhouse from year to year, their roots tied up in Moss, and crowded into a pot or box with no earth and very little water through the winter; they can be kept in a cellar or spare room. Early in April they are potted up and protected by mats in a pit, as I have no room for them in the greenhouse. This causes them to be somewhat pot-bound, and they flower splendidly during the latter part of the summer. Marguerites, the yellow and the white with large leaves, are good pot plants early in the year, far prettier than the narrow-leaved kinds. A double Pomegranate I have had for many years in a pot, and if thinned out in the summer it flowers well; also two small Orange trees. The large old-fashioned Oak leaved, sticky Cape Sweet Geranium, which has a handsomer flower than the other kinds, makes a very good outdoor pot plant. Fuchsias, especially the old-fashioned fulgens, are satisfactory. Carnations Raby Castle, Countess of Paris, and Mrs. Reynolds Hole I grow in pots, and they do well; they must be layered early in July, and answer best if potted up in September and just protected from severe frosts. In fine summers, Myrtles and Oleanders flower well with me in tubs, not in the open ground. I treat Oleanders as they do in Germany—cut them back moderately in October and dry them off, keep them in a coach-house, warm shed, or wherever severe frosts will not reach them. When quite dry they stand a moderate amount of frost. Then in March they are brought out, the surface is stirred and mulched, they are taken into a greenhouse and brought on a bit. In May they are thickly covered with good, strong horse manure and copiously watered. At the end of the month they are stood out in the open on a low wall. During May, June and July

they cannot have too much water ; after that they want much less, or the leaves turn yellow and drop off. Some years I grow *Solanum jasminoides* over bent wires in pots ; grown thus it is pretty. The

American Aloe. Example of greenhouse plants set in open air in summer. Engraved from a photograph taken in Knightwick Rectory Garden, Worcestershire.

variety of plants which can be tried for growing in pots out of doors in summer is almost endless. Love-lies-bleeding (*Amaranthus caudatus*) is an annual but if sown in January and very well grown on as a fine

single specimen plant, it looks handsome and uncommon in a green glazed pot or small tub. Nothing I grow in pots is more satisfactory than the old-fashioned *Calceolaria amplexicaulis* ; it does not grow to any perfection with me in the beds, the soil being too dry, but potted, it makes a splendid show through the late summer and autumn months. The shrubby *Veronica speciosa rubra*, and *V. imperialis*, I grow in pots because they flower beautifully in the autumn, and the drowsy bumble-bees love to lie on them in the sunshine when *Sedum spectabile* is passing away. They are not quite hardy with me, as they cannot withstand the long, dry, cold springs. This in itself justifies the growing them in pots ; in mild, damp districts they are large shrubs. The blue *Agapanthus* everybody grows in tubs. The plants have to be rather pot-bound and kept dry in the winter to flower well, and as the flower-buds form they want well watering and a weekly dose of liquid manure. *Hydrangeas* I find difficult to grow when planted out ; the common kinds do exceedingly well in tubs in half shady places if they get a good deal of water. Large standard *Myrtles* I have had covered with bloom in August in tubs. My large old plant, which I had had many years, was killed last spring by being turned out of the room it had wintered in too early, because I came from London sooner than usual. The great difficulty in small places is housing these large plants in winter. They do not want much protection, but they must have some, and the death of large old plants is grievous.

Woodlands, Surrey.

M. T. E.

Spray of Myrtle.

Sheltered dell, with tree ferns and stove plants placed out for the summer (Battersea).

CHAPTER XVIII.

BEAUTY OF FORM IN THE FLOWER GARDEN, AND HEREIN ALSO OF THE SUB-TROPICAL GARDEN.

THE use in gardens of plants of fine form has taught us the value of grace and verdure amid masses of flowers, and how far we have diverged from artistic ways. In a wild state brilliant blossoms are often usually relieved by a setting of abundant green, and where mountain or meadow plants of one kind produce a sea of colour at one season, there is intermingled a spray of pointed grass and leaves which tone down the colour masses.

We may be pleased by the wide spread of colour on a heath or mountain, but when we go near we find that it is best where the long moss cushions itself beside the ling, and the fronds of the Polypody come up around masses of heather. If this be so on the hills, a like state of things is more evident still in the marsh or wood. We cannot attempt to reproduce such conditions, but the more we keep them before our eyes the nearer shall we be to success, and we may have in our gardens (without making wildernesses of them either) all the light and shade, the relief, the grace, and the beauty of natural colour and form too.

A recent demand for £2,000 for the building of a glass house for Palms for the subtropical garden of Battersea Park here throws light on the costly system of flower gardening in this and other

Hardy Palm in the open, Cornwall.

public gardens. It may be noted that this is only a small part of the cost of keeping the tender and half-hardy plants in a glass nursery and not a demand of money for a Palm-house which the public might enjoy ; but was to be part of the expenditure on some glass-sheds which they never see, and which were merely to grow the plants to be put out for a few months in summer.

In our flower gardens Palms can only be seen in a small state ; nor can they, as shown in pots and tubs in Battersea, give one any idea of the true beauty of the Palm on the banks of the Nile or the Ganges. But, worse than this, the system leads to the neglect of the many shrubs and trees of the northern world, which are quite as beautiful as any Palm. The sum mentioned as the cost of the house for young Palms would go far to plant Battersea Park with the finest hardy shrubs and trees. The number of these public gardens that are being opened in all directions makes it all the more important that the false ideal they so often set out should be made clear. I do not say we should have none but hardy plants in public gardens, but the concentration of so much attention, and of the greater part of the cost, on such feeble examples of tropical plants as can be grown in this country set out for a few months in the summer has a very bad effect. The lesson all connected with gardening in any way want most to learn is that the things which may be grown to perfection in the open air in any country are always the most beautiful, and should always have the first place in their thoughts.

It would be much better in all ways to place a like artistic value on everything that stands in the open air in a garden, and regard all parts of the garden as of equal importance without wholly doing away with tropical plants, at least with those that can be grown with advantage in our country.

Looking round the London parks we see much waste in trying to get effects of form from Palms and various tender plants, strewn in all directions in Hyde Park, often dotted about without good judgment, and marring the foreground of scenes that might be pretty. Where this is done there is rarely any attempt to get effects of fine form from hardy trees, shrubs, and plants, which is a much simpler and easier process than building costly glasshouses to get them.

For our gardens, the first thing is to look for plants that are happy in our climate, and to accustom ourselves to the idea that form may be as beautiful from hardy as from tender things. Many tropical plants, which we see in houses cut down close and kept small, would, if freely grown in the open air in their own country, be no more striking in leaf than the hardy Plane or Alantus. Many plants that are quite hardy give fine effects, such as the Aralias, herbaceous and shrubby. Aristolochia among climbers ; Arundo,

Pampas Grass in a Sussex garden (Chichester).

hardy and very pretty beside water ; Astilbes, rough herbaceous plants which can be put anywhere almost ; the hardy Bamboos of Japan and India, which are increasing in number, and are very distinct and charming, and often rapid growers in genial parts of the country, especially near the sea. A considerable number will probably be found hardy everywhere. The large leaved evergreen Barberries are beautiful in peat soils, and, grouped in picturesque ways, effective for their noble leaves as well as flowers.

The Plume Poppy (*Bocconia*) is handsome for its foliage and flowers, even in ordinary soil. A great number of the larger hardy Compositæ (*Helianthus* *Silphium*, *Senecio*, *Telekia*, *Rudbeckia*) are fine in leaf, as are some of the Cotton Thistles and plants of that family. The common Artichoke of our gardens and its allies are fine in form of leaf and flower, but apt to be cut off in hard winters in some soils. The Giant Fennels are most graceful early leafing things, thriving admirably in sandy and free soils. Plantain Lilies (*Funkia*) are important, and in groups their foliage is excellent. The Pampas Grass is precious where it grows well, but in many districts is gradually killed by hard winters. Where it has the least chance, it should be planted in bold masses.

The great leaved Gunneras are superb near water and in rich soil. The giant cow parsnips are effective, but apt to take possession of the country side, and are not easily exterminated, and, therefore, should be put in with a sparing hand in islands and rough places only. The large Indian evergreen Rockfoils are fine in form, and in their glossy foliage are easily grown and grouped in picturesque ways, and they are very hardy. In sandy and free soils a handsome group of beautiful leaved things may be formed of *Acanthus*. The new water lilies will help us much to fine foliage, especially in association with the many graceful plants that grow in and near water, as are also certain hardy ferns which may be grown near water, like the Royal Fern, which in rich soil and shade makes leaves as fine as any tropical Fern. In southern districts the New Zealand Flax is effective in gardens, and the great Japan Knotworts (*Polygonum*) are handsome in rough places in the wild garden, and better kept out of the flower garden. Some of the Rhubarbs, too, are distinct and handsome, and very vigorous by the waterside, where the great water dock often comes of itself. It is a stately genus, and though we may not find room for many in the garden, it may be easy to do so by the water side or in rich ground anywhere.

With our many fine-leaved plants from temperate and cool climes it is possible to have beautiful groups of hardy fine-leaved plants, for trees like the *Ailantus* and *Paulownia* make almost tropical growth if cut down close to the ground every year. We have also the hardy Palm (*Chamærops*), the *Yuccas*, and graceful Bamboos, and Siebold's

Plantain Lily (*Funkia*), and plants of a similar character. Amongst those annually raised from seeds, and requiring only the protection of glass to start them, we have much variety from the stately Castor-oil-plant to the silver *Centaurea*. Although tender plants in pots are effective in summer in special positions, plants that cannot stand out-of-doors from the beginning of June until the end of September can hardly be called fit for summer gardening. Among the most suitable are several kinds of Palm, such as *Seaforthia elegans*, *Chamærops excelsa*, and *C. humilis*; *Aralias*, various; *Dracænas*, do.;

Group of house plants placed out for summer. Harrow Lodge, Dorking.

Phormium tenax and its variegated form; *Yucca aloifolia variegata*, *Ficus elastica*, and some *Eucalyptus*. *Erythrinæ* make fine autumn groups and are brilliant in colour, and useful for lighting up masses of foliage.

The hardiest Tree Fern, *Dicksonia antarctica*, looks well when plunged in shady dells with overhanging foliage for shelter; and several varieties of dwarf Ferns, such as the Bird's-nest Fern, are admirable for undergrowth to this Fern. Plants raised from seed will, however, usually form the majority, owing to the lack of

room under glass for many large plants. Of plants raised from seed the most useful are Cannas, which may be taken up and wintered under glass, or securely protected in the soil. Most of the tall light green-foliaged varieties flower freely and make excellent centres for groups, while the dwarf bronze-foliaged sorts are good for vases. Solanums have also been effective in the south. The spiny-leaved *S. robustum*, the elegant cut-leaved *S. laciniatum*, and *S. Warscewiczii* make good single specimens, or edgings to groups of taller plants. Wigandias, *Ferdinanda eminens*, and *Melianthus major* are all useful; and *Acacia lophantha*, *Amaranthus*, *Cineraria maritima*. Bocconias, with their tall spikes of graceful flowers and noble foliage, are very effective and permanent plants and several varieties of *Rhus* or Sumach have good foliage, *Rhus glabra laciniata* among them.

As to arrangement, the best beds or sets of beds are those of the simplest design. Shelter is a great aid, and recesses in shrubberies or in banks clothed with foliage form the most fitting background for beds or groups to nestle in. Avoid Musas or Caladiums, the leaves of which tear to shreds if winds cannot be shut out, and also plants that look unhappy after a cold night or two. Make the most of plants that grow under nearly all conditions, and use any dell overhung by trees for half hardy fine-leaved plants. A garden where each plant spreads forth its delicate foliage will form a pleasant change from brilliant bedding plants, or severely geometric carpet beds.—J. G.

Better effects may be obtained from hardy plants only than from tender ones. There are the Yuccas, hardy, and unsurpassed by anything of like habit grown in a hothouse; the Arundos, conspicuous and donax; fine hardy plants like *Crambe cordifolia*, *Rheum* in variety, *Ferula* and umbelliferous plants, as graceful as tenderest exotics. Then we have a hardy Palm that through all our recent hard winters has preserved its health and greenness wherever its leaves could not be torn to shreds by storms.

As an example of fine form from hardy plants, I cannot do better than give the New Zealand Reed (*Arundo conspicua*). This handsome Grass produces its blossom-spikes earlier than the Pampas, and is more elegant in habit, the silky white tufts bending like ostrich plumes at the end of slender stalks. It is best adapted to a sheltered corner, where it is protected from rough winds, and does admirably in the cold and warmer districts, but, like the Pampas Grass, not very hardy in cool and inland districts.

As to tender plants in the open air, it would be difficult to give a better illustration than the stately *Musa Ensete* in Berkshire. In sheltered nooks in the southern counties this plant makes a very fair growth in the summer. In 1877 I was struck with its

health and vigour at Park Place, Henley-on-Thames. Mr. Stanton, the gardener, raised a batch from seed, and it was surprising what fine plants they became in fifteen months. The plant is quite as effective in a conservatory in winter as out-of-doors in summer.

In the illustration of a bold mass of fine leaved plants near Hyde Park Corner, we see some of the best features of recent fine-leaved gardening. It had a great Abyssinian Plantain in the middle, and was fringed by a few sub-tropical plants, and edged by an extra-

Fine-leaved herbaceous plant (Plantain Lily).

ordinary fringe of the fine hardy Siebold's Plantain Lily, long-enduring in beauty. The reason of the success of this bed is clear; it was not a finicking angle or a wormy scrawl, but a bold circle, and presented no confusion to the observer, who simply saw the plants rising in a well-defined group from the turf. It was by itself, could be seen unopposed, and was not hedged in by a lot of other beds. Lastly, the plant forms were strong and well selected, and contrasted well with the ordinary tree vegetation near. The way in which the Plantain Lilies began early in the year to adorn the spot, and continued

to do so throughout the whole summer and autumn, was a pleasure to see. The drawing was made about the end of September, shortly after some heavy storms which tore the *Musa* a little, but the effect remained excellent till October.

YUCCAS IN GROUPS.—Wherever space can be afforded, hardy *Yuccas* should be grown, for few hardy plants are so distinct in foliage and manner of growth; but they appear to best advantage arranged in bold groups, near trees and shrubs, and forming a harmonious contrast to them. Perhaps the best situation is a sloping ground fully exposed to the mid-day sun, and backed by evergreens. If allowed space for development, they will every year add beauty to the place. The handsome spikes of their large cream-coloured flowers are extremely effective, especially when relieved by a background of verdure. *Yuccas* like a well-drained soil, and thrive on a subsoil of pure chalk, and they delight in full exposure to the sun, and enjoy shelter from rough winds. Hence the advisability of planting them near trees or shrubs.

In grouping *Yuccas*, a better effect is obtained if some of the specimens have the head of their foliage from 3 feet to 6 feet above the soil. These tall plants should not, however, be placed in a back line, but some should be allowed here and there to advance into the foreground, some of the smaller specimens nestling at their feet. The effect of a group thus arranged charms by its irregularity and quaint beauty.

Among the more tender plants, we must choose such as grow healthily in sheltered places in the warmer parts of England. The kinds with stout evergreen foliage, such as the New Zealand Flax and the hardier *Dracænas*, will be as effective here as they are around London and Paris, and to them the northern gardener should direct his attention. Even if it were possible in all parts to cultivate the softer-growing kinds to the same perfection as in the south of England, it would not be always desirable, as they cannot be used indoors in winter. The best are the many evergreen plants that stand out in summer without injury, and may be transferred to the conservatory in autumn, to produce through the cold months as fine an effect as in the flower garden in summer. One kind of arrangement in particular must be guarded against. I mean the geometro-picturesque one, which is seen in some parts of the London parks devoted to sub-tropical gardening. The plants are often of the finest kinds and in the most robust health, and all the materials for the best results are abundant; yet the result is not artistic, owing to the needless formality of the beds and the heaping together of many specimens of one kind in long masses straight or twisting, with high raised edges of hard-beaten soil.

The first and the last word to say about form is, that we should

try and see beauty of form everywhere among plants that suit our climate. The willows of Britain are as beautiful as the olives of Italy, or the gum trees as seen in Algeria and the South of France, so that, although the sub-tropical as a system of flower gardening has failed throughout our country generally, and can only be carried out well in the south of England and the warmer countries of Europe, nevertheless we need not deprive ourselves of the enjoyment of the finest forms near and in our gardens. The new Water Lilies take us to the waterside, and there are many good forms even among our native flowers and weeds. The new hardy Bamboos are also very graceful and most distinct, of which several of the highest value promise to be

Gunnera and Bamboo (Fota, co. Cork).

hardy in our country. What can be done with them, and a few other things, we can now see in the Bamboo garden at Kew, at Batsford Park, and other places. The common hardy Japan Bamboo has thriven even in London, and it is not only waterside or herbaceous plants of all kinds we have to think of but the foliage of trees, which in many cases is quite as beautiful as that of the dwarfier plants. The hardy trees of North America are many of them beautiful in foliage, from the Silver Maple to the Scarlet Oak, and Acacias from the same country have broken into a number of beautiful forms; some are as graceful as ferns. These trees, if obtained on their own roots, will afford us fine aid as backgrounds. The Aralias of Japan and China are quite hardy and almost tropical in foliage,

while the beauty that may be got from ferns is very remarkable indeed, our native Royal Fern being of noble proportions when well-grown in half-shady and sheltered places in deep soils, as at Newick Park, and the same is true of all the bold American ferns, plants too often hidden away in obscure corners, whereas the boldest of them should be brought out in our cool British climate to form groups on the lawn and turf. This applies also to our larger native ferns, which, massed and grouped away from the old-fashioned fernery, often tell better. In this way they are used in some German gardens. We do not illustrate them in this chapter, because the reader has simply to turn to the chapter on the Fern garden to see some of their fine forms.

If any one objects that some of the plants mentioned in this chapter are coarse, such as the great leaved composite, the answer is that, on the other hand, many of them are refined and delicate, such as the Acacias, Acanthus, Asparagus, Bamboos, and Ferns. Great Reed, Pampas and Bulrush evergreen, Barberry, and graceful Cypress, Cedar and Fir. Plaintain-Lily and Adams needle—not forgetting the fine foliage of the Tea Rose.

During recent years the most graceful things and of permanent value in our gardens are Bamboos.

THE BAMBOO GARDEN AT KEW.—“The Bamboo garden formed a few years ago at Kew has proved so well adapted for the plants, that a few notes as to its position and soil may be of value to the numerous readers who intend to grow the Bamboos. A position was selected in the middle of a wood near the Rhododendron dell, and taking advantage of a hollow already existing there, the ground was lowered some 5 feet or 6 feet below the surrounding level. A belt of shrubs on the north and east sides, between the trees and the Bamboos together with the low level, affords them a shelter almost as perfect as can be furnished out of doors. Even the bitterest north-easter loses a good deal of its sting before it reaches these Bamboos. What the cultivator of Bamboos has most to fear is not a low temperature merely—most of the Bamboos will stand 20° or 25° of frost in a still atmosphere—but the dry winds of spring.

Bamboos like best a free, open, sandy loam, and the greater part of the soil at Kew is poor and sandy; but there is, in one part, a belt of good stiff loam extending for a few hundred yards, and it is on the border of this that the Bamboo garden is situated. At the commencement the ground was trenched to a depth of 3 feet, and enriched with leaf-soil, and where necessary lightened with sandier soil. These plants can scarcely be over-fed, and in well-drained soil can scarcely be over-watered, and an annual mulching with rich manure is of the greatest advantage.

In regard to transplanting, the best time to plant is in spring, when

growth begins. The renewal of growth is indicated by the unrolling of the young leaves, which may be in April or May, according to the winter. Bamboos are very difficult to kill outright, but treated improperly they are apt to get into a stunted condition, which it takes them a long time to recover from. I would advise those who wish to try these plants to obtain them from the nurserymen in autumn or winter, if they have been grown in pots, and to give them greenhouse treatment till the end of May, when they can be planted out in a growing state; but, on the other hand, if they have been planted out in the nursery ground, not to have them sent off till the end of April or later, when they can be set out at once. A yearly clearing out of the older, worn-out stems, dead leaves, &c., prevents that choked-up appearance one

In Bamboo garden, Kew.

trees so often in ill-tended Bamboos, and whilst giving a lighter and more graceful aspect to the plants allows freer play to the young growths.

Such, briefly, has been the system of cultivation pursued at Kew, and that it is the right one is shown by the luxuriant growth of almost all the kinds—so luxuriant, indeed, as to be rather embarrassing in the somewhat restricted space occupied by the collection. The Bamboo garden was made in 1892, and the following are the lengths of a few of this year's growths, exceeded, of course, by specimens in older collections and in warmer parts of the country, but of some interest, perhaps, as showing the rate of growth of Bamboos in a district which has not proved particularly favourable to the growth of tender shrubs

as a rule : *Arundinaria Simoni*, 17 feet ; *Phyllostachys viridi-glaucescens*, 17 feet ; *P. Henonis* 15 feet ; *Arundinaria nitida*, 13 feet ; *A. japonica*, 12 feet ; *Phyllostachys aurea*, 12 feet ; *P. nigra*, 12 feet ; *P. fastuosa*, 11 feet 6 inches ; *Arundinaria Hindsii*, 11 feet 6 inches ; *Phyllostachys Boryana*, 9 feet ; *P. Castillonis*, 8 feet 6 inches ; *Arundinaria anceps*, 7 feet 3 inches *A. tessellata* 4 feet 6 inches ; *A. Fortunei* (variegated), 4 feet.

Bamboos are not all of equal merit, but some of them are the most beautiful of evergreens. Just now when Christmas is at hand, and the days are at their shortest and darkest, there is nothing out of doors that equals the best Bamboos in the fresh greenness and beauty of their foliage.—W. J. B."

Plants hardy or half-hardy, with fine Foliage or Form, for use in British Gardens.

Acacia	Cannabis	Dracæna	Ligularia	Ricinus
Acanthus	Carduus	Equisetum	Megasea	Rumex
Agave	Carex	Eryngium	Melia	Sagittaria
Ailanthus	Carlina	Eucalyptus	Melanthus	Scirpus
Alsophila	Carludovica	Farfugium	Molosperrum	Seafortia
Amaranthus	Caryota	Ferdinanda	Montagnæa	Senecio
Andropogon	Centaurea	Ferula	Morina	Silphium
Aralia	Chamædorea	Ficus	Mulgedium	Silybum
Aristolochia	Chamæpeuce	Funkia	Musa	Solanum
Artemisia	Chamærops	Gourds	Nicotiana	Sorghum
Arum	Cordyline	Gunnera	Nuphar	Struthiopteris
Arundo	Corypha	Gynerium	Onopordon	Thalictrum
Asparagus	Crambe	Gymnocladus	Osmunda	Tupidanthus
Asplenium	Cucurbita	Hedychium	Paulownia	Typha
Astilbe	Cyathea	Helianthus	Petasites	Uhdea
Bambusa	Cycas	Heracleum	Phoenix	Veratrum
Berberis	Cynara	Inula	Phormium	Verbascum
Bocconia	Cyperus	Jubæa	Polygonum	Wigandia
Bupthalmum	Datisca	Kochia	Polymnia	Woodwardia
Caladium	Dicksonia	Kœlreuteria	Rheum	Yucca
Calla	Dimorphanthus	Latania	Rhus	Zea
Canna	Dipsacus

Bed of fine-leaved plants in Hyde Park. From a sketch by H. G. Moon.

Torch lilies (Longleat).

CHAPTER XIX.

THE FLOWER GARDEN IN AUTUMN.

Now who hath entered my loved woods,
And touched their green with sudden change ?
Who blanch'd my Thistle's rosy face,
And gave the winds her silver hair ?
Set Golden-rod within her place,
And scattered Asters everywhere ?
Lo ! the change reaches high and wide,
Hath toned the sky to softer blue ;
Hath crept along the river side,
And trod the valleys through and through !

RECENT additions to our garden flora have made such a difference that the flower garden in the autumn may be even more beautiful than that of the spring, rich as that is in flowering trees and shrubs.

The use of half hardy, or bedding plants, which are often showy in autumn, gives a certain amount of colour which is very precious ; and the introduction of many beautiful hardy flowers gives us the means of making the autumnal garden very fine in colour effects. It would be easy to give the names of many things that are to be found in flower in gardens in autumn, but that is not nearly so important as getting an idea of many of the nobler class of plants which may be effectively used at that time, no matter almost what the season may be. Half hardy plants for the garden depend very much on the weather of the summer, and certain seasons are so much

against them that they make no show ; but this cannot be said of the hardy flowers of nobler stature and beauty, which are so well fitted for our climate, like the many Sunflowers. Certain plants may depend for success on soil and situation, or even climate, even when they are hardy as the Fuchsia, which is so much better in the coast and west country gardens ; but, when everything is left out that wants any extra culture or advantages of climate and soil, there remain for every garden many beautiful things for the garden in the fall.

Of those that can generally be trusted for our country, I should say that, of all the gains of the past generation, the brilliant groups of plants of the Sunflower order were the finest, handsomest, and most generally useful for their disregard of any weather likely to occur. The masses of fine form and colour one may have with these when grouped in picturesque ways are remarkable. With the Sunflowers are included not only the *Helianthus* strictly, of which there are so many good kinds now, but also other showy prairie flowers of the same natural order, which approach them in character, such as *Rudbeckia*, *Silphium*, *Helenium*, and other vigorous families of this numerous tribe of plants. The best character of many of these is that they thrive in any soil, and make their way in rough places and among shrubs, or in parts of gardens less precious than those we keep for our best flowers.

For delicate and fine colour, however, the first place belongs to Tea and monthly Roses, of which the best kinds should always be grown in the open air. Of the kinds which open best in England, a delightful garden may be made in autumn, in fine seasons enduring right to the end. Until quite recently no one trusted the Tea Rose out in bold masses in the flower garden, and hence the ordinary red Rose, not generally flowering late, was kept by itself. A greater mistake could not be, because these most precious of all Roses (the Teas) go on blooming throughout the summer and autumn, and very often they vary in bloom ; that is to say, the flowers of September will not be the same as the flowers of June, the buds also varying. So we have not only lovely Roses throughout the fine season, but also variety every week, every shower seeming to influence the bloom. There is such great variety among them that every week seems to give us a new aspect of beauty. In my own garden were planted several thousands of Tea Roses in this way, not only for their beauty, but also with a view of testing the kinds best for our country. Some kinds which are fine abroad do not open well with us, but a number of beautiful kinds do, and we have never seen any picture of garden beauty equal to theirs in such a fine autumn as that of 1895. We had thousands of blooms open until the end of September, almost as showy as bedding plants, but far more refined in colour, fragrance,

and everything that makes a plant precious. Almost the same thing may be said of the neglected monthly Roses, which have this charm of late flowering, in many cases even in cold northern districts.

But the most precious, perhaps, of all flowers of autumn for all parts of the country, grouped in an artistic way, are the hardy Asters of the American woods, which lived for ages in our gardens in mean bundles tied up in mixed borders like besoms. The best of these massed and grouped among shrubs or young plantations of trees, covering the ground, give an effect new and delightful, the colour refined and charming, and the mass of bloom impressive in autumn. Some kinds come in flower in summer, but nearly all the loveliest Asters in colour flower in September and October, and no such good colours of the same shades have ever been seen in the flower garden.

It is not only the Asters of America we have to consider, but the still more precious Asters of Europe, which, by their extraordinary beauty, make up for their rarity. Professor Green, of California, who knows the American Aster well, on seeing here a plant of *Aster acris*, said, "We have none so beautiful as that." This is the Aster with the beautiful blue purple flower which is so effective when massed. Under different names this plant is grown in nearly allied forms, some having specific names, enabling us to enjoy plants of different stature but the same high beauty, flowering at slightly different times, but always at their best in autumn. With these should be grouped the handsome large Italian Aster, which also has its half-a-dozen forms, not differing much, but precious for their variety, and among the prettiest plants ever seen in our gardens. It is none the less valuable because as easily cultivated as the common Balm of the kitchen garden. For the last two years I have had several thousand plants of these European Asters beneath a group of half-grown Fir, just as they might be in their wild state, but rather thicker, as the spot is a cultivated one, and have never had the same return of beauty from anything else. Be the weather what it may, the lovely blue and purple was a picture, and landscape painters came to paint the scene.

The Sunflowers and Starworts we give the first place to because they are almost independent of soil or cool climates. Hardy as the Chrysanthemum is, the same cannot be said for it, because, as an outdoor flower, it must have a sandy soil and warm positions, and cool soils, even in southern England, are against it; whereas in warm and free soils, like that at Hazlemere, one may see delightful results from the cottage Chrysanthemums, which are very pretty where they can be grown against low walls or palings. Other plants which are of the highest value in endurance and freedom of bloom are the Heaths of our own islands. Their effect is good, summer and winter; but in

autumn some of them flower in a pretty way, particularly the Cornish and the little Dorset Heath, and the Irish Heath in its purple and white forms.

Among the half hardy plants of the garden perhaps the first place belongs to the Dahlia, which was always a showy autumn flower, but of late has become more precious through the beauty of what are called

Border of Michaelmas Daisies (Munstead), Surrey.

Cactus Dahlias, which are so much better in form and colour than the roundheaded Dahlias.

The hardy Fuchsia is in the warmer and milder districts often very pretty in autumn, especially where it is free enough to make hedges and form large bushes; but in cold and midland places the growth is often hindered by hard winters. Gladiolus is a splendid flower of the south, but coming more into a class of flowers requiring care, and if they do not get it soon disappearing, liable also to disease, and, on the whole, not so precious as showy. Nurserymen are raising

kinds of a hardier nature, but we have more precious flowers. The last few years have brought us magnificent varieties of the Cannas through the crossing of some wild species with the old hybrid kinds. Unfortunately, although in warm valleys and under special care here and there they do well, our country is not generally warm enough to show their fine form and colour as in France and Italy. Their use in pots is another matter.

The addition of Lilies to our garden flora within the past generation has had a good effect on the autumn garden. Where the finer kinds are well grown, the varieties of the Japanese Lilies, with their delicate and varied colours, are splendid autumn flowers for the open air. The Anemones, usually flowers of the spring, come in some forms for the autumn garden, particularly the white and pink kinds. The handsome Bignonia, or trumpet creeper, is precious on all warm soils, but generally it has not done so well with us as in France. Several kinds of Clematis come in well in autumn, particularly the yellow and the fragrant kinds. The Pentstemons are handsome and very valuable in warm soils and districts where they may live out of doors in winter, but in London districts they are not so good. A splendid autumn flower is the Cardinal Flower, and happy should be those who can grow it well. It fails in many gardens in loamy soil, and where there is insufficiency of water, being a native of the bogs, and thriving best in moist and peaty soil. A number of fine varieties have been raised, and are brilliant in suitable soils; but without these they are best left alone.

The Torch Lilies are extremely effective in autumn, and in warm soils they are often among the handsomest things, but, not being northern plants, are unable to face a northern winter. Happily this is not so with the beautiful new Water Lilies raised by M Latour Marliac, which are hardy in the open air, even with such weather as that of the early part of 1895. Though perhaps the best bloom comes in summer, they flower through the autumn, varying, like the Tea Rose, according to the weather, but interesting always up to the end of September. We should also name the Hollyhock which is, however, so liable to accident from disease, and those who care for it will do well to use seedling plants. Seedsmen are now saving seed of different colours which come fairly true.

A handsome group of vigorous perennials for the autumn are the Polygonums. Some of the large kinds, such as the Japanese and Indian, are not showy, but massed picturesquely on margins of a wide lawn, and on pieces of stiff soil which are useless in any garden sense, are effective for many weeks in autumn, as the flower is pretty, and the foliage of one kind is often fine in colour. I have three kinds of them massed together, growing like great weeds, namely, P.

cuspidatum, sachalinense, and complexum, and a very soft and good effect they gave together in a rough hollow where no garden plants less vigorous than these would have grown.

Thus we have a noble array before coming to some old flowers of autumn, the Meadow Saffrons or "autumn Crocuses," many of the common kind of which fleck the meadows in autumn. There are other kinds, too, which of recent years have been added in greater numbers to our gardens, some of them pretty, and the double kinds prettier than most double flowers. As they grow naturally in meadows, in turf is a delightful way to have them in gardens, though new and rare kinds should be grown in nursery beds until they are plentiful. They are not difficult to grow, and should often be placed in moist grassy places.

Then there are the true autumn Crocuses, which are very little seen in gardens, but are most delicate and lovely in colour. Coming for the most part from sunny lands, they do best in light soils; but some, like *C. speciosus*, grow in any soil, and all are worth growing. Among the best is *C. nudiflorus*, naturalised in Britain, in colour one of the most lovely flowers. To get little pictures from such plants we must have them happy in grass or among dwarf plants, and on sunny banks and grassy corners of the lawn or pleasure ground.

In mid-October they have often taken away large areas of bedding plants in the London parks; while, at the same time, there are many lovely hardy flowers in perfect bloom. No doubt severe frosts may destroy any kind of flower soon, but for those who live in the country in the autumn it is something to have bright colours and beautiful plants about them late, and these are afforded as well by the Starworts and other hardy plants in October, as the fairest flowers that come in June. When we have a severe September about London, many gardens of tender plants are shorn of their beauty, whereas, the hardy flowers go on quite untouched for a month or six weeks later, and not merely bloom as do heliotrope and geranium, in a fine autumn, but as the meadow flowers in summer, with vigour and perfect health. Therefore, it is clear that, whatever the charms of tender plants may be for the summer, those who live in the country in autumn are unwise to trust to anything but the finer hardy plants.

Thus, without touching on rarities or things difficult to grow, we have a handsome array of beauty for the autumn garden, even leaving out of the question the many shrubs and trees which are beautiful in foliage or fruit in autumn, and there are many of these in any well-stored garden.

*Some Hardy and Half-hardy Plants blooming in British gardens.
September—October.*

Abutilon	Crocus	Hyacinthus	Oenothera	Snapdragon
Aconitum	Cuphea	Hypericum	Pampas Grass	Solanum
Agapanthus	Cyclamen	Iberis	Pansy	Solidago
Ageratum	Dahlia	Impatiens	Papaver	Statice
Amaryllis	Delphinium	Lantana	Pentstemon	Strawberry
Anagallis	Desmodium	Lauristinus	Petunia	Sweet Peas
Anemone	Dianthus	Lavender	Phlox	Sweet William
Arnebia	Diplacus	Liatris	Phygelius	Telekia
Aster	Diplopappus	Lilium	Physalis	Trachelium
Berberidopsis	Eccremocarpus	Linaria	Physostegia	Tradescantia
Bignonia	Erica	Linum	Plumbago	Tritoma
Brugmansia	Escallonia	Lobelia	Polygonum	Tritonia
Calceolaria	Fuchsia	Lonicera	Prince's-feather	Tropæolum
Campanula	Gaillardia	Lupin	Pyrethrum	Tuberose
Canna	Geum	Lychnis	Rose	Valerian
Cassia	Gladioli	Lythrum	Rudbeckia	Venidium
Ceanothus	Godetia	Magnolia	Salpiglossis	Verbascum
Celsia	Gypsophila	Marigold	Salvia	Verbena
Centaurea	Helenium	Matthiola	Scabious	Veronica
Chrysanthemum	Helianthus	Mignonette	Sedum	Viola
Clematis	Heliotrope	Mimulus	Senecio	Yucca
Colchicum	Hieracium	Montbretia	Silene	Zephyranthes
Convolvulus	Hollyhock	Nicotiana	Silphium	Zinnia
Coreopsis	Honeysuckle	Nigella

Belladonna Lily and Zephyranthes, Kew. Engraved from photograph by G. Champion.

Winter Jasmine.

CHAPTER XX.

THE FLOWER GARDEN IN WINTER.

THE idea that winter is a doleful time for gardens must not be taken seriously even by those who only grow hardy things out of doors; because between the colour of the stems and leaves of trees, or shrubs, there is much beauty left, even in winter, and in mild winters good things venture to flower. Mr. Moore, of Dublin, wrote to me in midwinter :

After a very open winter we have had a sharp snap of cold, and to-day (Jan. 20) it is blowing a bitterly cold storm from the east. To-day has opened Winter Sweet and Winter Honeysuckle; Iris Stylosa, blue and white, Christmas Roses and Winter Heliotrope are beautiful; in fact, I never saw them so good.

But even where, owing to hard winters, we cannot enjoy our flowers in this way, there is much beauty to be had from trees and shrubs, evergreen and summer-leaving. Hitherto we have been all so busy in planting evergreens in heavy masses, that the beauty one may realise by using a far greater number of summer-leaving shrubs and fine herbaceous plants among the evergreens is not often seen.

But gardens are too often bare of interest in winter, and some of the evil arises from the common error that plants are not worth seeing in winter. The old poet's wail about the dismal winter is a false one to those who have eyes for beauty. Woods are no less beautiful in winter than in summer—to some, more beautiful from

the refined colour, tree form and the fine contrast of evergreen and summer-leaving trees. In any real garden in winter there is much beauty of form and colour, and there are many shrubs and trees which are beautiful in the depth of winter, like the Red and Yellow Willow and Dogwoods, and even the stems of hardy flowers (*Polygonum*); the foliage of many alpine plants (*Epimedium*) are not only good in colour, but some of these plants have their freshest hues in winter, as the mossy Rockfoils of many kinds. In the country garden, where there are healthy evergreens as well as flowering shrubs and hardy plants, how much beauty we see in winter, from the foliage of the Christmas Roses (*Helleborus*) to the evergreen Barberries! The flower gardener should be the first to take notice of this beauty, and show that his domain as well as the wild wood, might be interesting at this season.

For the dismal state of flower-gardens in winter the extravagant practice of our public gardens is partly to blame. A walk by the flower beds in Hyde Park on Christmas Day, 1895, was not a very enlivening thing. One by the bent-bound dunes of the foam-dashed northern shore, on the same stormy day, might be more instructive—for here is a large garden carried out with the very extravagance of opulence, and not one leaf, or shoot or plant, or bush in it from end to end; giants' graves and earth puddings—these and iron rails and the line of planes behind. The bare beds follow each other with irritating monotony—only five feet of grass between those in line. The southern division of this garden is nearly 500 paces long, and so even that those not in the habit of seeing this costly garden may imagine its ill effect in winter. Nearly 500 yards of a garden sacrificed for its kaleidoscopic effects in summer, and barer and uglier in winter than words can tell of. A more inartistic arrangement would be impossible and there is no chance of variety, breadth, or repose even in summer.

How are we to break up such an arid space as this in winter? One of the best ways would be to group families of the choicest flowering shrubs, which would be worth having for their own sakes, and at the same time would give relief to the wintry waste of desolation. At present any relief is only to be obtained by carrying out, in early summer, Palms and Bamboos from the hot-house, which is a very expensive and poor way in a country like ours. In forming groups of the more beautiful flowering shrubs, I do not mean anything like the present brutal treatment of shrubs in the London squares, where the surface is dug, and the shrubs are trimmed like besoms, ending in frightful ugliness; but each group of plants grown well by itself and let almost alone when once established. They would give relief in the summer; they often flower beautifully; and here and there

they might form dividing masses, so as to throw the unwieldy space into parts, which would help to secure variety and contrast.

The result of planting and placing rightly well chosen hardy shrubs would be a good background here and there; a smaller area to plant with summer things; less dependence on such feeble examples of tropical plants as one can grow in Britain; light and shade, and a variety of surface as well as more variety of plants and bushes; in short, all the life of the garden, instead of a dead waste. And not only would the winter effect be improved, but the summer also. The objection that some shrubs do not flower long enough is not serious, as we have their beauty of form and leaf, and delicate green and other fine colour of foliage. Moreover, the tropical plants put out to relieve the flowering plants do not, many of them, flower at all, and do not give such good relief as hardy shrubs and choice trees.

This is not a question of town or public gardens only, as it arises in many private places, and especially in large gardens, where much of the surface is given to half-hardy summer flowers. As to the common plan for getting rid of the winter bareness of such beds by evergreens and conifers in pots, it is impossible on a large scale, and sticking potted conifers in a flower-garden to drag them away in spring, is at best a very inartistic and very costly business. Some permanent way of breaking up the flatness is the best way; and this way would enable us to limit the excessive area of ground to be planted with tender things, the real root of evil.

KEEP THE STEMS OF HARDY PLANTS.—The stems of all herbaceous plants, reeds, and tall grasses in winter, are very good in colour, and should always be allowed to stand through the winter and not be cut down in the fidgety tidy way that is so common, sweeping away the stems in autumn and leaving the surface as bare and ugly as that round a besieged city. The same applies to the stems of all waterside and herbaceous plants, stems of plants in groups often giving beautiful brown colours in many fine shades. Those who know the plants can in this way identify them in winter as well as in summer—a great gain in changing one's plantings and in increasing or giving away plants. Moreover, the change to all these lovely browns and greys is a distinct gain as a lesson in colour to all who care for refined colour, and also in enabling us to get light and shade, contrasts and harmonies in colour. If these plants are grouped in a bold and at the same time picturesque way, the good of letting the stems remain will be far more evident than in the weak "dotty" way generally practised, the seed pods and dead flowers of many plants helping the picture. There is no need to remove any stem of an herbaceous plant until the spring comes and

the growing shoots are ready to take the place of the brown and dead ones, which then may be cleared away.

EVERGREEN PLANTS.—Apart from our evergreen shrubs, so happy as these are in many parts of the British Isles, there are the oft-neglected evergreen rock and herbaceous plants, such as Christmas Roses, Barrenworts, Heuchera, Alexandrian Laurel, the bolder evergreen ferns, and the large Indian Rockfoils, *Saxifraga* or *Megasea*. In early winter these fine evergreen plants become a deeper green, some forms getting red. They have been in our gardens for years, but are seldom made a right use of; thrown into borders without thought as to their habits, and soon forgotten or overshadowed by other things; so that we never get any expression of their beauty or effect in masses or groups. Yet, if grouped in effective ways, they would go on for years, giving us fine evergreen foliage in winter. In addition to the wild kinds, a number of fine forms have been raised in gardens of late years. Some thought should be given to the placing of the large Rockfoils, their mountain character telling us that they ought to be on open banks, borders, or banky places exposed to the sun, and not buried among heaps of tall herbaceous and miscellaneous vegetation. They are so easily grown and increased that a little thought in placing them in visible masses is the only thing they call for; and the fact that they will endure and thrive under almost any conditions should not prevent us from showing how fine they are in effect when held together in any bold way, either as carpets, bold edgings, or large picturesque groups on banks or rocks.

The Alexandrian Laurel (*Ruscus racemosus*) is a most graceful plant, somewhat shrubby in character, with glossy dark green leaves and Willow-like shoots. It is most free and happy on peaty and friable soils, growing 3 feet or 4 feet high; in winter the effect is very good, and it is valuable for the house, to give a graceful and distinct foliage to accompany various flowers at this season. It grows very well in Ireland on the limestone. In clay soils it may want a little encouragement, and it thrives well in partial shade.

The Christmas Rose is a noble winter flower where well grown, and is lovely in its wild state in the foot-hills of the Alps, in Italy and countries near; and, happily, it flowers in our gardens very well also, varying a little in its ways. The stout kind (*H. maximus*) flowers in the early winter in front of walls and in sheltered spots, and is hardy and free in ordinary soil. The true Christmas Rose (*H. niger*) is a little more particular; it thrives much better on chalky and warm soils, and grows best on a northern aspect or shaded place; and even in its own country the finest plants are found in places where it escapes the sun. These are true winter flowers; but hardly less so are

the Lenten Roses, or forms of the Oriental Hellebores. In the southern counties, five seasons out of six, no weather stops them from being fine in flower before the winter is past ; they often bloom in January and make a handsome show in February, and they are the finest of all flowers to end the winter. The Winter Heliotrope (*Tussilago fragrans*) is not to be despised, although it is a bad weed, and hard to get rid of. The way to deal with it is to put it on some rubbish heap, or gravel bank, right away from the garden, where a handful of it may be gathered when wanted.

The Algerian Iris flowers in warm sandy borders in the country around London, and in mild winters is a great treasure, not merely for its beauty in warm sheltered corners, but also its precious qualities for the house, in which the flowers, if cut in the bud state, open gracefully if placed in basins in moss. In warm and sheltered gardens, on warm soils, others of the winter blooming Iris of the East may be grown, while in such gardens, in the south at least, the good culture of the sweet Violet will often be rewarded with many flowers in winter.

A beautiful Italian Crocus (*Imperati*) often flowers in winter in the southern counties at least, as, where people take the trouble to get them, do *C. Sieberi*, *Dalmaticus*, *Etruscus*, *Suaveoleus* and others. This habit of some of the winter flowers of the south of Italy and Mediterranean region to open in our green and open winters should be taken advantage of. The fate of these Crocuses is interfered with by the common field vole, and the common rat is also a great destroyer of the Crocus. Where these enemies do not prevail, and the soil favours these charming winter and early flowers, we can grow them, not only in the garden, but on the turf of sunny meadows and lawns in which these beautiful Crocuses will come up year after year in winter and early dawn of spring.

SHRUBS AND TREES IN THE WINTER GARDEN.—The Winter-sweet (*Chimonanthus fragrans*) is in bloom often before Christmas in the country around London, and every shoot full of fragrant buds opening on the trees against south and west walls. It is invaluable both for the open garden and the house. The many bright berries which adorn our country, both in the wild land and in well-stored gardens, are rather things of the autumn ; and by mid-winter the birds are apt to clear them off Wild Roses, Briers, Barberry, and Thorns, American as well as British. The *Pyracantha*, however, stays with us late ; and Hollies, Aucuba, Cotoneaster, Snowberry, and the pretty little hardy *Pernettya*, from the Straits of Magellan, which has broken into such variety of colour in our country, are among those that stay late. But, however the cheery berries may fail us in hard winters, the colour of the trees and bushes that bear them never does ; and the red and

Winter Sweet, drawn by H. G. Moon from shoots gathered at Gravetye New Year's Day, 1895.

yellow Willow, Dogwood, Thorns, Alders, Birch, and many Aspens and Maples, give fine colour when massed or grouped in any visible way. Still more constant are the flowering shrubs of winter, where in sheltered gardens and warm valleys any attention is given to them—Winter Jasmine, Winter Sweet, Winter Honeysuckles, Wych-Hazel, Japan Quince in many forms Laurustinus, several Heaths, Arbutus, at least one variety of Daphne Mezereon, the pale Southern Clematis (*Calycina*) happy in our warmer gardens, Eleagnus, the Nepal Barberry, a Chinese Plum (*P. Davidiana*), and the catkin bearing *Garrya* and Hazel. The Winter Honeysuckles are a bit slow in some districts, and a better result is got from them on free soils, and from walls in sheltered corners, an immense difference resulting if we can have them near the sea, with its always genial influence in favour of things from climates a little warmer than our own. In heavy soils in the inland country and around London the Laurustinus often comes to grief or fails to flower well, but has great beauty in seashore districts, and often on sandy and gravel soils is charming, even in inland places.

The hardy and beautiful Winter Jasmine, which is so free on cottage walls and wherever it gets a chance, is most precious, owing to the way it opens in the house especially if gathered in the bud state. If we have it in various aspects, such a contingency as the sun scorching the shoots after a frost and killing

the flowers may be avoided, and the flowers will come later. The plant is so free that, if the shoots are allowed to hang down, they root in the ground like twitch, and therefore it can be increased very easily, and should be seen in visible groups and lines, and not only on the house or on walls, as in the milder districts it forms pretty garlands and bushes in the open. I have a little oak fence covered with it, which is usually very pretty about Christmas. In mild winters its beauty is extraordinary out of doors, and in the hardest winters the buds will open in the house.

And when the Dogwood has lost all its leaves and is a deep red by the lake, and the Cardinal Willow has nearly taken its winter colour, the dwarf autumn blooming Furze flowers far into winter, and is in perfect bloom on the drier ground, telling us of its high value where dwarf vegetation not over a yard high is desired. It is seen in abundance on many hills and moors, but is hardly ever planted by design. A good plant for all who care for low foreground vegetation, it may be planted like common furze, but by far the best way is to sow it in spring in any bare or recently broken ground. The Common Furze, too, of which the season of bloom is spring and mild winters, often flowers at Christmas; odd plants here and there in the colonies of the plant bearing quite fresh flowers; and if from the nature of these native shrubs they do not find a place in the flower garden, there are few country places where they may not be worth growing not far from the house, in covert, or by drives or rough walks, as no plants do more to adorn the late autumn and winter.

The hardy Heaths are excellent for the winter garden in their brown and grey tuftiness. The forms of the common Heather and the Cornish Heath are best for rough places outside the flower-garden, but some kinds of Heath are among the best plants for the choicest winter garden of the open air, particularly the Portuguese Heath (*E. Codonodes*), which in mild winters is of great beauty; also a hybrid between the Alpine forest Heath (*E. carnea*) and the Mediterranean Heath, with the port and dense flowering habit of the Alpine Heath and the earlier bloom of the Mediterranean Heath. The Alpine forest Heath, the most precious of all hardy Heaths, often flowers in mild winters, and in all winters is full of its buds ready to open.

So far we are speaking of districts where there are few advantages of climate; if we include others there might be more flowers in the winter-garden, and many varied flowers are seen in gardens in the Isle of Wight, Isle of Man and many other favoured gardens—not always confined to the southern parts of England and Ireland: the Cornish, Devon, South Wales or Cork Coasts being far more favourable. From these places Roses, Indian Daphne, and many other flowers, have often been sent to me in perfect bloom in January.

And if the snow shrouds the land, all's well, as the leaves of ever-green plants, like Carnations, are at rest in it, and some plants are all the better for the peace of the snow for a time. And even if our eyes are not open to the beauty of the winter let us make the flower-garden a real one for spring, summer and fall, as if it were true that in winter

The year
On the earth her deathbed, in a shroud of leaves dead,
Is lying.

But it is not true: there is in winter no death, every root works and every bud is active with life; the wooded land is tender with colour:—Alders by the busy wintry stream and Birch on the airy hill, Reeds fine in colour round the lake or marsh, and if even our wild marsh or rough woodland be beautiful in winter, our gardens, with the flora of three continents to gather from, should not then be poor in beauty. No! Winter is not a time of death, but of happy strife for plants and men.

Until her
Azure sister of the spring shall blow
Her clarion o'er the dreaming earth, and fill
(Driving sweet buds like flocks to feed in air)
With living hues and odours plain and hill:

Hazel catkins. From a drawing by H. G. Moon.

CHAPTER XXI.

WATER GARDENS BY VARIOUS WATER GARDENERS.

IT is not only from the mountain's breast, dyed with Violet and Gentian, the Sunflower-strewn prairie of the north, or the sunny fields where Proserpine gathered flowers, that our garden flora comes. River and stream are often fringed with handsome plants, and little fleets of Water Lily—silvery fleets they look as one sees them from the bank—sail on the lakelets far away in North America and Asia, even where the water is solid ice in winter. One need not go so far to see beautiful plants, as our own country rivers and back-waters of rivers possess many. Our gardens are often made about towns where there are few chances of seeing our native water plants, but by the back-waters of rivers and by streams in many situations, and by lakes like the Norfolk Broads one may often see as handsome plants in these places, and also in the open marsh land, as in any garden, and some that we do not often see happy in gardens, such as the Frogbit, the Bladderwort, and Water Soldier.

Where, as often is the case in artificially made ponds, the margin of the water is not the rich deep soil that we have by the Broads and by the sides of rivers, which themselves carry down deep beds of rich soil, a good way is to put the mud which we take out of the pond around its sides a little above and below the water line. This will encourage a rich growth of such Reeds as are found beside natural waters. Water with a hard, naked, beaten edge and little or no vegetation is not good to look at, and a margin of rich living plants is better for fish and game as well as for effect. The waterside plants one may establish in that way are worth having and give good cover for duck.

Perhaps the most beautiful of all water gardens are the river and stream gardens, as their form is so much better than anything we can make and the vegetation is often good even without care. With a little thought we can make it much more so, and in our river-seamed land there are so many charming opportunities for water-garden pictures.

Upper part of my Water Garden. From a photograph by Sir Henry Thompson, August, 1896.

WATERSIDE PLANTS. — The water-margin offers to lovers of hardy flowers a site easily made into a fair garden. Hitherto we have used in such places aquatic plants only, and of these usually a very meagre selection ; while the improvement of the waterside may be most readily effected by planting the banks near with vigorous hardy flowers, as many of the finest plants, from Irises to Globe Flowers, thrive in moist soil. Bank plants have this advantage over water plants that we can fix their position, whereas water plants spread so much that some kinds over-run others. The repeating of a favourite plant at intervals would mar all ; groups of free hardy things would be best : Day Lilies, Meadow Sweets, tall Irises, which love wet places ; Gunnera, American swamp Lilies in peaty soil, the rosy Loosestrife Golden Rods, Starworts, the Compass plants, Monkshoods, giant Knotworts, Moon Daisies, the Cardinal Flower, the common Lupine—these are some of many types of hardy flowers which would grow freely near the waterside. With these hardy plants, too, a variety of the nobler hardy Ferns, such as the Royal Ferns and Feather Ferns, would associate well.

WATER PLANTS of northern and temperate regions associated with our native water plants, add much beauty to a garden. If the soil be rich, we usually see the same monotonous vegetation all round the margin of the water, and where the bottom is of gravel there is often little vegetation, only an unbroken, ugly line of washed earth. A group of Water Lily is beautiful, but Water Lilies lose their charm when they spread over the whole of a piece of water, and even waterfowl cannot make their way through them. The Yellow Water Lily (*Nuphar lutea*), though less beautiful, is well worthy of a place, and so is the large *N. advena* (a native of America), which pushes its leaves above the water. The American White Water Lilies (*Nymphæa odorata* and *N. tuberosa*) are hardy and beautiful, and of recent years much beauty has been given our water plants in the hybrid hardy Water Lilies raised by M. Latour-Marliac, who has added the large and noble forms and the lovely colour of the Eastern Water Lilies to the garden waters of northern countries. The splendid beauty of these plants should lead people to think of artistic ways of planting garden waters. Our native Water Lily was always neglected and rarely effective, except in a wild state ; but when people see that they may have in Britain the soft yellow and rose and red flowers of the tropical Water Lilies throughout summer and autumn, they may take interest in water gardens, and even the wretched duck ponds which disfigure so many country seats will begin at last to have a reason to be. The change should be the means of leading us to think more of the many noble flowers and fine leaved plants of the water-side, apart from Water Lilies. The

new hybrid kinds continue blooming long after our native kind has ceased, and from the middle of May to nearly the end of October flowers are abundant.

For many years, pond, streamlet, and lake to a very considerable extent were left very much to themselves, with scarce a thought bestowed upon them or the plants for beautifying their surface or margin. In a large London nursery nearly twenty-five years ago, where a very large and, perhaps, complete collection of water plants existed, I was surprised to find that so very few aquatic plants should be required year after year ; so few, indeed, that the cost of maintaining the whole was barely met. This was most discouraging, because even water plants, where a representative collection is grown, cannot

Pond at Enys, Cornwall. From a photograph sent by Mr. F. W. Meyer, Exeter.

receive the necessary space for their free growth in a nursery. This was even so in the case of that lovely and fragrant Cape Pond Flower (*Aponogeton*), that, seeding in such abundance, was floated hither and thither in thousands, and in consequence had to be kept in check. The rapid increase of this plant, however, is by no means common ; indeed, many instances are known where it cannot be induced to flourish in the open. But in the nursery referred to, by reason of the quantity and size of the plants, flowers of this *Aponogeton* were gathered the greater part of the year, in the wintry season even its flowers floating on the surface by hundreds. The water in this instance, supplied from an artesian spring, contributed to the success of the plant, as also its freedom of flowering. Gradually,

however, the aquatics are coming to the front, and an altogether fresh impetus, as well as a great one, has resulted from the introduction of the many charming new hybrid *Nymphæas* which are fast making their appearance in some of the best-known gardens. As yet many of these hybrids are scarce, and care will be needed, and possibly protection required, on the larger pieces of ornamental water where water-fowl are encouraged.

In planting these choicer kinds, some precaution is necessary when sinking them into their places. Very deep water is not essential, but if the pond be an artificial one, it will be found a good plan to take a few bags of heavy loamy soil to the spot by means of a punt and empty the soil over the side. Then the plant itself, well fixed by wire to the side of a basket already filled with similar soil, should be gradually lowered on to the mound of soil already deposited. In the natural lake no soil will be needed before sinking the plant in position, though similar means may be used to lower the plant, which will quickly take to the accumulation of earth and leaves that years have deposited. Many of the most lovely of aquatics may be grown with considerable success even where neither pond, lake, rivulet, nor ornamental water is found, some very good results having been derived by growing them in tanks 2 feet or 3 feet deep into which a depth of some 12 inches of clay earth has been placed. The recent hybrids are well worthy of attention in this way, and if a fair-sized tank be made and so placed that it will catch the rain water, so much the better for the plants. In this way also fountain basins on the terrace garden may be made to do some service. Besides the hybrid *Nymphæas*, such places are well suited if the water be fairly deep for such things as *Orontium aquaticum*, the *Pontederias*, and Arrowheads, all of which are perfectly hardy with their crowns 8 inches or 10 inches below the surface of the water, while *Thalia dealbata*, a rarely seen plant from Carolina, is quite safe with similar treatment. Indeed, it is to be regretted that this handsome plant is not more frequently seen in the water where its handsome leaves and heads of purple blossoms are very showy, but our country is too cool to show its fine form and stature.

FORMING THE WATER GARDEN.—Fortunate indeed are those through whose grounds runs a brook or streamlet. As a great many of our most effective and most graceful hardy plants can be grown either in the water itself or in the moisture-laden margin of a pond or brook, it is surprising that more advantage is not taken of this fact when the opportunity occurs. Even where natural ponds exist it frequently happens that the banks of the pond, as well as the water itself, are either perfectly bare, or are covered only by the rankest weeds. The ponds chiefly considered here are those mostly formed

without cement, by natural flooding from a brook, streamlet or river. If the water supply is abundant and continuous, it matters little whether a portion of the water is wasted by percolating the sides of the pond, but when only a small supply can be had, the bottom and sides of the pond must be either concreted or puddled with clay. It often happens that when the excavations for a pond are completed, the bottom is found to consist of impervious clay, but the sides consist of ordinary soil, which would allow a large portion of the water to waste. In such cases the best way out of the difficulty is the cutting of a narrow trench, say 18 inches wide, to a depth a little beyond the surface of the natural clay subsoil. This trench, which should skirt the whole pond at some little distance from the actual

Riverside plants in front of an old manor—Levens.

edge of the water, is then filled with clay "puddle" till just above the water-line and forms an effective remedy against waste, while the water-soaked soil between the trench and the actual outline of the pond forms an excellent home for all kinds of marsh plants of the bolder type. The outline of a pond is of the utmost importance. Regular curves of circles or ovals are utterly out of place and look ridiculous in a landscape with irregular and naturally undulating ground. In order to be effective, the outline of the pond must not only be irregular, but it must be also in accordance with the laws of Nature, and as in most cases the natural pond or lake is merely an expanded stream or river, we must look to the shore-lines of the latter for guidance in the forming of artificial ponds. In a natural stream the curves are mostly due to the water meeting with some

obstacle which caused a deviation in its course. We find invariably that where a promontory, a projecting rock, or some other obstacle caused an alteration in the course of the water, the latter is thrown against the opposite bank with greater force, and unless the ground be very hard a good portion of it is washed away by the force, and an extended recess is the natural result. In the same way an irregular pond to look natural should have the largest and boldest recesses opposite or nearly opposite the largest promontory on the other side. The shore-line should not terminate abruptly, but should form a slope continued below the water level.

In planting the shore of a pond or lake it is the ground which projects into the water which should be furnished with the largest and boldest plants. This is not only perfectly natural, but has also the effect of partially concealing some of the recesses of the water. A pond thus treated will appear larger than it really is, and a walk around the shore-line will reveal fresh surprises with every step.

AQUATICS.—Of all plants suitable for the water garden, none can surpass the *Nymphæas* now that we have a variety of shades of colour undreamt of a few years ago. The delicate pink *Nymphæa Marliacea carnea* and the yellow *N. M. Chromatella* seem to make the most rapid progress in English water gardens, while the white *Nymphæa pygmæa alba* and the yellow *N. p. Helvola* are the Liliputians of the race. Perhaps the most exquisite of the newer kinds are *N. M. Signoretti* (which is red, shaded with orange). *N. M. Robinsoni* and the deep carmine *N. M. ignea*. A little less expensive is the large deep red *N. Laydekeri lilacea*, while the following are now to be got: *N. Laydekeri rosea*, deep rose, changing to carmine; *N. odorata exquisita*, rosy carmine; *N. o. rosacea*, tender rose shade; *N. o. rubra*, deep rose, and *N. odorata sulphurea*, deep yellow. *Nuphar advena* should not be used except in places where there is plenty of room, when, as shown in the picture, even the leaves alone produce a bold effect. The same might be said of our native Water Lilies, *Nymphæa alba* and *Nuphar lutea*. *Stratiotes aloides* (popularly known as the Water Soldier) is attractive, not so much for its flowers as for its long leaves, which form a striking contrast to other aquatics. *Villarsia Humboldtiana* and the native *Villarsia nymhpæoides*, with its small round leaves and yellow flowers, form a good contrast to plants of a bolder type. Another interesting aquatic is *Vallisneria spiralis*, with very long, narrow leaves and small white flowers floating on the surface of the water.

AQUATICS FOR SHALLOW WATER.—The common Sweet Flag (*Acorus Calamus*), the Flowering Rush (*Butomus umbellatus*), and the Bulrush or Reed Mace (*Typha latifolia*) are bold as well as graceful objects in shallow water, especially in a large lake, but in ponds

of only moderate size they should be used with caution, or they would soon shut out *Nymphæas* and other aquatics whose leaves and flowers float on the water. Much less robust in their growth are *Typha angustifolia* and *T. minima*. Very striking, too, are the arrow-shaped leaves and white spikes of blossom of *Sagittaria sagittæfolia* and the Buckbean (*Menyanthes trifoliata*). The flowers of the latter are very sweet-scented and arranged in racemes; they are beautifully fringed, pure white, slightly tinged with pink outside. This also must be kept in check to prevent injury to other aquatics. A handsome American aquatic, quite hardy in shallow water, is *Pontederia cordata*, with handsome spikes of blue flowers and almost erect leaves on long stalks about 18 inches or more in height. The

Natural grouping of waterside plants. From a photograph sent by M. Louis Kropatsch, Imperial Gardens, Vienna.

Bog Arum (*Calla palustris*), though only about 9 inches high, when planted in groups is most effective. The well-known Arum Lily (*Calla æthiopica*) may—in the west and south of England at all events—also be used as an aquatic for shallow water. Though a severe winter will cut it down, the roots below the surface of the water will push forth new leaves and flowers in great profusion. At Treilissick, near Truro, the pond was skated on for several weeks, and 16° and 18° of frost were registered during the severe winter two years ago, but in the following spring many thousands of Arum Lilies were cut from the very same pond.

MARGINS OF WATER.—The water-soaked margins of our ponds and brooks would furnish a home for many graceful fine-foliaged and

flowering plants. One of the noblest of our plants with large leaves delighting in such a position is *Gunnera manicata*. *Gunnera scabra* also likes a similar position, but its leaves seldom attain a diameter of more than 5 feet, while *Gunnera magellanica* is quite a pigmy. *Rheum Emodi* from the Himalayas, *Rheum palmatum* from Northern Asia, and the Siberian *Rheum undulatum* are also effective plants for the waterside. Of an entirely different type are the noble *Arundo donax* and its variegated variety. In the south-west of England they are, as a rule, hardy without protection, and their elegant grace is most striking. The Pampas Grass (*Gynerium argenteum*) and its early-flowering companion, *Arundo conspicua*, from New Zealand, may also be mentioned as graceful plants for the waterside. Much dwarfer, but also effective, is the deciduous grass, *Elymus glaucophyllus*, with broad glaucous foliage contrasting well with the fine deep green foliage of *Carex pendula* or the still finer *Carex riparia* and its variegated form. *Cyperus longus* is another suitable companion from the same family. *Juncus effusus spiralis*, with its stems twisted like corkscrews, is perhaps more curious than pretty, but *Acorus gramineus variegatus* and *Juncus zebrinus* have an uncommon as well as a pretty effect in consequence of their variegated leaves.

The plants just mentioned as suitable for the waterside are valued mostly on account of their foliage. But among flowering plants also handsome varieties may be found that might with great advantage be used for decoration at the waterside much oftener than is at present the case. Few things are brighter than the brilliant purple flowers of *Lythrum salicaria* var. *roseum superbum*, or the large yellow flowers of *Inula Helenium* and *Telekia speciosissima*. Groups of *Iris Kæmpferi* and the well-known *Iris germanica*, also look exceedingly well on the margin of a pond, and the "flowering" Fern (*Osmunda regalis*) delights in that position. *Senecio japonica* grows really well only when its roots can find abundance of moisture; its large deeply-cut leaves are as handsome as its deep yellow flowers, 4 inches across, and borne on a stem 3 feet to 4 feet high. A similar position is required by *Spiræa gigantea*, which bears its flowers on stems 5 feet to 6 feet above the ground. *Spiræa Aruncus*, though not so tall, is, nevertheless, most suitable, as are also its smaller, but still more handsome companions, *Spiræa palmata*, *S. alba*, *S. astilboides*, and *Astilbe rivularis*. Very bright and effective, too, in such a position are *Chelone barbata* and *Lyni*, and the Globe Flowers (*Trollius*) show by the waterside a vigour they do not develop elsewhere. This might also be said of the double Marsh Marigold (*Caltha palustris* fl.-pl.) and of several varieties of *Hemerocallis*.

FOR A SHADY NOOK by the waterside we are by no means

limited to Ferns. It is in such a position *Primula japonica* and *sikkimensis* delight. Here also the blue Himalayan Poppy (*Meconopsis Wallichii*), the tall yellow Gentian (*Gentiana lutea*), and the bright blue *Mertensia virginica* will flourish as well as *Saxifraga peltata*, *Sanguinaria canadensis*, *Podophyllum Emodi*, the handsome *P. peltatum*, and *Rodgersia podophylla*, while *Trillium grandiflorum* and Solomon's Seal will be at their best. There is, no doubt, a number of other suitable plants for the water garden, especially if we include the plants generally known as bog plants, which, however, are perhaps more suitable for the bog bed of a rock garden than the bolder margins of ponds or lakes, but enough plants have been enumerated to show that we have a great variety to pick from, and that certainly there is a great future for the water garden.—F. W. MEYER, *Elmside, Exeter*.

It is now some fifteen or sixteen years since I planted the common white Water Lily in the pond here. Noting how well it grew, I was induced to try the pink or rose-coloured form of it which had been introduced from Norway—*i.e.*, *Nymphæa alba* var. *rosea*. Finding, too, that this was thriving, I further extended the Lily culture by the addition of a dozen more varieties and species. Of these I have only lost *N. flava*, and that occurred during the severe frost of 1894-95. All that I gave in the way of protection then was laying a few mats upon the ice when it was sufficiently strong to bear one's weight, and that small amount of protection was more in the form of a preventive against any skaters running over them where the ice was none too strong, and possibly cause injury should it have given way. During that winter the ice was unusually thick ; so much so here must it have been as to almost, if not quite, reach the Lily roots, the depth of water over them then being only about 12 inches. No better test of their hardiness is, I think, needed than this, save in the case of *N. flava*. Last spring I added *N. Robinsoni*, the present winter being of course its first test, but of its hardiness I have not the slightest doubt. In addition to the foregoing I have three of the pigmy varieties, which, with a distinct form of the common white from Norway, make in all eighteen kinds or varieties.

In the spring, when I added the twelve varieties (chiefly those of M. Latour-Marliac's raising), these being small tubers, I commenced by putting them carefully into soil in large-sized punnets, the entire dozen coming to hand in one parcel by post. I mention this so that some idea may be formed of the then size of the tubers compared with the present time. During the summer of 1894 they grew well, making steady progress, and towards the autumn a few flowers appeared on the strongest plants. The following summer (*i.e.*, 1895) a most marked progress was made the stronger-growing

kinds beginning to give some indications of their true character, whilst the flowering period was well prolonged and a considerable number of flowers produced. Seeing that more room was essential for their perfect development, I decided to provide for this by carefully lifting the plants last spring when the first indications of growth were visible. This operation was performed about two years from the time of first planting them, but so well had they rooted in the case of the strong growing kinds, that it took three men to lift them with digging forks, several of the roots being as large as one's fingers and of considerable length. These came up with good balls, and were immediately transferred to large circular baskets which had been half-filled with good loam and leaf-soil, a few handfuls of bone-meal being allotted to each basket according to its size. When the roots were carefully spread out more soil was added to fill each basket, which was at once sunk again into the water, but at a greater distance apart than in the first instance. This time the strongest were placed at some 10 feet or so from each other, but I can see already, after only one more year's growth that they will require more room even than this. These plants were sunk in about 18 inches of water this time in order to be more in accord with their growth. The more moderate growers were arranged in front of these and in about 12 inches of water. No apparent check ensued even at the first, for they grew away most vigorously, and in most cases have flowered as profusely. By the autumn the strongest clumps were fully 6 feet across, and this season I shall not be surprised if they touch each other. The lake has a fair quantity of mud in it, about 6 inches perhaps where the plants are at present, the bottom being puddled with clay. The supply of water is from a spring which continuously discharges into the lake.

These fine water plants as grown and bloomed here are singularly beautiful and effective; either one or another is always producing the distinct and pleasing flowers. The flowers remain open, too, for a prolonged period each day, either one or another being in good condition from 9 a.m. to nearly dusk when the weather is bright. On more than one occasion I have also noted how beautiful they have been during showery weather; the water then being clear added to their beauty, the flowers glistening and sparkling like diamonds when under a brilliant light. When seen in this state, scarcely anything in the way of flowers could be more beautiful.—JAS. HUDSON, *Gunnersbury House, Acton.*

ARUM LILIES AS AQUATICS IN BRITAIN.—Whether or not the common Arum (*Richardia æthiopica*) is naturally an aquatic it may be taken as proved that it is at least amphibious, as a friend of mine has for years past grown Arum Lilies in a fresh water lake by the banks

of the river Fal within 20 feet of salt water, and his success has been great, as may be imagined when I say that the plants now form a broad margin to a portion of the lake about 300 yards in length and varying in width from 1 yard to 3 yards. The flowers on this belt open, at one time in June last, were estimated at 10,000, and the annual number is not less than 50,000. After a mild winter, such as that of 1895-96, cutting commences in February; by Easter the number of flowers is immense, and their production is continued to the end of September. The hardiness of the plants was well tested in the winter of 1894-95, when ice sufficiently thick to be skated on was formed on the lake, but this only served to check and not to destroy any of the plants, the check on those plants with crowns near the surface being sufficiently severe to prove that a good depth of water over the crowns is safest.

The method adopted for planting is simple enough and involves but little labour. Plants which have been forced are taken direct to the water, carried in a boat to the position selected, and then simply dropped overboard, after which they soon commence to root freely in the pond mud. A large waggon-load was treated in this way last year, and this represents about the usual rate of annual increase by new plantings. The position chosen for the Arums by the lake-side is a sunny, but well-sheltered one, and here the plants revel to such a degree as to have induced owners of other estates in Cornwall to plant largely on the same lines, with, of course, greater climatic advantages than can be found in the country at large. But does not the proved well-doing of the plants in water 2 feet deep open up possibilities for their cultivation in colder climes?—J. C. TALLACK, *Livermere*.

ENEMIES.—Many water plants will grow almost anywhere and bid defiance to game or rats, but the newer and rarer Water Lilies are worth looking after, as they will not show half their beauty if they are subjected to the attacks of certain water animals. They may, indeed, when young be easily exterminated by them, and even when old and established the common water rat destroys the flowers, and, taking them to the bank, eats them at its leisure, and I have often found the remains of half a dozen fine flowers in one spot. When the plants are small, the attacks of the common moorhen and other water-fowl may mean all the difference between life and death to a Water Lily. Perhaps, therefore, the first thing to be done in establishing these plants is to put them in some small pond apart from the rougher water-side plants, and especially where they will be safe from the attacks of the water rat and other creatures which cannot be kept out of ponds fed by streamlets. By these and river banks or back-waters water rats are hard to destroy, and guns, traps, ferrets, or any other

means must be used. The common brown rat is not so fond of these flowers as the true water rat, but it is so destructive to everything else, that it is essential to destroy it at the same time, as it often abounds near water. The water or moorhen is continuously destructive to all the Water Lilies, pecking at the flowers until mere shreds are left, and no one can fairly judge of the rare beauty of these plants where these birds are not kept down.

PLANTING THE WATERSIDE.—People are so much led by showy descriptions in catalogues, and also by their own love for ugly things, that we often see misuse by the waterside of variegated shrubs—a bold lake margin almost covered with variegated bushes, like the yellow elder, the purple beech, and even down to the very margin of the water with variegated shrubs, absolutely the worst kind of vegetation which could be chosen for such a place.

Of all places that one has to deal with in gardening or planting, islands and the margins of water—lake or river—we have the clearest guidance as to the trees and shrubs that inhabit and belong to such places, and that always thrive and look best in them. The vegetation best fitted for those places is mostly of an elegant and spiry character ; willows in many forms often beautiful in colour, in summer or winter, dogwoods and aspen poplars. There is no scarcity of such trees and shrubs at all ; even the willows of Europe and Britain furnish a fine series of trees, and some form tall timber trees like the white willow, and low feathery willows like the rosemary-leaved one. There is also a superb group of weeping trees among these willows, some of them more precious and hardy even than the Babylonian willow. As regards reeds and herbaceous plants, our country and the northern world are very rich indeed, so that we need never use any grossly unsuitable plant for the waterside.

These facts are worth bearing in mind in seeking true and artistic effects, as the side water properly or improperly planted is strangely different from an artistic point of view. Take for example a piece of water, good in form of margin, and right in every way as to its relation to the landscape ; it is quite easy to spoil the effect of it all by the use of shrubs which have not the form or colour characteristic of the trees and shrubs of the water side. By the right use of the trees or shrubs—true to the soil, so to say—we may, on the other hand, make the scene beautiful in delicate colour and fine form, at all seasons, right, in a word, either as a picture, as a covert, and even for timber, for some of the willows have a high value as timber.

The best materials for waterside planting are distinctly those of our own country, or of Europe and the northern world generally ; but we need not despise things that are very suitable and which come to us from other countries, and among them some of the bamboos

promise very well, having, to some extent, the same character of graceful, pointed leaf of the willow and the reed.

WILLOWS AND THEIR COLOUR.—Some say that to enjoy the colour of willows we should cut them down once a year and that the young shoots so grown are more showy. In that case they are thicker together and more level in colour ; but it is a very stupid practice to carry out, because some of the finest willows are trees, and by cutting them down we lose the form, which is very beautiful throughout the year. Colour also is bound up with form and light and shade, and we cannot see the most beautiful effects of colour without these ; so that it is wrong in every way to cut down our willows for the sake of enjoying their colour. A small patch may be treated in that way, especially if we follow the good old plan of using the twigs. If we cut these every year we have a useful aid in packing, tying the branches of trees, and for other purposes. Even in the wild willows of our own country we can notice the great error of this practice of cutting down—in such places, for instance, as Brandon in Norfolk, and other eastern county places, where we see the far greater beauty of the naturally grown tree, even from the point of view of colour.

Pool with Calla Lilies, Trelissick, Truro.

CHAPTER XXII.

THE BOG GARDEN.

THE bog garden is a home for the numerous children of the wild that will not thrive on our harsh, bare, and dry garden borders, but thrive cushioned on moss or in moist peat soil. Many beautiful plants, like the Wind Gentian and Creeping Harebell, grow on our own bogs and marshes, much as these are now encroached upon. But even those who know our own bogs have, as a rule, little notion of the multitude of charming plants, natives of northern and temperate countries, whose home is the open marsh or bog. In our own country we have been so long encroaching upon the bogs and wastes that some of us come to regard bogs and wastes as exceptional tracts all over the world, but when we travel in new countries in northern climes we soon learn what a vast extent of the world's surface was once covered with bogs. In North America, even by the margins of the railways, one sees, day after day, the vivid blooms of the Cardinal-flower springing erect from the wet peaty hollows; and far under the shady woods stretch the black bog pools, the ground between being so shaky that you move a few steps with difficulty. And where the woody vegetation disappears the Pitcher-plant (*Sarracenia*), Golden Club (*Orontium*), Water Arum (*Calla palustris*), and a host of other handsome bog plants cover the ground for hundreds of acres, with perhaps an occasional slender bush of Laurel Magnolia (*Magnolia glauca*) among them. In some parts of Canada, where the painfully long and straight roads are often made through woody swamps, and where the few scattered and poor habitations offer little to cheer the traveller, a lover of plants will find beside the road conservatories of beauty in the ditches and pools of black water fringed with a profusion of stately ferns, and bog and water bushes.

Southwards and seawards, the bog flowers, like the splendid kinds of herbaceous Hibiscus, become tropical in size and brilliancy, while far north and west and south along the mountains grows the

queen of the peat bog—the beautiful and showy Mocassin-flower (*Cypripedium spectabile*). Then in California, all along the Sierras, a number of delicate little annual plants continue to grow in small mountain bogs long after the plains are quite parched, and annual vegetation has quite disappeared from them. But who shall record the beauty and interest of the flowers of the wide-spreading marsh-lands of this globe of ours, from those in the vast wet woods of America, dark and brown, hidden from the sunbeams, to the little bogs of the high Alps, far above the woods, where the ground often teems with Nature's most brilliant flowers? No one worthily; for many mountain-swamp regions are as yet little known to us. One thing, however, we may gather from our small experience—that many plants commonly termed "alpine," and found on high

Mocassin-flower in rocky bog.

mountains, are true bog plants. This must be clear to any one who has seen our pretty Bird's-eye Primrose in the wet mountain-side bogs of Westmoreland, or the Bavarian Gentian in the spongy soil by alpine rivulets.

In many country seats there are spots that with a little care can be made into pretty bog gardens. Where there are no natural sites a bog garden may be made by forming a basin of brickwork and Portland cement, about one foot in depth; the bottom may be either concreted or paved with tiles laid in cement, and the whole must be made water-tight; an orifice should be made in the side, at the height of 6 inches, to carry off the surplus water, and another in the bottom at the lowest point, with a cork, or, better still, with a brass plug valve to close it. Five or six inches of stones and bricks are

to be first laid in, and the whole must be filled with good peat soil, the surface being raised into uneven banks and hillocks, with large pieces of sandstone imbedded in it, so as to afford drier and wetter spots. The size and form of this garden may be varied at discretion; it should be in an exposed situation; the back may be raised with a rocky bank of stones imbedded in peat, and the moisture, ascending by capillary action, will make the position a charming one for Ferns and numberless other peat-loving plants. It is in every way desirable that a small trickle of water should constantly flow through the bog; ten or twelve gallons daily will be sufficient, but if this cannot be arranged it may be kept filled by hand. Such a bog may be bordered by a very low wall of flints or stones, built with mortar, diluted with half its bulk of road-sand and leaf-mould, and having a little earth on the top; the moisture will soon cause this to be covered with moss, and Ferns and all kinds of wall-plants will thrive on it.

Where space will permit, a much larger area may be converted into bog and rockwork intermingled, the surface being raised or depressed at various parts, so as to afford stations for more or less moisture-loving plants. Large stones should be freely used on the surface, so as to form mossy stepping-stones; and many plants will thrive better in the chinks between the stones than on the surface of the peat. It is not necessary to render water-tight the whole of such a large area. A channel of water about 6 inches deep, with drain-pipes and bricks at the bottom, may be led to and fro or branched over the surface, the bends or branches being about 3 feet apart. The whole, when covered with peat, will form an admirable bog, the spaces between the channels forming drier portions, in which various plants will thrive vigorously.

Perhaps the best place for an artificial bog is on sloping ground. The water flows in at the top, and the surface must be rendered water-tight with Portland cement or concrete. Contour or level lines should then be traced on the whole surface at distances of about 3 feet apart, and a ridge, two bricks in height, should be cemented along each of the horizontal lines. These ridges, which must be perfectly level, serve to hold the water, and the surplus escapes over the top to the next lower level. Two-inch drain tiles, covered with coarse stones, should be laid along each ridge to keep the channel open, and a foot of peat should be thrown over the whole. Before adding the peat, ridges may be built on the surface, the stones being built together with peat in the interstices. These ridges need not follow the horizontal lines. The positions thus formed are adapted both to grow and to display Ferns and alpine bog plants to advantage.

Perhaps the most charming plants to commence with are our own native bog plants—*Pinguicula*, *Drosera*, *Parnassia*, *Menyanthes*, *Viola palustris*, *Anagallis tenella*, *Narthecium*, *Osmunda*, *Lastrea Oreopteris*, *Thelypteris spinulosa*, and other Ferns ; *Sibthorpia europæa*, *Linnæa borealis*, *Primula farinosa*, *Campanula hederacea*, *Chrysosplenium alternifolium* and *oppositifolium* ; *Saxifraga Hirculus*, *aizoides*, *stellaris*, *Caltha*, and Marsh Orchises. These, and a host of plants from our marshes and the summits of our higher mountains, will flourish as freely as in their native habitats, and may all be grown in a few

*Cypripedium.**Trillium.**Sarracenia.**Helonias.**Pinguicula.*

A bog garden.

square feet of bog ; while *Rhododendrons*, *Kalmias*, dwarf Ferns, and Sedges will serve for the bolder features.

One of the great charms of the bog garden is that everything thrives and multiplies in it, and nothing droops or dies, but the real difficulty is to prevent the stronger plants from overgrowing, and eventually destroying, the weaker. A small pool of water filled with water plants is a charming addition to the bog garden. The only precaution needed is to destroy the weeds before they gain strength—a single plant of Sheep Rot (*Hydrocotyle*), for example, would smother and ruin the entire bog in a season.—LATIMER CLARK.

In the bog garden many of our most beautiful plants, which in a summer like that of 1895 have been languishing for moisture in the borders, may be grown to perfection surpassing in beauty all our former impressions of them. Of primary importance, of course, is the position, and where this is naturally of a moist, boggy or swampy character, matters will be much simplified. We will assume there is such a spot at disposal, a swampy, treacherous, and, as we are wont to regard it, useless piece of land, under water the greater part of the year. Such a spot will be sure of its crop of naturally water-loving plants, such as Rushes, Sedges, or the like, and the first care must be to root them out one and all. In doing so, be careful that 12 inches or so of the margin be overhauled, as in all probability there will be here roots and seeds of all these wildlings. According to the nature of the boggy piece and also the depth of the water, it may be necessary for cleansing the ground to cut a deep trench and allow the water to pass away, as, without the moisture, the whole is much more convenient for preparation, and roots are more readily eradicated. The ground thoroughly cleansed at the outset, attention should next be directed to the soil. This may be variable, according to the variety of plants it is intended to introduce. For instance, strong growing subjects like the Astilbes and Meadow Sweets are all at home in a fairly stiff and moist soil. On the other hand, *Iris Kæmpferi*, *Trilliums*, *Cypripediums*, *Lilium pardalinum*, *L. superbum*, and other such things have a decided preference for soil of a vegetable character, such as peat, leaves, and the like. These latter, again, have a preference for the drier parts of the bed, while such as the *Calthas* and *Menyanthes trifoliata* revel in wet mud. To meet the varied degrees of moisture which the plants prefer will be quite an easy matter in an artificially constructed bog by the adoption of an undulating surface throughout. Slightly raised mounds are by far the most convenient, and certainly the most economical, way of providing for the greatest number of plants.

FORMATION.—The shape, of course, should be irregular, and, unless a depression of the whole exists, let this receive the next attention, and in such a way that the highest part will be 9 inches below the average surrounding soil. The paths should next be dealt with, excavating these nearly a foot deep in the central parts and gradually rising at the entrances. The soil taken from the paths may, if good, be used to form the raised beds for the planting of moisture-loving plants, such as are content if their roots only reach water. The sides of these beds may need rough support, such as rude sandstone blocks, to keep the soil in its place. These, or similar things, may also form stepping-stones in the wetter parts, as by this means the plants may be viewed without inconvenience. Beds of various sizes will be needed in proportion to the kind of plants that shall hereafter occupy them. For instance, the sloping banks at the edge, which may also take the form of a slightly projecting mound, would constitute excellent positions for some of the hardy Bamboos. Similar opportunities may occur at intervals throughout the margin for planting with such things as *Acanthus*, *Yuccas*, *Eulalias*, *Astilbe rivularis*, *Spiræa Aruncus*, *Bocconia cordata*, and others of similar proportions, while the lower slopes and depressions between these would make excellent places for *Osmunda regalis*, *Lilium giganteum*, *L. pardalinum*, *L. canadense*, and *L. superbum* in peaty beds. The latter three of these are really swamp-loving by nature, and it is scarcely possible to see them in anything approaching perfection elsewhere. In the moisture so close at hand such things simply revel, and the owner of them may for years see them towering far above his head in their day of flowering—a picture of health and beauty. With such things it should always be borne in mind that constant saturation is not absolutely essential, though, indeed, they receive it more or less in their native habitats.

Where space for bog gardens is limited, a very charming carpet to the Lilies just named would be the Wood Lily of North America (*Trillium grandiflorum*). The two things may be planted or replanted at the same season when necessity arises. The *Trillium*, moreover, would come in spring-time and would protect the growth of the *Lilium* against our late spring frosts. For the *Liliums* a foot deep of peat, leaf-soil, and turf, with sharp river grit, would form a good bed, and with a mulch each year of leaf-soil and a little very rotten manure would serve them for many years. It may surprise many to know that under such conditions these *Trilliums* would in a few years, if left alone, attain to nearly 2 feet and be lovely in the size and purity of their flowers. In another of these depressions *Cypripedium spectabile* could easily be established, or a bed may be devoted to the more showy hardy species, giving 6 inches of peat or more, with leaf-soil added. The species named is rather late in sending up its growth, and affords plenty of time for a carpet of *Trillium* to flower before much headway is made. Other beautiful carpeting plants for these would be found in the American Mayflower (*Epigæa repens* or *Pratia angulata*), and if the position be shaded, as it should be for the *Cypripediums*, a charming, yet delicate, fringe may be found in *Adiantum pedatum*. Besides *C. spectabile*, *C. pubescens* and *C. parviflorum* are well deserving attention, together with *Orchis foliosa*, the beautiful "Madeira Orchis," and the *Habenarias*, especially *H. ciliaris* and *fimbriata*; all delight in moisture and require but little root room. Then if a glow of rich colour was needed in such places it could be supplied in *Spiræa venusta* or *S. palmata*, both delighting in moist soil. Another fine effect may be had by grouping *Lobelia fulgens*, or indeed any of the scarlet *Lobelias*. In wet parts may be planted *Osmunda regalis*, *Onoclea sensibilis*, *Struthiopteris germanica*, and *Astilbe rivularis*, allowing room for each. Groups of the herbaceous *Phloxes* in their best and most distinct shades, particularly of salmon scarlet and the purest white, would find their natural wants completely satisfied in the bog garden and give fine colour. In English gardens it is only in a moist season that we see the *Phlox* in even fair condition, for the reason that the original species is a native of wet meadows. This condition we can best imitate by deep digging and heavy manuring, and so much the better if the beds of these be saturated with water. Only in the constant cooling moisture of the bog can *Primula japonica* be seen in perfection, for here will it produce rosettes of leaves $2\frac{1}{2}$ feet across, and giant whorls of its crimson flowers, attaining to nearly the same height. Another charming Primrose is that from the swampy mountain meadows of the Himalayas, *P. sikkimensis*, essentially moisture-loving; but to get the best results this must be treated as a biennial, grown on quickly, and planted in the bog as soon as large enough to handle. Other species of *Primula* suited to the higher and drier parts of the bog would be found in *P. cashmeriana*, *capitata*, *denticulata*, *rosea*, *farinosa*, *involucrata*, *viscosa*, and others, all alike beautiful in their way, and attaining greater vigour with the abundant moisture. Some of the smaller kinds of the *viscosa* type are better for slight shade, such as may be provided by *Dielytra spectabilis*, (a really delightful plant in boggy ground) and various *Spiræas*. It should be noted that many shade-loving plants delight in full sun when given abundant moisture at the root. Particularly noticeable is this with the *Liliums* I have noted previously. In the early part of the year the bog garden should be aglow with such things as Marsh Marigolds, in single and double forms. In the wet mud in the lower parts and about the stepping stones these would appear quite natural, and in like places *Ficaria grandiflora*, a plant too rarely seen, with its blossoms of shining gold; then *Senecio Doronicum*, with golden orange flowers, *Dielytra eximia*, *Trollius*: any of the *Dentarias* and *Dodecatheons* likewise are all well suited for the raised

parts where the roots will touch the moisture. The *Dodecatheons* in peat, loam, and leaf soil in equal parts, particularly *D. Jeffreyanum*, grow to a large size: *Hepaticas*, too, are greatly improved in company with these last, while the charming effects that may be produced are almost without end. *Corydalis nobilis* in peat and loam, *C. lutea*, together with the Water *Mimulus* (*M. luteus*), all provide rich masses of yellow. *Gentiana asclepiadea*, *G. Andrewsii*, as well as *G. verna*, grow charmingly in the bog. Nor is the list of plants exhausted; indeed, they are far too numerous to give in detail, but yet to be mentioned as among the grandest are many *Irises*, *I. Kämpferi* in particular. *Meconopsis Wallichiana* (the blue Poppy of the Himalayas) produces quite a unique effect in the moister parts. *Saxifraga peltata*, *S. Fortunei*, *S. Hirculus*, *S. granulata plena*, *Soldanellas*, *Senecio pulcher*, *Sisyrinchium grandiflorum* and many more are all benefited by the varying degrees of moisture to be found in the bog garden.

In gardens where no moist piece of ground exists, such as those with gravel or sandy subsoils, it will be necessary to select a low part and mark out an irregular outline. Next dig out the soil 18 inches or 2 feet in depth, so as to allow of at least 6 inches of clay being puddled in the bottom to retain the moisture. For bog plants clay is far better than concrete, because it supplies food for many moisture-loving plants. To keep the clay in position, sloping sides will be best, and for the soils named it will scarcely be necessary to have more than a small outlet for excessive moisture, and this at about 12 inches high from the deepest part. For this a narrow clinker or rough brick drain will suffice, so placed that the outlet may be blocked, if necessary, for affording greater moisture. By digging a shallow trench around the upper margin of the bog-bed, and using Bamboos, such as *Metake* or *glaucescens*, or *Bocconia cordata*—the last two valuable for their rapid annual growth—such things would give the needful shade in summer.

In large gardens and cool, hilly districts the bog garden should always be found. Some years ago I had charge of just such a garden: in the flower garden was a fountain basin wherein water plants were grown; the overflow from this went tumbling in many ways over a series of rocks into the rock garden pond containing *Orontium aquaticum*, *Nymphæas*, and *Sagittarias*. In turn the overflow from the rock garden was conducted to the bog garden proper, where many masses of *Cypripedium spectabile*, with fully a score of spikes of its beautiful flowers to each tuft, grew in luxuriance in peat and leaves under a welcome shade. In the swampy watercourse, before the bog was entered, the Marsh Marigold in variety abounded, being very conspicuous. Here, too, *Osmundas* were rampant, together with *Primula japonica* and a variety of plants already mentioned, and *Ourisia coccinea*, tightly pressing the surface of a stone, flowered splendidly.—E. J.

CHAPTER XXIII.

THE HARDY FERN GARDEN.

THE marriage of the fern and flower garden is worth effecting, our many hardy evergreen Ferns being so good for association with hardy flowers. There are many varieties of our native Ferns which would be excellent companions to evergreen herbaceous plants suited for sheltered, half-shady nooks, and there are hardy and vigorous exotic kinds. Graceful effects may be had in fore-grounds, in drives through glades, through the bold use of the larger hardy Ferns, whether evergreen or not. The Bracken is everywhere; but there are Ferns of graceful form which delight in the partial shade of open woods and drives, and succeed even in the sun. Ferns have, as a rule, been stowed away in obscure corners, and have rarely come into the garden landscape, though they may give us beautiful aspects of vegetation not only in the garden, but by grassy glades, paths, and drives. In countries where hardy Ferns abound, they are often seen near water and in hollow and wet places, and it will often be best to group them in such localities, but without any of the ugly aspects of "rockwork" too often supposed to be the right thing in a hardy fernery.

In the home counties there is probably not a better fernery than that at Danesbury. It is on a sloping bank in a rather deep dell, overhung with trees and Ivy, in the shade of which the Ferns delight. As regards the planting, the various families are arranged in distinct groups, and each group has a position and a soil favourable to its requirements. The best way to grow Ferns, however, is with flowers, as in Nature, and a hardy fernery may be very beautiful. As a rule, Ferns have in their natural state both soil and locality exactly suited to their requirements; and the soil is yearly enriched by the decaying foliage of surrounding trees, which protects them in winter. In arranging a fernery, study the habits and requirements of each species, and allot to it the position most likely to give the best results. At Danesbury the most

Effect of native Ferns in foreground. From a photograph by Miss Willmott

sheltered, moist spot is given to the evergreen *Blechnums*, which delight in a damp atmosphere, and to the delicate forms of *Asplenium*. *Osmunda*, which thrives amazingly, is in a low swamp. The soil used for these Royal Ferns is a mixture of good loam and fibrous peat. The better deciduous kinds of *Polypodium*, such as *P. Phegopteris* and *P. Dryopteris*, have sheltered positions; and in quiet nooks may be found charming groups of the Parsley Fern, and *Cystopteris fragilis*, a most delicate and graceful Fern. *Lastrea Filix-mas* and its varieties occupy the more exposed positions in company with fine colonies of the evergreen kinds, comprising some unique varieties of the *Polystichums*, *Scolopendriums*, *Polypodiums*, etc. A plentiful supply of water is available.

The Fern-lover will remember that not only have we our own beautiful native Ferns for adorning our gardens, but also the hardy Ferns of America, Asia, and the continent of Europe. As to the hardiness of exotic Ferns, Mr. Milne-Redhead writes from Clitheroe:—

Is it not strange that we so seldom see, even in good gardens, any well-grown plants of exotic *Osmundas*, *Struthiopteris*, &c.? Here, after a long spell of hot, dry weather, we had on May 20, 1896, a sharp snap of frost which completely cut off the more than usually beautiful flowers of *Azalea mollis*, and seriously injured the young growths of some Japanese Pines, such as *Abies firma*, *A. sachalinensis*, and others. This frost turned the young fronds of our English *Filix-mas* and *Filix-fœmina* quite black. Close by these plants, and under similar conditions of soil and exposure, the American *Adiantum pedatum*, 1 foot high, and the tender-looking *Onoclea sensibilis* were quite unhurt, and *Osmunda interrupta* and *O. cinnamomea* entirely escaped and are now very fine. Our English *O. regalis* was slightly touched, but the Brazilian *O. spectabilis* brought by myself from dry banks in the Organ Mountains was not even browned in its early and delicate fronds. All the Ferns I have named are great ornaments to any moist and rather shady place in the shrubbery. In a sheltered nook in the rock garden I find, to my surprise, that *Gymnogramma triangularis* has survived the perils not only of a frosty spring, but the still greater ones of a wet autumn and winter, and is now throwing up healthily its pretty triangular fronds, whose under surface is quite white with the powder peculiar to the genus—in fact a hardy silver Fern.

A visit to Mr. Sclater's Fern garden at Newick shows us the good effects that may be had by using the nobler hardy Ferns—both native and foreign—in a bolder way, and often in the open sun. The idea that a fernery is best in a dark corner has had unfortunate results in keeping the grace of such plants out of the garden picture. Hardy Ferns are being used in bold and simple ways at Kew, where at one time they were in an obscure fernery, and even if some Ferns require shade, many do not in our cool climate. Shade is, moreover, an elastic term; the bold hardy Ferns one sees in the American wood-

lands would not have too much sun in the open in Britain, provided they were in the right soil.

Many hardy Ferns are excellent for association with hardy flowers, and many may be grouped with evergreen rock and hill plants in

Native Ferns massed by shady walk (Devon). From a photograph by S. W. Fitzherbert.

forming borders and groups of evergreen plants. Though we have enough native Ferns in these islands to give us very fine effects, as we see at Penrhyn, or wherever Ferns are boldly grouped, some of the finest Ferns we see at Newick, and also at Rhianva and other gardens

are natives of North America. Foremost among the strong-growing hardy exotic kinds, there are the handsome North American *Osmunda cinnamomea*, and *O. Claytoniana*, *O. gracilis*, a very pretty species of particularly slender habit; the Sensitive Fern (*Onoclea*), *Dicksonia punctiloba*, the beautiful Canadian Maiden-hair, the American Ostrich Feather Fern, *Lastrea Goldiana*, *Woodwardia virginica*, all of North American origin and attaining between 2 feet and 3 feet in height. Among the smaller ferns are *Aspidium nevadense*, *novaboracense* and *thelypteroides*, *Asplenium angustifolium*, *Athyrium Michauxi* and *Woodwardia angustifolia*, all of which grow from 18 inches to 24 inches. *Allosorus acrostichoides*, the handsome *Polypodium hexagonopterum*, *Woodsia obtusa*, *oregana* and *scopulina*, and also two pretty *Selaginellas*, viz., *oregana* and *Douglasi*. All these are of small dimensions, varying as they do from 6 in. to 12 in. in height. The pretty *Hypolepis anthriscifolia* of South Africa; the robust *Lastrea atrata*, from India; the Japanese *Lastrea decurrens*, the massive *Struthiopteris orientalis*, also a native of Japan, and the pretty *Davallia Mariesi* are all equal in hardiness to any of our British deciduous Ferns.

EVERGREEN HARDY FERNS.—Some of the evergreen Ferns, whether British or exotic, which stand the severity of our climate, are as hardy as those which lose their leaves in winter, and no Fern could be hardier than the various small-growing *Aspleniums*, which grow in old walls exposed to severe frosts, such as the black-stemmed Spleenwort (several), and its pretty crested and notched forms, the little Wall Rue or Rue Fern, the forked and other native Spleenworts. All these are small, seldom exceeding 8 in. in height, while the black Maiden-hair Spleenwort *Blechnum* and its several beautiful forms usually average from 9 in. to 12 in. in height. *Polypodium* also contains some handsome evergreen plants; even the common Polypody is a fine plant in its way, and is seen at its best when growing on a wall, on the branches of a tree, or on the roof of a low house. But by far the handsomest of its numerous forms are the Welsh Polypody, the Irish and the Cornish, and its handsome, finely-cut varieties in which the fronds are of a light and feathery nature. Then there are the more or less heavily crested forms, all of larger dimensions than the species from which they are issue. The common Hart's-tongue, also perfectly hardy, supplies us with many forms giving fine effect and free growth.

As regards strong-growing evergreen hardy Ferns, however, none can compare with the Prickly Shield Fern and the soft Prickly Shield Fern and its beautiful varieties which produce massive fronds 18 ins. to 24 ins. long. Then there is an extensive section of varieties in

which the fronds in many instances are as finely cut as those of the Lace Fern, and infinitely finer in effect. The soft Prickly Shield Fern has also produced some remarkably crested forms, all of which are equal in vigour and in dimensions to the typical species. The Holly Fern is also perfectly hardy, and is one of those plants which are usually killed with kindness, through being grown in a temperature higher than is required. As regards

EXOTIC EVERGREEN KINDS, North America supplies the greatest part of those hardy in England. The larger-growing kinds from that country are *Aspidium cristatum* *Clintonianum*, *A. floridanum*, *Asplenium angustifolium*, *Lastrea marginalis*, *Polystichum munitum* and *P. acrostichoides*, all of which sorts attain from 18 ins. to 24 ins. in height.

Not less effective and quite as interesting as the above, though of smaller dimensions, are the North American *Asplenium ebum*, *Phegopteris alpestris*, *Pellaea atropurpurea*, *Woodsia alpina* and *W. glabella* varying in height from 6 ins. to 12 ins. There are also some remarkably handsome strong-growing sorts, native of Japan, the most decorative as also the most distinct among these being *Lastrea Standishi*, with fronds 24 ins. to 30 ins. long, and of a lovely and cheerful green colour; *Lastrea erythrosora*, with fronds 18 ins. to 24 ins. long, of a beautiful bronzy red colour when young, and of a deep dark green hue when mature. *Lastrea opaca* is another handsome Japanese form, broad and massive, of a fine metallic colour when young, and of a deep velvety green when mature. In *Lastrea Sieboldi* we have a totally distinct plant, having the general aspect of a somewhat dwarf *Polypodium aureum* and of the same bluish colour. This and *Dictyogramma japonica*, which have somewhat bold and broad fronds, are also quite hardy, and so are the Japanese *Lastrea prolifica*, a species with finely-cut fronds, bearing numerous small plants; the handsome *Polystichum setosum*, with beautiful dark green, shining foliage; *Polystichum Tsus-simense*, *Lastrea corusca* and *L. aristata*. *Lomaria chilensis* is a large-growing Fern with fronds 24 ins. to 30 ins. long and of a particularly deep green colour. *Nipholobolus lingua* is a very distinct Fern with entire fronds of a very leathery nature, dark green above and silvery beneath, having somewhat the general appearance of our common Hart's-tongue, but in this case the fronds, instead of starting from a single crown, are produced along a slender rhizome of a wiry nature. Perhaps one of the prettiest of the hardy evergreen Ferns is the violet-scented *Lastrea fragrans*. This charming little plant, seldom more than 4 ins. in height, succeeds well when planted outside, as it is on the outside rockery in

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Ferns and flower border.

Kew Gardens, where its crown is simply protected by a handful of dry leaves during the winter.

ROCK AND SUN-LOVING FERNS.—It is a mistake to consider all Ferns as plants requiring shade and moisture. There are, on the contrary, ferns which like full sunshine and bright light. Without counting *Cystopteris alpina* and *fragilis*, which grow in our walls as well in sun as in shade, there is one class of Ferns which actually requires sunshine. *Cheilanthes* from the Old World, as well as those from the New, only do well in a sunny aspect. I could not succeed at Geneva in cultivating *Cheilanthes odora*, *lanuginosa* and *vestita*. In spite of every care given to them, they suffered from general weakness, ending in decay. At last I one day saw *Woodsia hyperborea*, that delicate and fragile plant, in full sun along an alpine road in Italy, and on returning I planted all my *Cheilanthes* in sunshine on a south wall. The result was good, and I recommend the plan to Fern growers. But it was necessary also to change the soil in which these plants were cultivated, and I set them in soft porous mould composed of Sphagnum Moss, peat and sand; good drainage and frequent watering ensured an immediate and excellent result. That which proved satisfactory for *Cheilanthes* I then tried for *Woodsia hyperborea* and *ilvensis* (the treatment did not do for *W. obtusa*); then for *Scolopendrium Hemionitis*, that pretty and curious Fern from the south so rarely met with in gardens, where it is considered difficult to grow. Then I gave the same treatment to *Nothochlena Marantæ*; and this lovely Fern, which formerly did not do with me, turned out marvellously well. It is, then, certain that many species of Ferns require sun and plenty of air.—H. CORREVON, in *Gardeners' Chronicle*.

The following exotic Ferns may be grown in the open air if the more tender are covered with old fronds or soft hay over the crowns in winter. These would be better in sheltered nooks in the rock garden in good peaty earth. Those kinds marked with an asterisk should receive protection in this form. Unless otherwise mentioned, the Ferns are natives of North America.

Exotic hardy Ferns.

<i>Adiantum pedatum</i>	* <i>Cyrtomium caryoti-</i>	<i>Lastrea—continued.</i>	<i>Phegopteris alpestris</i>	<i>Struthiopteris ger-</i>
<i>Allosorous acrosti-</i>	<i>deum</i> (E. Indies)	<i>prolifera</i> (Jamaica)	<i>Dryopteris</i>	<i>manica</i> (Europe)
<i>choides</i>	* <i>falcatum</i> (Japan)	<i>Sieboldi</i> (Japan)	<i>hexagonoptera</i>	* <i>orientalis</i> (Japan)
<i>Aspidium cristatum</i>	* <i>Fortunei</i> (Japan)	* <i>varia</i> (China)	<i>polypodioides</i>	<i>pennsylvanica</i>
<i>Clintonianum</i>	<i>Dennstædtia puncti-</i>	<i>Lomaria alpina</i> (New	<i>Polystichum acros-</i>	<i>p. recurva</i>
<i>fragrans</i>	<i>lobula</i>	Zealand)	<i>tichoides</i>	<i>Woodsia</i>
<i>nevadense</i>	<i>Hypolepis mille-</i>	<i>chilensis</i> (Chili)	<i>a. grandiceps</i>	<i>glabella</i>
<i>novaboracense</i>	<i>folium</i> (N. Zea-	<i>crenulata</i> (Chili)	<i>a. incisum</i>	<i>obtusa</i>
<i>rigidum argutum</i>	land)	<i>Onoclea sensibilis</i>	<i>Brauni</i>	<i>oregana</i>
<i>spinulosum</i>	<i>anthriscifolia</i> (S.	<i>Osmunda cinna-</i>	<i>concovum</i> (Japan)	<i>scopulina</i>
<i>thelypteroides</i>	<i>Africa</i>)	<i>momea</i>	<i>munitum</i> (Califor-	<i>Woodwardia angusti-</i>
<i>Asplenium angustifo-</i>	<i>Lastrea</i>	<i>Osmunda Claytoni-</i>	<i>nia</i>	<i>folia</i>
<i>lium</i>	* <i>atrata</i> India)	<i>ana</i>	<i>m. imbricans</i>	* <i>japonica</i> (Japan)
<i>ebenum</i>	* <i>decurrens</i> (Japan)	<i>gracilis</i>	<i>polyblepharum</i> (Ja-	<i>orientalis</i> (Japan)
* <i>fontanum</i> (Europe)	<i>fragrans</i>	<i>japonica</i>	<i>pan)</i>	<i>radicans</i> (S.
<i>thelypteroides</i>	<i>Goldiana</i>	* <i>Pellæa atro-</i>	* <i>proliferum</i> (Austra-	<i>Europe)</i>
<i>Michauxi</i>	<i>intermedia</i>	<i>purpurea</i>	<i>lia)</i>	<i>r. americana</i>
<i>Botrychium virgini-</i>	<i>marginalis</i>	* <i>gracilis</i>	* <i>setosum</i> (Japan)	<i>virginica</i>
<i>cum</i>	* <i>opaca</i> (China)

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The Tall Arundo : Golden Field. Liphook, Surrey.

CHAPTER XXIV.

COLOUR IN THE FLOWER GARDEN.

ONE of the first things which all who care for gardens should learn, is the difference between true and delicate and ugly colour—between the showy dyes and much glaring colour seen in gardens and the beauties and harmonies of natural colour. There are, apart from beautiful flowers, many lessons and no fees:—Oak woods in winter, even the roads and paths and rocks and hedgerows; leaves in many hues of life and death, the stems of trees: many birds are lovely studies in harmony and delicate gradation of colour; the clouds (eternal mine of divinest colour) in many aspects of light, and the varied and infinite beauty of colour of the air itself as it comes between us and the distant view.

Nature is a good colourist, and if we trust to her guidance we never find wrong colour in wood, meadow, or on mountain. “Laws” have been laid down by chemists and decorators about colours which artists laugh at, and to consider them is a waste of time. If we have to make coloured cottons, or to “garden” in coloured gravels, then it is well to think what ugly things will shock us least; but dealing with living plants in their infinitely varied hues, and with their beautiful flowers, is a different thing! If we grow well plants of good colour, all will be right in the end, but often raisers of flowers work against us by the raising of flowers of bad colour. The complicated pattern beds so often seen in flower gardens should be given up in favour of simpler beds, of the shapes best suiting the ground, and among various reasons for this is to get true colour. When we have little pincushion-beds where the whole “pattern” is seen at once through the use of dwarf plants, the desire comes to bring in colour in patterns and in ugly ways. For this purpose the wretched *Alternanthera* and other pinched plant rubbish are grown—plants not worth growing at all.

When dwarf flowers are associated with bushes like Roses, and with plants like Carnations and tall Irises, having pointed and graceful foliage, the colours are relieved against the delicate foliage of

the plants and by having the beds large enough we relieve the dwarfer flowers with taller plants behind. In a shrubbery, too, groups of flowers are nearly always right, and we can follow our desire in flowers without much thought of arranging for colour. But as the roots of the shrubs rob the flowers; the best way is to put near and around shrubberies free-running plants that do not want much cultivation, like Solomon's Seal and Woodruff, and other plants that grow naturally in woods and copses, while with flowers like Pansies, Carnations, Roses, that depend for their beauty on good soil, the best way is to keep them in the open garden, away from hungry tree-roots.

By having large simple beds we relieve the flowers, and enjoy their beauty of colour and the forms of the plants without "pattern" of any kind. Instead of "dotting" the plants, it is better to group them naturally, letting the groups run into each other, and varying them here and there with taller plants. A flower garden of any size could be planted in this way, without the geometry of the ordinary flower garden, and the poor effect of the "botanical" "dotty" mixed border. As, however, all may not be ready to follow this plan, the following notes on colour, by a flower gardener who has given much thought to the subject, will be useful:—

"One of the most important points in the arrangement of a garden is the placing of the flowers with regard to their colour-effect. Too often a garden is an assemblage of plants placed together haphazard, or if any intention be perceptible, as is commonly the case in the bedding system, it is to obtain as great a number as possible of the most violent contrasts; and the result is a hard, garish vulgarity. Then, in mixed borders, one usually sees lines or evenly distributed spots of colour, wearying and annoying to the eye, and proving how poor an effect can be got by the misuse of the best materials. Should it not be remembered that in setting a garden we are painting a picture,—a picture of hundreds of feet or yards instead of so many inches, painted with living flowers and seen by open daylight—so that to paint it rightly is a debt we owe to the beauty of the flowers and to the light of the sun; that the colours should be placed with careful forethought and deliberation, as a painter employs them on his picture, and not dropped down in lifeless dabs.

"HARMONY RATHER THAN CONTRAST.—Splendid harmonies of rich and brilliant colour, and proper sequences of such harmonies, should be the rule; there should be large effects, each well studied and well placed, varying in different portions of the garden scheme. One very common fault is a want of simplicity of intention; another, an absence of any definite plan of colouring. Many people have not given any attention to colour-harmony, or have

not by nature the gift of perceiving it. Let them learn it by observing some natural examples of happily related colouring, taking separate families of plants whose members are variously coloured. Some of the best to study would be American Azaleas, Wallflowers, German and Spanish Iris, Alpine Auriculas, Polyanthus, and Alstrmerias.

“BREADTH OF MASS AND INTERGROUPING.—It is important to notice that the mass of each colour should be large enough to have a certain dignity, but never so large as to be wearisome ; a certain breadth in the masses is also wanted to counteract the effect of foreshortening when the border is seen from end to end. When a definite plan of colouring is decided on, it will save trouble if the plants whose flowers are approximately the same in colour are grouped together to follow each other in season of blooming. Thus, in a part of the border assigned to red, Oriental Poppies might be planted among or next to Tritomas, with scarlet Gladioli between both, so that there should be a succession of scarlet flowers, the places occupied by the Gladioli being filled previously with red Wallflowers.

“WARM COLOURS are not difficult to place : scarlet, crimson, pink, orange, yellow, and warm white are easily arranged so as to pass agreeably from one to the other.

“PURPLE and LILAC group well together, but are best kept well away from red and pink ; they do well with the colder whites, and are seen at their best when surrounded and carpeted with gray-white foliage, like that of *Cerastium tomentosum* or *Cineraria maritima* ; but if it be desired to pass from a group of warm colour to purple and lilac, a good breadth of pale yellow or warm white may be interposed.

“WHITE FLOWERS.—Care must be taken in placing very cold white flowers such as *Iberis correfolia*, which are best used as quite a high light, led up to by whites of a softer character. Frequent repetitions of white patches catch the eye unpleasantly ; it will generally be found that one mass or group of white will be enough in any piece of border or garden arrangement that can be seen from any one point of view.

“BLUE requires rather special treatment, and is best approached by delicate contrasts of warm whites and pale yellows, such as the colours of double Meadow Sweet, and *Oenothera Lamarckiana*, but rather avoiding the direct opposition of strong blue and full yellow. Blue flowers are also very beautiful when completely isolated and seen alone among rich dark foliage.

“A PROGRESSION OF COLOUR in a mixed border might begin with strong blues, light and dark, grouped with white and pale yellow, passing on to pink ; then to rose colour, crimson, and the strongest scarlet, leading to orange and bright yellow. A paler yellow followed by white would distantly connect the warm colours with the lilacs and

purples, and a colder white would combine them pleasantly with low-growing plants with cool-coloured leaves.

"SILVERY-LEAVED PLANTS are valuable as edgings and carpets to purple flowers, and bear the same kind of relation to them as the warm-coloured foliage of some plants does to their strong red flowers, as in the case of the Cardinal Flower and double crimson Sweet William. The bright clear blue of Forget-me-not goes best with fresh pale green, and pink flowers are beautiful with pale foliage striped with creamy white, such as the variegated forms of Jacob's-ladder or *Iris pseudacorus*. A useful carpeting plant, *Acæna pulchella*, assumes in spring a rich bronze between brown and green which is valuable with Wallflowers of the brown and orange colours. These few examples, out of many that will come under the notice of any careful observer, are enough to indicate what should be looked for in the way of accompanying foliage—such foliage, if well chosen and well placed, may have the same value to the flowering plant that a worthy and appropriate setting has to a jewel.

"IN SUNNY PLACES warm colours should preponderate ; the yellow colour of sunlight brings them together and adds to their glowing effect.

"A SHADY BORDER, on the other hand, seems best suited for the cooler and more delicate colours. A beautiful scheme of cool colouring might be arranged for a retired spot, out of sight of other brightly coloured flowers, such as a border near the shady side of any shrubbery or wood that would afford a good background of dark foliage. Here would be the best opportunity for using blue, cool white, palest yellow, and fresh green. A few typical plants are the great Larkspurs, Monkshoods, and Columbines, Anemones (such as *japonica*, *sylvestris*, *apennina*, *Hepatica*, and the single and double forms of *nemorosa*), white Lilies, Trilliums, Pyrolas, Habenarias, Primroses, white and yellow, double and single, Daffodils, white Cyclamen, Ferns and mossy Saxifrages, Lily-of-the-Valley, and Woodruff. The most appropriate background to such flowers would be shrubs and trees, giving an effect of rich sombre masses of dusky shadow rather than a positive green colour, such as Bay Phillyrea, Box, Yew, and Evergreen Oak. Such a harmony of cool colouring, in a quiet shady place, would present a delightful piece of gardening.

"BEDDED-OUT PLANTS, in such parts of a garden as may require them, may be arranged on the same general principle of related, rather than of violently opposed, masses of colour. As an example, a fine effect was obtained with half-hardy annuals, mostly kinds of Marigold, *Chrysanthemum*, and *Nasturtium*, of all shades of yellow, orange, and brown. This was in a finely designed formal garden before the principal front of one of the stateliest of the great houses of England. It was a fine lesson in temperance, this employment of a simple scheme

SPRING.—The names of flowers prevailing at this season are printed in plan.

SUMMER.—State of the same border with the names of flowers in full bloom at that season.

AUTUMN.—State of the same border with the names of the autumnal blooming plants.

Plan showing the principal groups in a border of hardy flowers; the plants placed to form masses of harmonious colouring, and their progression simply, but carefully, arranged to produce a fine colour-effect. Many groups of small plants and bulbs, that could not be shown on the plan, are planted between and among the larger masses, their colour always agreeing with that of the surrounding flowers.

of restricted colouring, yet it left nothing to be desired in the way of richness and brilliancy, and well served its purpose as a dignified ornament, and worthy accompaniment to the fine old house.

“CONTRASTS—HOW TO BE USED.—The greater effects being secured, some carefully arranged contrasts may be used to strike the eye when passing ; for opposite colours in close companionship are not telling at a distance, and are still less so if interspersed, their tendency then being to neutralize each other. Here and there a charming effect may be produced by a bold contrast, such as a mass of orange Lilies against Delphiniums or Gentians against alpine Wallflowers ; but these violent contrasts should be used sparingly and as brilliant accessories rather than trustworthy principals.

“CLIMBERS ON WALLS.—There is often a question about the suitability of variously coloured creepers on house or garden walls. The same principle of harmonious colouring is the best guide. A warm-coloured wall, one of Bath stone or buff bricks, for instance, is easily dealt with. On this all the red-flowered, leaved, or berried plants look well—Japan Quince, red and pink Roses, Virginian Creeper, *Cratægus Pyracantha*, and the more delicate harmonies of Honeysuckle, Banksian Roses, and *Clematis montana*, and *Flammula*, while *C. Jackmanni* and other purple and lilac kinds are suitable as occasional contrasts. The large purple and white *Clematises* harmonise perfectly with the cool gray of Portland stone ; and so do dark-leaved climbers, such as White Jasmine, Passion Flower, and green Ivy. Red brickwork, especially when new, is not a happy ground colour ; perhaps it is best treated with large-leaved climbers—*Magnolias*, Vines, *Aristolochia*—to counteract the fidgety look of the bricks and white joints. When brickwork is old and overgrown with gray Lichens, there can be no more beautiful ground for all colours of flowers from the brightest to the tenderest—none seems to come amiss.

“COLOUR IN BEDDING-OUT.—We must here put out of mind nearly all the higher sense of the enjoyment of flowers ; the delight in their beauty individually or in natural masses ; the pleasure derived from a personal knowledge of their varied characters, appearances, and ways, which gives them so much of human interest and loveliness ; and must regard them merely as so much colouring matter, to fill such and such spaces for a few months. We are restricted to a kind of gardening not far removed from that in which the spaces of the design are filled in with pounded brick, slate, or shells. The best rule in the arrangement of a bedded garden is to keep the scheme of colouring as simple as possible. The truth of this is easily perceived by an ordinary observer when shown a good example, and is obvious without any showing to one who has studied colour effects ; and yet the very opposite intention is most commonly seen, to wit, a garish display of the

greatest number of crudely contrasting colours. How often do we see combinations of scarlet *Geranium*, *Calceolaria*, and blue *Lobelia*—three subjects that have excellent qualities as bedding plants if used in separate colour schemes, but which in combination can hardly fail to look bad? In this kind of gardening, as in any other, let us by all means have our colours in a brilliant blaze, but never in a discordant glare. One or two colours, used temperately and with careful judgment, will produce nobler and richer results than many colours purposely contrasted, or wantonly jumbled. The formal garden that is an architectural adjunct to an imposing building demands a dignified unity of colouring instead of the petty and frivolous effects so commonly obtained by the misuse of many colours. As practical examples of simple harmonies, let us take a scheme of red for summer bedding. It may range from palest pink to nearly black, the flowers being *Pelargoniums* in many shades of pink, rose, salmon, and scarlet; *Verbenas*, red and pink; and judicious mixtures of *Iresine*, *Alternanthera*, *Amaranthus*, the dark *Ajuga*, and red-foliaged *Oxalis*. Still finer is a colour scheme of yellow and orange, worked out with some eight varieties of *Marigold*, *Zinnias*, *Calceolarias*, and *Nasturtiums*—a long range of bright rich colour, from the palest buff and primrose to the deepest mahogany. Such examples of strong warm colouring are admirably suited for large spaces of bedded garden. Where a small space has to be dealt with it is better to have arrangements of blue, with white and the palest yellow, or of purple and lilac, with gray foliage. A satisfactory example of the latter could be worked out with beds of purple and lilac *Clematis*, trained over a carpet of *Cineraria maritima*, or one of the white-foliaged *Centaureas*, and *Heliotropes* and purple *Verbenas*, with silvery foliage of *Cerastium*, *Antennaria*, or *Stachys lanata*. These are some simple examples easily carried out. The principle once seen and understood (and the operator having a perception of colour), modifications will suggest themselves, and a correct working with two or more colours will be practicable; but the simpler ways are the best, and will always give the noblest results. There is a peculiar form of harmony to be got even in varied colours by putting together those of nearly the same strength or depth. As an example in spring bedding, *Myosotis dissitiflora*, *Silene pendula* (not the deepest shade), and double yellow Primrose or yellow *Polyanthus*, though distinctly red, blue, and yellow, yet are of such tender and equal depth of colouring, that they work together charmingly, especially if they are further connected with the gray-white foliage of *Cerastium*.—G. J.”

The Poet's Laurel.

CHAPTER. XXV.

FRAGRANCE.

A MAN who makes a garden should have a heart for plants that have the gift of sweetness as well as beauty of form or colour. And what a mystery as well as charm—wild Roses sweet as the breath of heaven, and wild Roses of repulsive odour all born of the earth-mother, and it may be springing from the same spot. Flowers sweet at night and scentless in the day; flowers of evil odour at one hour and fragrant at another; plants sweet in breath of blossom, but deadly in leaf and sap; Lilies sweet as they are fair, and Lilies that must not be let into the house; with bushes in which all that is delightful in odour permeates to every March-daring bud. The Grant Allens of the day, who tell us how the Dandelion sprang from the Primrose some millions of years ago, would no doubt explain all these things to us, or put long names to them—what Sir Richard Owen used to call “conjectural biology,”—but we need not care where they leave the question, for to us is given this precious fragrance, happily almost without effort, and as free as the clouds from man's power to spoil.

Every fertile country has its fragrant flowers and trees; alpine meadows with Orchids and mountain Violets; the Primrose-scented woods, Honeysuckle-wreathed and May-frosted hedgerows of Britain; the Cedars of India and of the mountains of Asia Minor, with Lebanon; trees of the same stately order, perhaps still more fragrant in the warmer Pacific breezes of the Rocky Mountains and Oregon, where the many great Pines often spring from a carpet of fragrant Evergreens, and a thousand flowers which fade away after their early bloom, and stand withered in the heat, while the tall Pines overhead distil for ever their grateful odour in the sunny air. Myrtle, Rosemary, and Lavender, and all the aromatic bushes and herbs clothing the little capes that jut into the great sea which washes the shores of Greece, Italy, Sicily, and Corsica; garden islands scattered through vast

Pacific seas, as stars are scattered in the heavens ; enormous tropical forests, little entered by man, but from which he gathers on the outskirts treasures for stove and greenhouse ; great island gardens like Java and Ceylon and Borneo, rich in spices and lovely plant life ; Australian bush, with plants strange as if from another world, but often most delicate in odour even in the distorted fragments of them we see in our gardens.

It is not only from the fragile flower-vases these sweet odours flow ; they breathe through leaf and stem, and the whole being of many trees and bushes, from the stately Gum trees of Australia to the sweet Verbena of Chili. Many must have felt the charm of the strange scent of the Box bush before Oliver Wendell Holmes told us of its "breathing the fragrance of eternity." The scent of flowers is often cloying, as of the Tuberose, while that of leaves is often delicate and refreshing, as in the budding Larch, and in the leaves of Balm and Rosemary, while fragrance is often stored in the wood, as in the Cedar of Lebanon and many other trees, and even down through the roots.

It is given to few to see many of these sweet plants in their native lands, but we who love our gardens may enjoy many of them about us, not merely in drawings or descriptions, but the living, breathing things themselves. The Geraniums in the cottage window bring us the spicy fragrance of the South African hills ; the Lavender bush of the sunny hills of Provence, where it is at home ; the Roses in the garden bring near us the breath of the wild Roses on a thousand hills ; the sweet or pot herbs of our gardens are a gift of the shore-lands of France and Italy and Greece. The Sweet Bay bush in the farmer's or cottage garden comes with its story from the streams of Greece, where it seeks moisture in a thirsty land along with the wild Olive and the Arbutus. And this Sweet Bay is the Laurel of the poets, of the first and greatest of all poet and artist nations of the earth—the Laurel sacred to Apollo, and used in many ways in his worship, as we may see on coins, and in many other things that remain to us of the great peoples of the past. The Myrtle, of less fame, but also a sacred plant beloved for its leaves and blossoms, was, like the Laurel, seen near the temples of the race who built their temples as the Lily is built, whose song is deathless, and the fragments of whose art is Despair to the artist of our time. And thus the fragrant bushes of our gardens may entwine for us, apart from their gift of beauty, living associations and beautiful thoughts for ever famous in human story.

It is not only odours of trees and flowers known to all we have to think of, but also many delicate ones, less known, perhaps, by reason of the blossoms that give them being without showy colour, as the wild Vine, the Sweet Vernal, Lemon, and other Grasses. And among these modest flowers there are none more delicate in odour

than the blossoms of the common white Willow, the yellow-twigg'd and the other Willows of Britain and Northern Europe, which are all the more grateful in air coming to us

O'er the northern moorland, o'er the northern loam.

What is the lesson these sweet flowers have for us? They tell us—if there were no other flowers to tell us—that a garden should be a living thing; its life not only fair in form and lovely in colour, but in its breath and essence coming from the Divine. They tell us that the very common attempt to conform their fair lives into tile or other patterns, to clip or set them out as so much mere colour of the paper-stainer or carpet-maker, is to degrade them and make our gardens ugly and ridiculous, from the point of view of Nature and of true art. Yet many of these treasures for the open garden have been shut out of our thoughts owing to the exclusion of almost everything that did not make showy colour and lend itself to crude ways of setting out flowers.

Of the many things that should be thought of in the making of a garden to live in, this of fragrance is one of the first. And, happily, among every class of flowers which may adorn our open-air gardens there are fragrant things to be found. Apart from the groups of plants in which all, or nearly all, are fragrant, as in Roses, the annual and biennial flowers of our gardens are rich in fragrance—Stocks, Mignonette, Sweet Peas, Sweet Sultan, Wallflowers, double Rockets, Sweet Scabious, and many others. These, among the most easily raised of plants, may be enjoyed by the poorest cottage gardeners. The garden borders of hardy flowers bear for us odours as precious as any breath of tropical Orchid, from the Lily-of-the-Valley to the Carnation, this last yielding, perhaps, the most grateful fragrance of all the flowering host in our garden land. In these borders are things sweeter than words may tell of—Woodruff, Balm, Pinks, Violets, garden Primroses, Polyanthuses, Day and other Lilies, early Iris, Narcissus, Evening Primroses, Mezereon, and Pansies delicate in their sweetness.

No one may be richer in fragrance than the wise man who plants hardy shrubs and flowering trees—Magnolia, May, Daphne, Lilac, Wild Rose, Azalea, Honeysuckle—names each telling of whole families of fragrant things. From the same regions whence come the Laurel and the Myrtle we have the Laurustinus, beautiful in our sea-coast and warmer districts, and many other lovely bushes happy in our climate; one, the Wintersweet, pouring out delicious fragrance in mid-winter; Sweet Gale, Allspice, and the delightful little Mayflower that creeps about in the woodland shade in North America. So, though we cannot boast of Lemon or Orange groves, our climate is kind to many lovely and fragrant shrubs.

Even our ugly walls may be sweet gardens with Magnolia, Honeysuckle Clematis, Sweet Verbena, and the delightful old Jasmine, still clothing many a house in London. Most precious of all, however,

are the noble climbing Tea Roses raised in our own time. Among the abortions of this century these are a real gain—the loveliest flowers ever raised by man. Noble in form and colour, and scented as delicately as a June morn in alpine pastures, with these most precious of garden Roses we could cover all the ugly walls in England and Ireland, and Heaven knows many of them are in want of a veil.

Some Fragrant Plants for British Gardens.

Abelia	Crinum	Lupins	Pondflower	Sweet Scabious
Abronia	Cyclamen	Magnolias	Plantain Lily	Sweet Sultan
Allspice	Datura	Marvel of Peru	Primroses	Sweet Verbena
Almond	Day Lily	May-flower	Rhododendrons	Sweet William
Alyssum	Deutzia	Meadow Sweet	Rock Rose	Thyme
Apples	Evening Primrose	Mexican Orange	Rockets	Tuberose
Auricula	Forsythia	Flower	Rose	Tulip Tree
Azalea	Grape Hyacinth	Mezereon	Rosemary	Tulips
Balm	Hawthorns	Mignonette	Scilla	Twinflower
Balm of Gilead	Heartsease	Mock Orange	Stocks	Vine
Bee Balm	Heliotrope	Musk	St. Bruno's Lily	Violets
Belladonna Lily	Honeysuckles	Myrtle	Snowflake	Wallflower
Blue Bells	Horse Chestnut	Narcissus	Southernwood	Water Lilies
Brugmansia	Hyacinths	Night-scented Stock	Styrax	Willows
Burning Bush	Iris	Pæony (some)	Sweet Bay	Winter Green
Carnation	Jasmine	Pancratium	Sweet Cicely	Winter Heliotrope
Clematis	Lavender	Pansy	Sweet Fern Bush	Winter Sweet
Clethra	Lilac	Pelargonium	Sweet Flag	Wistaria
Columbine	Lily	Phlox	Sweet Gale	Woodruff
Cowslips	Lily-of-the-Valley	Polyanthus	Sweet Pea	Yarrow

Honeysuckle (Baeres, Henley-on-Thames). From a photograph by Miss Maud Grenfell.

Type of complex parterre, copied out of books for all sorts of situations.

CHAPTER XXVI.

SIMPLER FLOWER GARDEN PLANS AND THE RELATION OF THE FLOWER GARDEN TO THE HOUSE.

A GREAT waste is owing to frivolous and thoughtless "design" as to plan and shapes of the beds in the flower-garden. What a vision opens out to any one who considers the design of the flower garden when he thinks of the curiosities and vexations in the forms of beds in almost every land where a flower garden exists! The gardener is the heir—to his great misfortune—of much useless complexity and frivolous design, born of applying conventional designs to the ground. These designs come to us from a remote epoch, and the designing of gardens being from very early times in the hands of the decorative "artist," the garden was subjected to their will, and in our own days we even see gardens laid without the slightest relation to garden use, difficult to plant, and costly to

form and to keep in order. At South Kensington the elaborate tracery of sand and gravel was attractive to some when first set out,

but it soon turned to dust and ashes. It was, indeed, to a great extent formed of broken brickdust, in a vain attempt to get rid of the gardener and his flowers. The colours were supplied from the building sheds, where boys were seen pounding up bricks and slates, and beds were made of silver sand, so that no gardener could disfigure them. The Box edgings of beds a foot wide or smaller soon got out of order, and after a few years the whole thing was painful to see, while good gardeners were wasting precious time trying to plant paltry beds in almost every frivolous device known to the art of conventional design.

Even where such extravagances were never attempted we see the evil of the same order of ideas, and in many gardens the idea of adapting the beds to the ground never occurs to the designer, but a design has been taken out of some old book. If the ground does not suit the plan, so much the worse for the ground and all who have to work on it. The results of this style of forming beds the cottage gardens escaped from, the space being small and the cottage gardener content with the paths about his door. To some people this objection on my part to intricate design is mistaken for an objection to formality altogether. Now there are bold spirits who do not mind setting their houses among rocks and heather, but we must cultivate a flower garden, and simplicity as to form of the beds should be the rule in it. There are many ways of growing flowers and all sorts of situations fit for them, but the flower garden itself near the house must be laid out with formal beds, or else we cannot cultivate the flowers or get about the ground with ease. It is a question of right and wrong formality. The beds in my own work are, as will be seen by the plans here given, as formal as any, but simpler, and are made on the ground and to the ground. Our object should be to see the flowers and not the beds, so that while we have all the advantage of mass and depth of soil, and all the good a bed can give for convenience of working or excellence of growth, we should take little pride in its form, and plant it so that we may see the picturesque effects of the plants and flowers, and forget the form of the bed in the picture.

The relation of the beds to each other is often much too complex and there is little freedom. Designs that were well enough for furniture or walls or panels when applied to the garden gave us a new set of difficulties. Carried out in wood or in the carpet they answer their purpose, if we like them; but a flower bed is a thing for much work in cultivating, arranging and keeping it, and it is best to see that we are not hindered by needless complexities in dealing with the beds. In good plans there is no difficulty of access, no small points to be cut in Grass or other material, no vexatious

obstruction to work, but beds as airy and simple as possible and giving us much more room for flowers than beds of the ordinary type. The plans given are those of wholly different kinds of gardens.

The next plan is that of the gardener's house at Uffington, near Stamford; it is an example of the older-fashioned garden not uncommon before nearly all old gardens were altered for the sake of the Perilla and its few companions. At one end of the little garden is the gardener's house, and high walls surround the rest of the garden, so that there is shelter and every comfort for the plants. The garden is simply laid out to suit the ground, the plants—Roses and hardy flowers in great variety, a plan which admits of delightful effect in such walled gardens. Picturesque masses of Wistaria covered one side of the wall and part of the house—the whole was a picture in the best sense; and it would be difficult to find in garden enclosures anything more delightful during more than half the year.

The main drawback in gardens of this sort in the old days was the absence of grouping or any attempt to hold "things together"—a fault which is easily got over. It is easy to avoid scattering things one likes all over the beds at equal distances, and, without "squaring" them in any stupid way, to keep them rather more together in natural groups, in which they are more effective, and in winter it is much easier to remember where they are. In this way, too, it is easy to give a somewhat distinct look to each part of the garden. Box edgings may be used in such a garden, and where they thrive and are well kept they are very pretty in effect, but always distinctly inferior to a stone edging because more troublesome, and also because dwarf plants cannot grow over them here and there as they can over a rough edging of natural stone, the best of all edgings.

FLOWER GARDEN OF TUDOR HOUSE.—This shows two flower gardens close to a Tudor house, with a garden door from the house into each. One being small (that on the south), it was thought better to devote it all to flowers and the necessary walks, all being done with a view to simplicity of culture and good effect of the plants. In the other garden, there being more space, the lawn is left open in the centre, while all round and convenient to the walk are simple, bold beds easy to deal with, and also spaced in a free and open way for people to get among them or about the lawn. The little south garden being much frequented in all weathers, and the paths among the beds rather small, it was thought best to pave them with old flagstones, and that has proved very satisfactory, because rolling and much weeding are thereby avoided and the walks are pleasant to walk or work on at all seasons.

South of the house and of these gardens there is an open, airy meadow lawn, the Grass of which is studded with many bulbs that flower in the spring. The vigorous kinds of spring bulbs are grown in

Sheltered little garden in front of gardener's house at Uffington, Stamford, with simple beds of Roses and hardy flowers. The space enclosed in walls.

great quantities in this field, and only the choicer and rarer early bulbs are put among the Roses and other flowers in the flower garden proper, which is mainly devoted to the finest hardy flowers of summer and to Tea Roses.

HAWLEY.—This garden shows two essential things in the art of garden-design: First, the general idea of this book that it is by well studying the ground itself, rather than bringing in any conventional plans, we arrive at the best results. Gardening is so pleasant in many ways that almost any plan may pass for pretty and yet be far from being the most artistic result that could be got among a given set of conditions, or difficulties it may be of ground. If in such a case we adopt such plans as are sent out from offices both in France and England, it is possible that (with considerable cost) we may adapt them to the situation, but assuredly that way cannot give us the most artistic result.

The second point is, that where the vegetation of a place has distinct characters of its own, these should be made the most of. If this were the case generally we should see much less of the stereotyped in garden-design. This garden is in the charming Pine district of Hampshire—the Pine, beautiful in groups and in distant effects, and this was taken advantage of, and the Pine look of the place preserved in all ways, and even heightened where it could be done with good effect. These Pine groups and masses were naturally more of the framework of the garden—the woods and trees surrounding it. The next thing done was to take advantage of the natural vegetation of the ground apart from the trees *e.g.*, the heathy vegetation of the country, and instead of destroying it for turf or any of the usual features of a garden, preserving all its prettiest effects, its groups of Heath, wild Fern, and some Birch and Broom. Enough mown grass being left to walk upon outside the garden, it was thought the prettiest thing instead of a shaven lawn would be to leave the wild Heaths and bushes and grass of the country, here and there scattering a few bulbs on the grass, but generally leaving things as nature had left them. The walks, instead of following the French sections of eggs pattern or the conventional serpentine walks of some landscape work were made in the line of easiest grade and where they were most wanted—and are not more in number or area than were necessary. There was no attempt made to make the walks conform to any preconceived idea. The grass walk under the Oaks was suggested by the Oaks themselves, and it is very pretty in effect. Originally several terraces had been run up at all sorts of awkward angles, and the ground was consequently more difficult to deal with than can well be imagined; these were thrown into one simple terrace round the house planned in due relation to its needs and the taste of the owner. The flower garden was laid out in simple beds as shown on the plan, and below these the necessary grass walks lead out towards the open country. Once free of the flower garden and the walk leading to it the ground took its natural disposition again. The

kitchen garden had been in its present place originally ; its position could not be changed, and was therefore accepted and walled round with Oak. The whole garden is quite distinct from any other, which in itself is a great point. This garden was, as I think all gardens ought to be, marked out on the ground itself without the intervention of any plan. A plan is always a feeble substitute for the ground, and even if made with the greatest care and cost has still to be adapted to the ground. The plan shown in the engraving was made after my work was done.

SHRUBLAND PARK.—The plan here given is that of the new flower garden at Shrubland Park, which is situated exactly in front of the house, and tells its own story. It shows the simple form of beds adopted, planned to suit their places, in lieu of the complex pattern beds for carpet bedding, sand, coloured brick, and also the change from such gardening to true flower-gardening. The names of the plants used are printed in position, but the actual way of grouping cannot well be shown in such a plan—the plants are not in little dots, but in easy, bold groups here and there running together. The flower gardening adopted is permanent, *i.e.*, there is no moving of things in the usual wholesale way in spring and autumn. The beds are planted to stay, and that excludes spring gardening of the ordinary kind. But many early spring flowers are used in the garden, the mainstay of which is summer and autumn flowers, the period chosen for beauty being that when the house is occupied and all beautiful hardy flowers from Roses to Pansies that flower from May to November are those preferred. There is no formality or repetition in the flower planting but picturesque groups, here and there running together, and sometimes softened by dwarf plants running below the taller ones. The beds are set in a pleasant lawn, and there is easy access to them in all directions from the grass. The area of gravel was much greater in the old plan than in the present one, in which what is essential only for free access to the garden is given.

EVERGREEN FLOWER GARDEN IN SURREY VILLA.—Bearing in mind the conventional bareness and hardness of the common garden of our own day, there is no improvement greater than results from breaking into this by permanent planting of things of a bushy kind. The plan of this garden shows a choice evergreen garden instead of the usual summer planting and autumnal death. The beds are simple and planted with choice shrubs, not crowded, but leaving room for different kinds of hardy flowers so as to get the relief of flower and shrub, and the charm of beds alive and filled at all times. Most of the evergreens (like *Kalmia*, Japanese *Andromeda*, and *Rhododendrons* of beautiful colour) are choice flowering ones, so that we have bloom in spring and summer ; and after, or with the shrubs, the

Hawley flower garden.

Bitton : part of the plan of the garden near house for flowers and shrubs.

flowers between. Such a garden in pure air well begun might be almost permanent, because in such soils as these light peaty Surrey soils, the shrubs would thrive for many years; and the same may be said of the Lilies and choice bulbs between, only slight changes and additions being required from time to time. Many large gardens, which in similar soils are bare even in early summer, might thus be made charming and graceful gardens throughout the year, and, if this way is not so loud in colour as other ways of flower-gardening, it suits certain positions well. This way of planting need not exclude some summer planting of the usual character, in fact would give zest and relief to it: it is the one evanescent system carried out everywhere that steals the varied beauty from the garden.

BITTON VICARAGE GARDEN.—This is one of the oldest and most richly stored with good hardy flowers of all English gardens, and, unlike many gardens where much variety is sought, it is pretty in effect and quite by itself as all gardens should be, and an example of a small garden of the highest interest, and withal of simple and sensible plan.

The garden is not a large one, being about an acre and a half in area, and in shape a parallelogram, or double square. As its owner, Mr. Ellacombe, tells us:

“It lies on the west side of the Cotswolds, which rise, about half a mile away, to the height of 750 feet, and about 15 miles to the south are the Mendips. These two ranges of hills do much to shelter us from the winds, both from the cold north and easterly winds, and from the south-west winds which in this part of England are sometimes very violent. I attach great importance to this kindly shelter from the great strength of the winds, for plants are like ourselves in many respects, and certainly in this, that they can bear a very great amount of frost, if only the air is still, far better than they can bear a less cold if accompanied by a high wind.”

The garden then has the advantage of shelter; it has also the advantage of a good aspect, for though the undulations are very slight the general slope faces south; and it has the further advantage of a rich and deep alluvial soil, which, however, is so impregnated with lime and magnesia that it is hopeless to attempt Rhododendrons, Azaleas, Kalmias, and many other things, and it has the further disadvantage of being only about 70 feet above the sea level, which makes an insuperable difficulty in the growth of the higher alpine. On the whole, the garden is favourable for the cultivation of flowers, and especially for the cultivation of shrubs, except those which dislike the lime.

The garden is in many ways an ideal one, lying deep down in a happy valley and forming with the fine old church the centre of an old world village. It is a quiet, peaceful garden of grass and trees

The new flower garden in front of house at Shrubland Park, showing simple forms of beds filled with the most beautiful hardy flowers in groups and colonies, and many Tea Roses and Carnations. Plan and planting by author (replacing Sir C. Barry's).

and simple borders, and every nook and corner has its appropriate flower ; in a word, it is just such a garden as one would expect a scholar to possess who has sympathy for all that lives or breathes and who has given us such a book as "The Plant Lore and Garden Craft of Shakespeare." The garden at Bitton Vicarage is no new garden, for it was famous more than half a century ago, when Haworth and Herbert, Anderson, Falconer, Sweet, Baxter and others took such an interest in bulbs and hardy flowers. By the same token it is by no means a new-fangled garden ; there is all due and proper keeping, but it is patent to any plant-lover that its owner thinks more of seeing his plants happy and healthy than he does of any unnecessary trimness.—F. W. B.

RESERVE GARDEN.—We have an example in this plan of what is meant by a reserve garden. An oblong piece of ground having the walls of the kitchen garden for two of its boundaries, and a Yew hedge sheltering it from the east winds, while the other is screened by evergreen trees, with which are intermingled hardy plants of tall growth. The plants are set in beds without reference to the general effect, and all the borders, being edged with stone dug on the place, give no trouble after the stones are properly set ; when old and moss-grown the stones look better than anything else that could be used—the dwarfer plants being allowed to run over them and break the lines. Every year the plan of such a garden may be varied as our tastes vary and as the flowers want change. A similar garden ought to be in every place where there are borders to be stocked and maintained in good condition, and particularly where there is a demand for cut flowers.

Such a garden may be made in any shape which is convenient for cultivation, for access and for cutting ; but some general throwing of the ground into easily worked beds is desirable. The more free and less hampered with gravel, permanent edgings, and the like, the better it will be for future work. The gardener is often hindered by needless impedimenta in the flower garden, but in the reserve garden, where only the cultivation of flowers has to be thought of, he should be able to get to work at any time with the least possible difficulty, and in dry and good soils it would not be necessary to have much more than a beaten walk for the foot. It would be possible to do without edgings ; but where edgings are used they should be of a kind that might be removed at any time, the best for this end being of natural stone. The drainage should be good, and if possible the place should be not too far to the manure heap, while the soil should in all cases be good, as very often it has to give two crops a year ; in the case of bulbs that perish early it is easy to get after crops of annuals or ornamental grasses.

YEW HEDGE

Seat

PAEONIES AND DAHLIAS
The Dahlias preceded by Wallflowers.

PERENNIALS
IN GROUPS

FLOWERING SHRUBS AND TREES

Wall of Tea Roses with border in front for Gladioli, Belladonna Lilies, Vallota, Agapanthus, Lilies and other Bulbs.

SHRUBS AND TREES

Reserve garden for the choicer families of hardy plants, grown in beds without reference to general effect, and serving also as a garden for cut flowers and a nursery.

CHAPTER XXVII.

WALKS AND EDGINGS.

OUR gardens are often laid out in a complex way : with so many needless walks, edgings, and impediments of many kinds that work cannot be done in a simple way, and half the time is lost in taking care of or avoiding useless or frivolous things. Efforts thus wasted should be turned to account in the growth of flowers. In many large places there is no true flower-gardening ; wretched plants are stuck out in the parterre every year, and a few stunted things are scratched in round the choke-muddle shrubbery, but little labour or love is bestowed on the growth of flowers. In others there are miles of walks bordered by bare stretches of earth, as cheerful as Woking Cemetery in its early years. The gardener is impotent to turn such a waste into a paradise ; his time and his thoughts are often eaten up by keeping in order needless and often ugly walks. The gardeners, owing to the trouble of this wasteful system, have little time for true flower-gardening—forming a real garden of Roses, or groups of choice shrubs, or beds of Lilies, or of other noble hardy plants, so that the beds may fairly nourish their tenants for a dozen years. Instead of the never-ending and wearisome hen-scratchings of autumn and spring, we ought to prepare one portion of the flower garden or pleasure ground each year, so that it will yield beauty for many years. But this cannot be done while half the gardener's time is taken up with barber's work.

Our own landscape gardeners are a little more sparing of these hideous walks than the French ; but we very often have twice too many walks, which torment the poor gardener by needless and stupid labour. The planning of these walks in various elaborate ways has been supposed to have some relation to landscape gardening ; but one needless walk often bars all good effect in its vicinity. Flower-beds are often best set in Grass, and those who care to see them will approach them quite as readily on Grass as on hard walks. For the three or four months of our winter season there is little need of frequent resort to flower-beds, and for much of the rest of the year the

turf is better than any walk. I do not mean that there should be no walk to the flower-garden, but that every walk not necessary for use should be turfed over. Few have any idea how much they would gain, not merely in labour, but in the beauty and repose of their gardens, by doing away with needless walks.

GRAVEL WALKS.—For hard work and general use the gravel walk is the most important of all for garden and pleasure grounds. The colour of walks is important; that of the yellow gravels being by far the best. Of this we have examples in the country around London, in the gravels of Croydon, Farnham, and also those of Middlesex. These walks are not only good in colour but also excellent in texture, consolidating thoroughly. It is a relief to see these brownish-yellow walks after the purple pebble walks of the neighbourhoods of Dublin and Edinburgh. After the sound formation of these walks the main point is to keep them to the essential needs of the place, and when this is done their effect is usually right. Even this excellent gravel is sometimes improved about London by the addition of sea shells, cockle shells mostly gathered from the coasts of Kent; and, after the walk is formed and hardened, this is lightly scattered over the surface and rapidly breaks down and gives to the walk a clean smooth surface.

In public gardens and parks large areas of gravel are sometimes necessary, and in some ways of "laying out," such as those round French châteaux, wide arid areas of gravel are supposed to have a *raison d'être*; but in English gardens they are better avoided. English roads, lanes, and pathways are often pictures, because consecrated by use and often beautiful in line, following as they often do the line of easiest grade or gentle curves round hills; but in gardens, roads and paths are often ugly because overdone, and nothing can be worse than hot areas of gravel, not only without any relation to the needs of the place, but wasting precious ground that might be made grateful to the eye with turf, or of some human interest with plants.

STONE WALKS IN SMALL FLOWER GARDENS.—A walk which is much liked is the stone walk, suggested by the little stone paths to cottages. In large open gardens such walks would not be so good, but in small inclosed spaces and flower gardens, where we have to plant very closely in beds, stone walks are a gain. In some districts a pretty rough, flat stone is found, of which there is a good example at Sedgwick Park. In cities, when renewing the side-walks, it is sometimes easy to get old flagstones, which are excellent for the purpose. I use such old stones and mostly set them at random, or in any way they come best. The advantages are that we get rid of the sticky surface of gravel in wet weather or after frost, avoid rolling and weeding for the most part, the stones are pleasant to walk on at all

times, and we can work at the beds or borders freely in all weathers without fear of soiling gravel. The colour of the stones is good and in sunny gardens in hot summers they help to keep the ground moist, while the broken and varied incidents of the surface get rid of the hard unyielding lines of the gravel walk and help the picture. They should never be set in mortar or cement of any kind, but carefully in sand or fine sandy soil, and the work can be done by a careful man with a little practice. If in newly-formed ground there is a little sinking of the stone, it can be corrected afterwards. Small rock plants, like Thyme, the fairy Mint, and little Harebells, may be grown between the divisions of the stone, and, indeed, they often come of themselves, and their effect is very pretty in a small garden. Another point in favour of the stone walk is that it forms its own edging, and we do not need any living edging ; and if for any purpose, in a wet country or otherwise, we wish to somewhat raise the flower beds, we can use the same kind of stone for edging the beds.

GRASS, HEATH, AND MOSS WALKS.—Once free of all necessary walks about the house of gravel or stone, which constant work and use make essential, it is often easy in country gardens to soon break into grass walks which are pleasantest of all ways of getting about the country garden or pleasure ground. Not only can we take them into the wild garden and rough places, but they lead us to flowering shrubs and beds of hardy plants and to the rock garden, or through the pleasure ground anywhere, as easily and more pleasantly than any regularly set out walks. There is much saving of labour in their formation because given sound drained ground which is to be found around most country houses, we have little to do except mark out and keep the walks regularly mown ; when this work is compared with the labour of carting, the knowledge and the annual care which are necessary to form and keep hard walks in order, the gain in favour of the grass walk is enormous. It is perhaps only in our country that the climate enables us to have the privilege of these verdant walks, which are impossible in warmer lands owing to the great heat destroying the herbage, and, therefore, in Britain we should make good use of what our climate aids us so much in doing.

We have, of course, to think of the fall of the grass walk for the sake of ease in mowing and in walking too, as very much of their comfort will depend, at least in hilly ground, on the careful way these walks are studied as regards their gradation. There is really not much difference in the degree of moisture in such walks and gravel walks, and, besides, so little use is made of walks of any kind in wet weather, that generally, taking them all the year round, they serve as well as any other where there is but gentle wear.

Apart from the grass walks which can be formed in so large an

area of Britain we may have walks through heath and the short vegetation that grows in heathy districts, and these walks will be no less pleasant than the grass walks. The short turf of the heath, and often the mown heather itself forms an excellent springy walk, as in parts of Surrey. Such walks want little making, only some care in laying down their lines so as to take them into the prettiest spots and letting them edge themselves with heather, ferns and Whortleberry. But no more than any other should such walks be multiplied beyond what is necessary, and they ought to be broad enough and airy enough to take us in the pleasantest way to the most interesting parts of the garden or pleasure ground or woods. In woody or half shady places we may enjoy the mossy walk as in very sandy or light soils we may have a turf almost of Thyme.

TAR WALKS.—Among the curious mixture of good and bad, ugliness and beauty, we see often in country seats are tar walks, and they are a main “factor” in making many a garden ugly. They have almost every fault that a walk could have, being hideous in colour, hot in summer, and sticky, hard and unpleasant to the feet, wearing into ugly holes and an uneven and unpleasant surface. The only excuse that could ever be made for them was that they offered an escape from continual hoeing, a great labour, but now needless, owing to the weed-killers. If walks are simply made, and not one yard more is made than is required for use, the labour of cleaning is immensely reduced, and one dressing a year of an effective weed-killer often keeps them right. If there were no other objection than the colour of the tar walk, it should be sufficient to condemn it, and gravel in the home counties and about London is so good in colour, that one is surprised that anybody can tolerate a tar walk. In small, close courtyard gardens, where gravel is objected to, we may have a well-made stone walk of good colour.

CONCRETE AND ASPHALT WALKS.—Apart from tar walks, which on hot days may give us the idea that we are stuck in a bog, there are also well-made walks to be had from concrete and true asphalt. These walks have distinct advantages for courtyards and small spaces, or even small gardens in certain places ; they are better in colour than the tar walk, and more enduring if well made. They are clean, but they have certain disadvantages as compared with stone walks. They require a much more expensive and careful setting, and they are certainly not more enduring. Also, they do not allow us the privilege of putting plants between the joints, one of the great charms of the stone walk, which can be easily set to allow Thyme and dwarf rock-plants to come up between them ; and therefore in all districts in which a warm-coloured stone is procurable, or rough flagstone from quarries, it is very much better to use it

as we can always have gravel for any roads that have to be traversed by carriages or carts ; the space for concrete, asphalt, or stone walks is not considerable, and the natural material should be used wherever it be possible.

FLOWER GARDEN EDGINGS, LIVE AND DEAD.

Even small things may mar the effect of a flower garden, however rich in its plants, and among the things that do so are cast edgings of tiles or iron, often very ugly, and as costly as ugly, some of the earthenware edgings perishing rapidly in frost. But if they never perished, and were as cheap as pebbles by the shore, they would be none the less

Stone edging. From a photograph by Mr. A. Emblin, Worksop, Notts.

offensive from the point of view of effect, with their hard patterned shapes, often bad colour, and the necessity of setting them with precision in cement or mortar ; whereas the enduring and beautiful edging wants none of these costly attentions. The seeming advantage of these patterned and beaded tile edgings is that they appear permanent, and get rid of the labour of clipping and keeping box edgings in good order ; but these ends are met quite as well by perfectly inoffensive edgings. Edgings may, for convenience sake, be divided into dead and permanent ones and living ones formed of plants or dwarf bushes, which involve a certain amount of care to keep in order, and which will some day wear out and require a change or replanting.

The true way in all gardens of any good and simple design is to get edgings which, while quite unobtrusive in form or colour, may remain for many years without attention. In all good gardens there is so much to be done and thought of every day in the year, that it is important to get rid of all mere routine work with edgings of Box and other things that want frequent trimming or remaking, in which work much of the labour of gardeners has been wasted in the past.

NATURAL STONE is the best of all materials for permanent edgings for the flower garden, or any garden where an edging is required, and no effort should be spared to get it. In many districts it is quite easy to do so, as in some of the home counties the refuse of quarries (in Surrey Bargate stone, and in Oxfordshire and Gloucestershire the flaky stone used for the roofs of old time) is excellent for edgings. Much difference will occur in stone in various districts, and some will not be so good in colour and shape as the stone just mentioned, but the advantage of natural stone in various ways is so great that even inferior forms of it should be chosen before any other material. In undressed, or very roughly dressed natural stone, it does not matter in the least if the

Edging of Foam Flower.

stones vary in size, as we have not to set them rigidly like the cast tiles; sunk half-way firmly in the earth, after a little time they soon assume a good colour; green mosses stain them in the winter, and if we wish to grace them with rock flowers they are very friendly to them, and Rockfoil, or Stonecrop, or Thyme may creep over them, and make them prettier than any edging made wholly of plants, like Box or Thrift, or Ivy. Unlike the tile, stones are none the worse if they fall a little out of line, as they are easily reset, and also easily removed by handy garden men without expensive workmen, or any aid from mortar or trowel. In large and stately gardens dressed stone may be used to frame a grass plot or handsome straight border, but in most cases this expense would be thrown away, as we get so good a result with the undressed stone. But in a flower garden like that at Shrubland Park, the dressed stone of good and simple form, and properly set as it should be in such a position quite near the house, is quite rightly used. Near cities and towns the removal of old or half-worn stone pavements, like the York stone used in London, often gives us opportunities of securing it for

forming edging ; and being often got in large pieces, it requires rough dressing to allow of its being firmly and evenly set in the ground. I have used this largely for edgings, which will last as long as they are allowed to remain. The beautiful green stone of Cumberland would make as good an edging as one could desire, and many kinds of stone may be used.

In districts where there is no stone to be had, and we have to use any kind of artificial stone or terra cotta, these should never have any pattern or beading, but be cast in quite simple forms, never following the patterns usually adopted by the makers of garden tiles. Certain inferior forms of dead edgings should be avoided, such as boards, that soon rot, and are wholly unfit in all ways as edgings. Iron, too, as used in continental gardens or in any shape, should never be used as an edging, ordinary bricks half set in the ground being far better than any of these.

GRASS EDGINGS sometimes are used to flower borders, but are always full of labour and trouble. And they have various drawbacks, apart from the mowing and edge-cutting, chief among these being that the border flowers within cannot ramble over them as they do over the stone edgings in such pretty ways. These narrow grass margins are often used as edgings to flower borders in the kitchen garden in places where very little labour is to spare for the garden,

Bold evergreen edging to rough border.

but, little as it is, it has to be given throughout the season to these grass edgings, which are worse than useless as a finish to a flower border. By these I do not mean the grass margins to the garden lawns, or a carpet of turf, as these are easily attended to when the lawn is being mown, but the foot wide grass edgings which require attention when

time can be badly spared for them, and are often so narrow that it is not easy to use a machine for mowing them.

BOX.—Of all the living things used as edgings in gardens, the first place belongs to Box, used for ages and deservedly liked from its neat habit and good colour. When there were many fewer plants to look after than we have now, to tend some miles of box edging was often the pride of the gardener, and even now we see it sometimes done, though the hand often fails with the ceaseless care the edging requires if it is to be kept in good order, and it gets spotty and in some soils worn out and diseased. Where cared for it must be clipped with much care and regularity every May after the danger of hard frosts

is past, as these sometimes touch the young growth. By cutting in May the young growth soon hides the hard mark of the shears. Pretty as it is in certain gardens, the drawbacks to Box as a flower-garden edging are serious ; it requires much labour to keep it in order, and not every garden workman can clip Box well ; it is a harbour for slugs and weeds, drying and starving the soil near ; whereas the stone edging keeps the soil moist and comforts the rock flowers that crawl over it. We cannot allow dwarf and creeping plants to crawl over the Box, or they will scald and injure it, but with the stone, we are free in all ways, and get a pretty effect when Pinks and other dwarf plants, crossing the stone edging here and there, push out into the walk itself. I like Box best as a tall, stout edging or low hedge, used in a bold way as high Rosemary edgings are used in southern gardens, about 18 in. high, or even a little higher, to enclose playgrounds or separate

Ivy edging.

gardens or to mark an interesting site as that of the old house at Castlewellan. Sometimes old and neglected Box edgings grown into low hedges are pretty in a garden, as in George Washington's old home at Mount Vernon in Virginia. And low hedges of Box are now and then a good aid near the flower garden as at Panshanger.

YEW, IVY, HEATH AND VARIOUS EDGINGS.—Among other edgings made of woody or shrubby things, we have the Yew, which bears clipping into edgings a foot high, and which might be worth using in some positions, though much clipping of this sort causes much labour and to me sorrow. Ivy is more precious for its shoots, which garland the earth as well as wall or tree. It is more used abroad than in Britain, the freshness of its green being more valued where good turf is less common, and Ivy is of the highest value as an edging in various ways, but better as a garland round a plot or belt of

shrubs than near flower beds, and it enables us to make graceful edgings near and under trees. Like the Box, it may also be used as a bold hedge-like garland to frame a little garden or other spot which we wish to separate from the surrounding ground. The Tree Ivy is best for this, but the common Ivy, if planted as an edging in any open place, will in time assume the shrubby or tree form, and make a handsome and bold garland. Where, for any reason, we desire Ivy edgings, it is better not to slavishly follow the French way of always using the Irish Ivy for edgings. The dark masses of this in the public gardens of London, Paris, and also in the German cities are very wearisome, and help to obscure rather than demonstrate the value of the Ivy as the best of all climbers of the northern world. The common Ivy, of which the Irish form is a variety, is a plant of wide distribution throughout Europe, North Africa, and Asia, and varies very much in form. There being in Britain over fifty cultivated forms of it, it is in England that it is best known. The Irish variety seems to have taken the fancy of continental European gardeners, and is much more cultivated than any other but many of the other varieties less known are more graceful and varied in form, and even colour, some of them having in winter a bronzy hue, instead of the dark look of the Irish Ivy. Some, too, are fine in form, from the great Amoor and Algerian Ivies to the little cut-leaved Ivy. Even the common Ivy of our woods is prettier than the one so much used.

Among the bold edgings one sees enclosing the "careless" and broad borders of Spanish or Algerian or other southern gardens, overshadowed by orange or other fruit trees, is the Rosemary, clipped into square topped bushy edges, about 15 ins. high. Though tender in many parts with us, it may be used in the same way on warm soils and in mild districts, and the Lavender may be used in the same way, though in its case it is best not to clip it, and there is a dwarf form, which is best for edgings to bold borders.

DWARF EVERGREEN EDGINGS.—Among various dwarf evergreen shrubs which may be used as edgings are the dwarf Cotoneasters, Periwinkles, smaller Vacciniums, Partridge Berry, the alpine forest Heath and some of the smaller kinds of our native Heaths, varying them after the nature of the soil and the kind of plants or shrubs we are arranging; heaths and shrubs of a like nature being best for association with peat-loving evergreen shrubs, though they need not all be confined to these or to such soils. Such evergreen edgings of low shrubs are often very useful where we plant masses of select evergreen flowering shrubs, and they may be used in free belts or groups as well as in hard set lines, the last being in many cases a sure way to mar the effect of otherwise good planting in pleasure grounds.

Where we are dealing with nursery or cut flower beds, borders in the kitchen garden or elsewhere, no such objection to the continuous edging holds. And in such cases those who use plants have a great variety to choose from : Strawberries, wild, Quatre-saison, and any favourite larger sort ; Rockfoils—of this rich and varied family the Mossy Rockfoils make soft and excellent green margins to beds of hardy flowers ; Houseleeks, Stonecrops, Gentianella, which forms such a fine evergreen edging in cool soils ; Tufted Pansies, Thrift, purple Rock-Cresses which are among the most precious of rock flowers for evergreen edgings, and bloom often throughout the spring ; dwarf Speedwells, Edelweiss in open country gardens where it thrives ; alpine Phloxes, Sun Roses, Arabis, evergreen Candytuft, excellent as

White Pink edging.

a permanent margin to bold mixed groups of spring flowers and shrubs ; Pinks, both white and coloured, pretty on warm and free soils, but useless where they are hurt in winter ; Daisies and Polyanthus and garden Primroses : in Scotland and cool places, the rosy and some of the Indian Primroses make beautiful edgings. Dwarf Harebells, and some of the silvery or striped Grasses and Moneyworts may also be used. There is, in fact, scarcely a limit to the choice one may make from the more free and vigorous rock and alpine flowers, the choice being governed by the nature of the soil, rainfall, and elevation, or closeness to the sea, which is so often kind to plants slow or tender in inland situations, like some of the grey Rock Scabious which form such pretty marginal plants where they thrive.

PLASTERED MARGINS TO FLOWER BEDS.—Here is an illustration showing a wretched mud edging. These miniature ramparts, though

Example of ugly cracked mud edging (London Park.)

less common than formerly, are a blot in London gardens and parks. They are made of muddy compounds, and in addition to the offensive aspect of the little walls when first plastered up, there are the cracks which come after—well shown in the cut. In a hot year, or any year, it is madness to cock the beds upon a little wall like this. The proper way to make a flower bed is to let the earth slope gently down to the margin, as was the practice for ages before this ugly notion came about.

Rocky border with edging of dwarf plants in groups.

Tufted Pansies.

CHAPTER XXVIII.

THE FLOWER GARDEN IN THE HOUSE

ONE of the real gains in any flower garden worthy of the name is that we have in it lovely forms and delicate colours for the house, from the dawn of spring, with its noble Lenten Roses on sheltered borders, until autumn goes into winter in a mantle of Starworts. Many English and all German and French flower gardens in parterres offer us only Lobelias, and various plant rubbish of purplish or variegated hues, very few of them worth cutting, whereas our real flower garden is a store of Narcissus, Azalea, Rose, Lily, Tulip, and Carnation, and all the fairest things of earth. All we have to care about is placing them in simple ways to show their form as well as colour. Apart from the good plan of having a plot for the culture of any flowers we wish to cut for the house, a true flower garden will yield many flowers worthy of a place on an artist's or any other table, and worthy of it for their forms, colour, or fragrance. Many of these, from the Narcissus to the Tea Rose, give flowers so freely that we need not be afraid to cut; indeed, in many cases, careful cutting prolongs the bloom (as of Roses). Many shrubs we may improve as we cut their branches for the house, for example Winter Sweet, Forsythia, and Lilac.

It is not merely the first impression of flowers, good as it may be, that we have to think of, but the charms which intimacy gives to many of the nobler flowers—some opening and closing before our eyes, and showing beauties of form in doing so that we never suspected when

passing them in the open air. In the changing and varied lights of a house we have many opportunities of showing flowers in a more interesting way, particularly to those who do not see them much out of doors, and now we have in gardens many new flowers of great beauty of form—Californian, Central Asiatic, Japanese, even the mountains of China and India giving precious things, as well as the rich flora of North America, as yet not as much seen in our gardens as it deserves to be. So that it will be seen how good is the reason why care should be given to show the flowers in the house when we have them to spare out of doors.

At first sight there may not seem much against our doing justice to flowers in the house, but our flower vases have shared the fate of most

Rose in a Japanese bronze basin.

manufactured things within the past generation, *i.e.*, they suffer from the mania for overdoing with designs, called “decorative,” which at the South Kensington schools is supposed to have some connection with “art.” Every article in many houses, being overcharged with these wearisome patterns, it was not to be expected that the opportunity of “adorning” our flower pots would be lost, and so we may have ugly forms and glaring patterns, where all should be simple in form, and modest and good in colour. The coalscuttle, with its “decoration,” does not stand in our way so much as the flower vase, as in this we have to put living things in their delicate natural colours and shapes, and to look at these, stuck in vases with hard colours and designs, is impossible to the artistic mind.

And when we have seen the ugliness of much of this work, what is to be done in the way of remedy as the shops are so much against us? The first need is a great variety of pots, basins, and jars or vases; so that no flower that garden, wood, or hedgerow can give us, need be without a fitting vessel the moment it is brought into the house. What are known as the Munstead glasses are a great help, because their shapes are carefully made to suit various flowers, and they are very useful and good in form—made, too, of plain glass. But, however good this series is, it is well to use a variety of other things in any simple ware that comes in our way, very often things on the way to the rubbish heap, such as Devonshire cream jars in brown ware. Nassau seltzer bottles, in the brown ware too, may well take a single flower or branch, while old ginger pots, quite simple shallow basins in yellow ware, and other articles made for use in trade, come in very well.

There is no need to exclude finer or more costly things than these if good in shape and not outrageous in colour, but various reasons lead us to prefer the simpler wares, in which the flowers look often quite as well as in any others, though a mass of Edith Gifford Rose looks very well

Peonies in Munstead glass.

in a good old silver bowl, and good china, silver, or bronze vases or basins may be used for choice positions or occasions, though it will generally be best not to submit fine or fragile vessels of this kind to the risks of constant use. Among the finest things ever made in the shape of vases for cut flowers is the old Japanese work, which is often as lovely in form and as beautiful with true ornament as anything made by the old Greeks; but the Japanese, like others, have taken to "potboiling" in bronze, and many of the things now seen at sales in London are coarse in workmanship. It might be worth while to have good and avowed reproductions of some of the more useful old forms—the slender, uprising ones are so good for many tall flowers; Italian bronze bowls are often useful too; and the

darkness within the bronze vessels tends to keep the flowers longer than when they are in glass vessels exposed to the light.

Japanese ways of arranging flowers are extremely interesting, and may sometimes be practised with advantage; but, with a great variety and good shape of vessels, the Japanese way is not so necessary as a system, for the reason that, given a variety of good shapes and different materials, we can place any single flower, branch, or bunch in a way that it will look well with very slight effort and in very little time. Any way involving much labour over the arrangement of flowers is not the best for us or for the result—far from it.

Lenten Roses, February.

Having got a good and constant supply of flowers, and variety of vessels, the question of arrangement is the only serious one that remains to be thought of, and it is not nearly so difficult if we seek unity, harmony, and simplicity of effect, rather than the complexities which we have all seen at flower shows and in "table decorations," many of them involving much wearisome labour, while a shoot of a wild rose growing out of a hedge or a wreath of honeysuckle would put the whole thing to shame from the point of view of beauty. In all such matters laying down rules leads to monotony, and yet there is much to be said for ways distinctly apart from the old nosegay masses and the

modern jumble, and generally it is best to show one flower at a time, especially if a noble one like the Carnation, which varies finely in colour. The baskets and basins of Carnations arranged by the late Lady Henry Grosvenor, at Bulwick, were lovely to see, and the best of them were of one Carnation of good colour. These were the flowers from her fine collection of outdoor Carnations, so useful for cutting in summer and autumn, when people are enjoying their gardens. But the improved culture of the Carnation as a plant for winter and spring bloom under glass gives us quantities of this precious flower for six months more,

Mexican Orange-flower.

when the outdoor supply is over. These are among the best flowers for the dinner table as well as the house generally, and on the dinner table the effect, by artificial or by natural light, of one or two flowers of the season, is often better than that given by a variety of flowers. What is just said of the Carnation applies to various noble groups of hardy flowers, such as the Tulip, Narcissus and Lily.

It is not only in vases we see the good of showing one flower or group at a time; a good result will often come through a single spray or branch of a shrub. The Japanese have taught us to see

the beauty of form and line in a single twig or branch, with its natural habit shown, apart from any beauty and form or colour its flowers may have. This is important, in view of the many shrubs that flower in our climate in spring, and of which, if flowering shoots are cut when in bud, the flowers open slowly and well in the house. They are best placed in Japanese bronze or other opaque jars. The taller Japanese bronze jars with narrow

Foliage of Evergreen hardy plant (*Epimedium*.)

necks are very useful for these, and it is an excellent practice to cut the bud-laden shoots of Sloe, Plum, Apple, Crab, and like plants, and put them in jars to bloom in the house. By this means we advance their blooming time; and, in the case of severe weather the beauty of early shrubs may be lost to us unless we adopt this plan. We see how well the French practice of growing Lilac in the dwelling house prolongs the beauty of this shrub, and it is not difficult to do something of the kind for the hardy shrubs and early

trees that come with the Daffodils, but are not so well able to brave the climate. These shoots of early shrubs are also usually best arranged each by itself, though some go well together, and graceful leaves of evergreens may be used with them. One advantage of dealing with one flower at a time is that we show and do not conceal the variety of beauty we have. For, all thrown together, that variety will be much less evident than if we make clear the colour and form of each kind. Some proof of this may be seen in the work of the best flower painters. In the work of M. Fantin-Latour, for example, his nosegays of many flowers, evidently bought at some country market stand, are painted as well as his simple subjects but these last are far the best pictures. However, there is such a wide range of plants, shrubs, and woodland and hedgerow flowers, that we must not hesitate to depart from any general idea if it tends to keep us from making the best of things in simple and ready ways.

WATER LILIES AND WATER-SIDE PLANTS FOR THE HOUSE.—Often the water and the water-side will give us fine things for house decoration, and the new Water Lilies of rare distinction help very much, as cut in the freshly expanded state they keep very well for some days and give us quite a new order of beauty. For this purpose we want bold and simple basins, as if we can put some of their handsome leaves in with them the effect is all the better. Although very fine in the open water, where they do admirably, the effect of the flower near at hand in the house is quite different and very beautiful, and as these plants increase their value as cut flowers for the house will be found to be great. There are also plants of the water-side which may help with foliage or flower; one of the best being the Forget-me-not, which flowers so well in the house, and the great Buttercup.

LEAVES.—Many as are the flowers of the open air excellent for house, the leaves of the open air tree or shrub or plant are hardly of less use for the same end: notably the foliage of evergreen shrubs in warm and sea coast districts, from evergreen Magnolia, Poet's Laurel, Cypress, Juniper and Thuja, Cherry Laurel, and Bamboo; even in the coldest districts we have the evergreen Barberry, and more than fifty forms of the best of all evergreen climbers, the Ivy, and the Holly with its scarlet, yellow or orange berries. The trees in autumn give us leaves rich in colour—Maple, Medlar, Mespilus, Parrottia, Tulip-tree and many others. The shrubs and climbers, too, help—Bramble, Wild Roses, Water Elder (*Viburnum*), Common Barberry, with its graceful rain of red berries; Vines in many forms; hardy flowers, too, help with *Acanthus*, Alexandrian Laurel, Solomon's Seal, Iris, Plantain Lily, Rock plants are rich in good leaves: Cyclamen, Heuchera, Christmas and Lenten Roses, the large Indian Rockfoils and the Barrenworts; and

then there are the hardy ferns of our own country and Europe, and also those of North America as hardy as our own.

A great help in a house is ready access to a handy water supply in a little room, near the flower garden or usual entrance for flowers, where vessels may be stored and flowers quickly arranged, used water and flowers got rid of and so planned that the mistress of the house, or whoever arranges the flowers, may use it at all times without other aid. This greatly helps in every way, and makes the arrangement of flowers for the house more than ever a pleasure.

The Chimney Campanula, Staunton Court.

CHAPTER XXIX.

EVERGREEN TREES AND SHRUBS.

“Oh the oak and the ash and the bonny ivy tree,
They flourish at home in my own country.”—*Old Ballad.*

THE above lines might be worth thinking of by those bent on planting evergreens for any of these uses, as if it were borne in mind that the evergreens we plant have to face winters in an Oak and Ash land, we should have less of the frightful waste owing to the planting of rampant but not hardy evergreens which perish in numbers after hard winters.

There are no background hues prettier than afforded by some evergreens like the Yew, Box, and Ilex; but their use requires care; we may have too many of them, and they should not take the place of flowering shrubs and flowers of many kinds. It is outside the flower garden that evergreens are most useful generally, and in a cold country like ours, especially on the eastern coasts and in wind-swept districts, Holly banks and hedges of other hardy evergreens are often a necessity. In our country we have the privilege of growing more evergreen shrubs and trees than continental countries, species resisting winter here which have not the slightest chance of doing so in Central Europe.

NOBLE NATIVE EVERGREENS.—Into our brown and frozen northern woods come a few adventurers from southern lands that do not lose their green in winter, but take then a deeper verdure—Ivy, Holly, and Yew enduring all but the very hardest frosts that visit our isles, some bright with berries as well as verdure; giving welcome shelter to northern and wind-swept gardens, and in our own time each varying into many noble varieties. These native evergreens and their varieties are, and for ever must be, the most precious of all for the British Isles.

When after a very hard winter we see the evergreen trees of the garden in mourning, and many of them dead, as happens to Laurels, Laurustinuses, and often even the Bay, it is a good time to

consider the hardiness and other good qualities of our British evergreens and the many forms raised from them. If we are fortunate

Old clipped evergreens, Berkeley Castle.

enough to have old Yew trees near us, we do not find that a hard winter makes much difference to them, even winters that brown the

evergreen Oak. We have collected within the past 200 years evergreen trees from all parts of the northern world, but it is doubtful if any of them are better than the common Yew, which when old is often picturesque, and which lives for over a thousand years. Of this great tree we have many varieties, but none of them quite so good as the wild kind when old. In the garden little thought is given to it and it is crowded among shrubs, or in graveyards, where the roots are cut by digging, so that one seldom sees it in its true character when old, which is very beautiful. The Golden Yew is a variety of it, and there are other forms one of which, the Irish form, is well known, and too much used.

After the Yew, the best of our evergreen shrubs is the Holly, which in no country attains the beauty it does in our own; certainly no evergreen brought over the sea is so valuable not only in its native form, often attaining 40 ft. even on the hills, but in the varieties raised from it, many of them being the best of all variegated shrubs in their silver and gold variegation; in fruit, too, it is the most beautiful of evergreens. Not merely as a garden tree is it precious, but as a most delightful shelter around fields for stock in paddocks and places which want shelter. A big wreath of old Holly unclipped on the cold sides of fields is the best protection, and a grove of Holly north of any garden ground we want to shelter is the best evergreen we can plant; the only thing we have to fear being rabbits, which when numerous make Holly difficult to establish by barking the newly-planted trees, and in hard winters even barking and killing many old trees. As to the garden, we may make beautiful evergreen gardens of the forms of Holly alone.

Notwithstanding the many conifers brought from other countries within the past few generations, as regards beauty it is very doubtful if more than one or two equal our native Fir. In any case few things in our country are more picturesque than old groups and groves of the Scotch Fir; few indeed of the conifers we treasure from other countries will ever give us anything so good as its ruddy stems and frost-proof crests.

Again, the best of evergreen climbers is our native Ivy, and the many beautiful forms that have arisen from it. This in our woods arranges its own beautiful effects, but in gardens it might be made more use of, and no other evergreen climber comes near it in value. The form most commonly planted in gardens—the Irish Ivy—is not so graceful as some others, and there are many forms varying even in colour. These for edgings, banks, screens, covering old trees, and summer-houses, might be made far more use of. In many northern countries our Ivy will not live in the open air, and we rarely take enough advantage in such a possession in making both shelters,

wreaths, and screens of it. It requires care to keep it close on our houses and on cottage roofs or it will damage them ; but there are

Evergreen trees in natural forms (Cedars : Gunnersbury).

many pretty things to make of it away from buildings, and among them Ivy clad and Ivy-covered wigwams, summer-houses, and covered ways, the Ivy supported on a strong open frame-work.

Box, which is a true native in certain dry hills in the south of England, is so crowded in gardens, that one seldom sees its beauty as one may on the hills full in the sun, where the branches take a charming plummy toss. To wander among natural groves of Box is pleasant, and we should plant it in colonies by itself full in the sun, so that it might show the same grace of form that it shows wild on the chalk hills. It is, I think, the best of our native evergreens for garden use, making pretty low hedges as at Panshanger, for that purpose for dividing lines near the flower-garden it is better than Yew or Holly.

Also among our native evergreens is the common Juniper, a scrubby thing in some places, but on heaths in Surrey, and favoured heaths elsewhere, often growing over twenty feet high and very picturesque, especially where mingled with Holly. The upright form, called the Irish Juniper, in gardens is not nearly so good as the wild Juniper though more often grown.

The *Arbutus*, which borders nearly all the streams in Greece, ventures into Ireland, and is abundant there in certain parts in the south. This beautiful shrub, though tender in midland counties, is very precious for the seashore and mild districts not only as an evergreen, but for the beauty of its flowers and fruit. Still, it is the one British evergreen which must not be planted where the winters are severe in inland districts, and usually perishes on the London clay.

It is the best of our native evergreens that deserve the preference instead of the heavy Laurels, and various evergreens not even hardy, so that after a hard frost we often see the suburbs of country towns black with their dead.

UGLY EVERGREEN TREES AND SHRUBS.—One of the most baneful things in our gardens has been the introduction of distorted and ugly conifers which often disfigure the fore-grounds of beautiful houses. These are often sports and variations raised in modern days, as is the case with the too common Irish Yew. It is not only that we have to deplore the tender trees of California, which in their own country are beautiful, though, unhappily, not so in ours, but it is the mass of distorted, unnatural, and ugly forms—the names of which disfigure even the best catalogues—that is most confusing and dangerous. In one foreign catalogue there are no less than twenty-eight varieties of the Norway Spruce, in all sorts of dwarf and monstrous shapes—some of them, indeed, dignified with the name *monstrosa*—not one of which should ever be seen in a garden. The true beauty of the pine comes from its form and dignity, as we see it in old Firs that clothe the hills of Scotland, California, or Switzerland. It is not in distortion or in little green pincushions we

must look for the charm of the Pine, but rather in storm-tossed head and often naked stems ; and hence all these ridiculous forms should be excluded from gardens of any pretence to beauty.

Another most unfortunate tree in this way, as helping to fill out gardens with graceless things, is the western *Arbor vitæ* (*Thuja occidentalis*). This, which is a very hardy tree but never a dignified one, even where it grows in the north about Lake Superior and through the Canadas, is, unhappily, also hardy in our gardens, and we may see in one catalogue no less than twenty-three forms of this tree all dignified with Latin names. There are plenty of beautiful things, new and old, worthy of the name, without filling our gardens with such monstrosities, many of which are variegated. Of all ugly things, nothing is worse than the variegated Conifer, which usually perishes as soon as its variegated parts die, the half dead tree often seeming a bush full of wisps of hay.

EVERGREEN WEEDS.—In many once well-planted pleasure grounds the Pontic *Rhododendron* almost runs over and destroys every other shrub, and hides out the most beautiful tree effects, growing often a little above the line of sight. Even where people have taken the greatest trouble to plant a good collection of trees, the monotony of it is depressing ; always the same in colour, winter or summer, except when dashed by its ill-coloured flowers. The walk from the ruins at Cowdray to the new house is an example that might be mentioned amongst a thousand others of a noble bank of trees, varied and full of beauty, but, in consequence of this shrub spreading beneath them all along the walk, showing nothing but a dank wall of evergreen. How this ugliness and monotony come about is through the use of the Pontic kind as a covert plant, and also owing to its facility of growth, the beautiful sorts of *Rhododendron* are usually grafted on it. In a garden where there are men to look after plants so grafted and pull away the suckers, this plan may do, but when planting is done in a bold way about woods, or even pleasure grounds, this is not attended to, nor can it always be, so that the suckers come up and in time destroy the valuable sorts ! The final result is never half so pretty as in the most ill-kept natural wood, with Bracken and Brier in fine colour and some little variety of form below the trees ; therefore everybody who cares for the beauty of undergrowth should cease this covering of the ground with this poor shrub, not so hardy as the splendid kinds of American origin often grafted on it to die. With the Cherry Laurel and the Portugal Laurel it is the main cause of the monotony and cheerless air of so many pleasure grounds.

The nurseryman who grows rare trees or shrubs very often finds them left on his hands, so that many nurseries only grow a few

stereotyped things, mainly those that grow freely, and, owing to the over-use of weed-evergreens like Privet, which are without beauty, and offensive in odour when in flower. The presence of such things is one of the causes of the miserable aspect of the shrubberies in many gardens, which might be very beautiful and interesting with a varied life. Many shrubs of little or no beauty in themselves very often destroy by their vigour the rare and beautiful garden vegetation, so that we have not only the ugliness of a brake of Laurel, or half-evergreen Privet, or Pontic Rhododendron to survey, but often the fact that these shrubs have overrun and killed far more precious things. And this nursery rubbish having killed every good thing begins to eat up itself, and hence we see so many shrubberies worn out.

THE NOBLER EVERGREEN FLOWERING SHRUBS.—It is not only the ill-effect of these all-devouring evergreens we have to consider, but what they shut out:—the evergreen flowering shrubs and trees of the highest beauty of colour as well as of foliage, and the many hardy Rhododendrons of finest colour. If we would only cease to graft them, and instead get them from layers on their own roots, we should not be overcrowded with the *R. ponticum* of the present system. They are not only hardy in the sense that many of our popular evergreens are hardy, *i.e.* in favoured districts or by the sea, so kind as it is to evergreens, but everywhere in England. I mean the many broad-leaved Rhododendrons which have mostly come to us from the wild American species, and are hardy in North and Eastern America. Apart from the use of such things, by carefully selecting their colours we may have not merely an evergreen background of fine and varied green, but also the most precious flowering shrubs ever raised by man and in their natural forms, often varying in fine colour and form too, if we will only cease to compel them to live on one mean and too vigorous shrub.

As to the kinds of Rhododendron that are raised from the Pontic kind or even from the Indian Rhododendrons, so far as tried they are not in any way so good as the varieties raised from the North American kinds, and which have the fine constitution of *R. Catawbiense* in them, and of which many are hardy not merely in Old England but in the much more severe winters of New England. Apart from plants of these kinds from layers we may also have them as seedlings, though the named kinds from layers give us the means of grouping a finely coloured kind which may often be desirable. It is also very probable that we shall, as various regions of the northern world are opened up, introduce to cultivation other fine wild species, and get precious races from them, so for many reasons the sooner we get out of the common routine of the nurseries in grafting every fine kind we

already have on, *R. ponticum*, the better. And if this plan be wrong with the varieties, what are we to say to grafting any of the fine wild species that come to us on the same Pontic kind kept in every nursery for the purpose? For however vigorous the growth at first, the stock is sure to get its head in the end, and then good-bye to the precious natural species it has borne—for no sound reason.

THE NOBLER EVERGREEN TREES.—Apart from trees of poor forms, there are others which are stately in their own country but a doubtful gain to ours, like the *Wellingtonia* and other Californian trees, and the Chili Pine. Sometimes the foregrounds of even fine old houses are marred by such trees, and unfortunately people use them in the idea that they are by their use doing something old-fashioned and “Elizabethan,” whereas they are marring the beauty of the landscape and of our native trees, often so fine beyond the bounds of the garden. We ought not to spoil the beauty of our home landscapes by using such things, which are so abundant in many places that the Nobler Exotic Evergreen Trees like the evergreen Oak are forgotten. This European tree from *Holkham* in Norfolk to the west of England and in many gardens round the coasts of our islands, is a noble evergreen tree and a fine background and shelter.

Then there is the Cedar of Lebanon, which is perhaps the finest evergreen tree ever brought to our country and as hardy as our own trees. If we use evergreen trees they ought to be the noblest and hardiest. The loss of this tree by storms could not happen to anything like the same extent if people went on planting young trees. The many catalogues issued, help towards the neglect of the really precious trees by “bringing out” novelties from all parts of the world—absolutely unproved trees; whilst the planting of such grand trees as the Cedar of Lebanon and the *Ilex* of Europe are often forgotten. A mistake in Cedar planting is the fashion of only planting isolated trees with great branches on all sides on enormous surface exposed to strong wind. In their own country, where Cedars are naturally massed together, although the gales are severe, the trees are not destroyed by wind in anything like the same degree. The Cedar of Lebanon is beautiful in the “specimen” way, but it is at least equally beautiful massed in groups. In their own countries, in addition to being massed and grouped together, the soil is often stony and rocky, the growth is slower, and the trees take a firmer hold, whereas in our river valleys, where the Lebanon Cedar is often planted in an isolated way, the growth is softer and the resistance to wind less, and a more artistic and natural way of planting would lessen the accidents to which this noblest of evergreen trees is exposed.

SHELTER AND WIND SCREENS IN AND NEAR THE FLOWER GARDEN.—Few countries are so rich in the means of shelter as our own, owing to the evergreens that grow freely with us and thrive in seashore and wind-swept districts. Shelter may be near flower beds and distant or wind-breaks, across the line of prevailing winds, and the north and east winds, and may be of Yew, Holly, Cedar of Lebanon (never Deodar) native Fir, and a few other hardy Firs, and the Ilex.

In old times shelter was often obtained from clipped hedges of Yews and Limes, but the fine evergreen shrubs we now possess make it more easy and effective, as naturally grown shrubs soften the wind better than clipped lines, while often themselves beautiful in leaf and bloom. There is, indeed, in gardens the danger of planting too densely at first, so that after some years the place becomes dank and the very house itself is made cheerless. The pretty young conifers planted are not thought of as forest trees, and parts which should be in the sun are gradually overshadowed—a great mistake in a climate like ours.

Among the kinds of shelter, walls, thickly clad with climbers, evergreens and others, are often the best for close garden work, because they do not rob the ground, as almost any evergreen tree will; and in doing their work, they themselves may bear many of our most beautiful flowers. Half-hardy evergreens, like the common Cherry, Laurel and Portugal Laurel, should never be planted to shelter the garden, because they may get cut down in hard winters. But happily, even in the most exposed places, a good many hardy flowers may be grown with success, such as Carnations, Pinks, and many rock plants which lie close to the ground, and are therefore little exposed to wind, and thrive in exposed places where soil and cultivation are not against them. English gardens are often well sheltered by the house itself and by old walls and enclosures, so that in old gardens it is easy to secure shelter for plants.

PLANTING NEAR THE SEA.—Some are doubtful of planting near the sea, considering the bleak look of things and the cutting winds. Yet even in places where the few trees that are planted are cut sharp off by the sea wind above the walls, as in Anglesea, we may see how soon good planting will get over difficulties that seem insurmountable. By the use near the sea of small-leaved trees like the Tamarisks, Sea Buckthorn, and small Willows, we very soon get a bit of shelter, and by backing these with the close-growing conifers like our common Juniper and some of the sea-loving Pines like Pinaster, and in mild southern and western districts the Californian Cypress and the Monterey Pine, we soon get shelter and companionship, so to say, for our trees, and fifty yards away we may soon walk in woods as stately as in any part of the country. Having got our shelter in this way

the growth of the hardy Pines of the northern world seems as easy by the sea as anywhere ; indeed, more so, because if there is any one place where the rather tender Pines are grown well it is near the sea in places around our coast, where if the soil is good, one has not to be so careful about the hardness of trees we select as we have to be in inland places.

THE ILEX.—The evergreen Oak takes a lead among the trees near the sea, and it ought to be largely used ; but as it is not very easily transplanted from nursery-bought plants, it is just as well to raise it on the place and plant it young. Seed may be scattered with some advantage in places we wish it to grow in, as it grows freely from seed.

This evergreen oak withstood the great gales of 1897 in the south and west of England better than any other. At Killerton and Knightshayes, and many other places where the destruction was greatest I was glad to see that the evergreen oak was not among the many victims. It is a precious tree for the south and west, and all sea shore districts, and should never be forgotten among the crowd of novelties among trees ; not one out of fifty is worth naming beside it. Like many other trees, it suffers from indiscriminate planting with other and sometimes coarser things, and is rarely grouped in any effective way, although here and there, as at Ham House, Killerton, and St. Anns we may see the effect of holding this tree together in groups or masses.

In addition to the common evergreen trees of Europe, the Scotch, Spruce and Silver Firs, we have the noble Corsican Pine, which, from its habitat in Calabria and in Corsica, can have no objection to the sea. The Pines of the Pacific coast, too, are well used to its influences, and hence we see in our country good results from planting them near the sea, as, for example, Menzies' Spruce at Hunstanton, the Monterey Pine at Bickton, the Redwood in many places near the sea. One good result of planting in such places is that we may use so many evergreen trees, from the Holly to the Cedar, and so get a certain amount of warmth as well as shelter.

Though our country generally is not perhaps fitted for the growth of the Cork Oak, a fine evergreen tree, it is here and there seen in southern and sheltered parts on warm soils, as in certain parts of Devonshire and on the warm side of the Sussex Downs, even in good condition. Of this fact we have an example in the Cork Oaks at Goodwood, all that could be desired in health and beauty. This Oak naturally inhabits the southern parts of Europe and the northern parts of Africa, and it is interesting to see that it can attain the size of a stately tree in our own country in some favoured places, but the evergreen oak for our islands is the Ilex and its various forms.

Some Genera of Evergreen Trees and Shrubs Hardy in the British Isles.¹

Abies	Choisya	Euonymus	Magnolia	Rhododendron
Aralia	*Cistus	*Fabiana	Myrica	Rosmarinus
Araucaria	Cotoneaster	Garrya	Olearia	Ruscus
*Arbutus	Cratægus	Gaultheria	Osmanthus	Sequoia
Arundinaria	Cupressus	Hedera	Pernettya	Skimmia
Aucuba	Daphne	Ilex	Phillyrea	Smilax
Azara	Daphniphyllum	Juniperus	Phlomis	Taxus
Bambusa	*Desfontainea	Kalmia	Phyllostachys	Thuja
*Benthamia	Diplopappus	Laurus	Pieris	Thujopsis
Berberis	Elaeagnus	Ledum	Pinus	Ulex
Buxus	*Embothrium	Leiophyllum	Quercus	Veronica
Camellia	Ephedra	Leucothœ	Rhamnus	Viburnum
Cedrus	Erica	Libocedrus	Raphiolepis	Vinca
Cryptomeria	*Escallonia	Ligustrum	Retinospora	Yucca
Chamærops				

¹ Some of those marked * are hardy only in seashore districts or warm soils, and in some genera named few species are evergreen.

Juniper showing natural growth.

CHAPTER XXX.

“ Vous travaillez pour ainsi dire à côté de Dieu, vous n’êtes que les collaborateurs de la loi divine de la végétation. Dieu, dans ses œuvres immuable, ne se prête pas à nos chimères ; la nature n’a pas de complaisance pour nos faux systèmes. Elle est souveraine, absolue comme son Auteur. Elle résiste à nos tentatives folles ; elle déjoue, et quelquefois rudement, nos illusions. Elle nous seconde, elle nous aide, elle nous récompense, si nous touchons juste et si nous travaillons dans son sens vrai ; mais si nous nous trompons, si nous voulons la violenter, la contraindre, la fausser, elle nous donne à l’instant même des dementis éclatants en faits par la stérilité, par le dépérissement, par la mort de tout ce que nous avons voulu créer en dépit d’elle et à l’inverse de ses lois.”—LAMARTINE, DISCOURS AUX JARDINIERS.

CLIPPING EVERGREEN AND OTHER TREES.

THE Yew in its natural form is the most beautiful evergreen of our western world—finer than the Cedar in its feathery branching, and more beautiful than any Cedar in the colour of its stem. In our own day we see trees of the same great order as the Yew gathered from a thousand hills—from British Columbia, through North America and Europe to the Atlas Mountains, and not one of them has yet proved to be so beautiful as our native Yew when unclipped root or branch. But in gardens the quest for the exotic is so active that few give a fair chance to the Yew as a tree, while in graveyards, where it is so often seen in a very old state, the cutting of the roots hurts the growth, though there are Yews in our churchyards that have seen a thousand winters. It is not my own

idea only that I urge here, but that of all who have ever thought of the beauty of trees, foremost among whom we must place artists who have the happiness of always drawing natural forms. Let any one stand near the Cedar-like Yews by the Pilgrim's Way on the North Downs, and, comparing them with trees cut into fantastic shapes, consider what the difference means to the artist who seeks beauty of tree form!

What right have we to deform things so lovely in form? No cramming of Chinese feet into impossible shoes is half so foolish as the wilful and brutal distortion of the beautiful forms of trees. The cost of this mutilation alone is one reason against it, as we see where miles of trees cut into walls have to be clipped, as at Versailles and Schönbrunn, and this shearing is a mere "survival" of the day when we had very few trees, and they were clipped to fit the crude notion of "garden design" of the day. The fact that men when they had few trees made them into walls to make them serve their ways of "design" is no reason why we, rich in the trees of all the hills of the north, should go on mutilating them too.

Thus, while it may be right to clip a tree to form a dividing-line or hedge, it is never so to clip trees grown for their own sakes, as by shaving such we only get ugly, unnatural forms. Men who trim with shears or knife so fine a *tree* as the Holly are dead to beauty of form and cannot surely have seen how fine in form old Holly trees are. To give us such ugly forms in gardens is to show one's self callous to beauty of tree form, and to prove that one cannot even see ugliness. For consider, too, the clipped Laurels by which many gardens are disfigured. Laurel in its natural shape in the woods is often fine in form; but it is planted everywhere in gardens without thought of its fitness for each place, and as it grows apace, the shears are called in, and its fine leaves and shoots are cut into ugly banks and formless masses, spoiling many gardens. There is no place in which Laurel is clipped for which we could not get shrubs of the desired size that would not need the shears.

In the old gardens, where from other motives trees were clipped when people had very few evergreens, or where they wanted an object of a certain height, they had to clip. It is well to preserve such gardens, but never to imitate them. If we want shelter, we can get it in various pleasant ways without clipping, and, while getting it, we can enjoy the natural forms of the evergreens. Hedges and wall-like lines of green living things are useful, and even may be artistically used. Occasionally we find clipped arches and bowers pretty, and these, when very old, are worth keeping. Besides, there is much difference between evergreen archways or bowers, hedges, and shelters, and the fantastic clipping of living trees into the shapes of bird or beast or

coffee-pot, and while it may be well to keep any old specimens of the sort when we find them, clipping is better not carried out with our lovely evergreens on a large scale.

Now and then we see attempts on the part of those having more knowledge of some half-mechanical grade of decorative "design" to galvanise the corpse of the topiary art. Such an idea would not occur to any one knowing the many beautiful things now within our reach, or by any one like a landscape painter who studies beautiful forms of earth or trees or flowers, or by any lover of Nature in tree or flower. Sometimes these puerilities are set into book form. For one author there is no art in gardening, but cutting a tree into the shape of a cocked hat is "art," and he says:—

I have no more scruple in using the scissors upon tree or shrub, where trimness is desirable, than I have in mowing the turf of the lawn that once represented a virgin world . . . and in the formal part of the garden my Yews should take the shape of pyramids, or peacocks, or cocked hats, or ramping lions in Lincoln green, or any other conceit I had a mind to, which vegetable sculpture can take.

After reading this I thought of some of the true "vegetable sculpture" that I had seen; Reed and Lily, models in stem and leaf; the Grey Willows of Britain as lovely against our British skies as Olives are in the south; many-columned Oak groves set in seas of Primroses, Cuckoo flowers and Violets; Silver Birch woods of Northern Europe beyond all grace possible in stone; the eternal Garland of beauty that one kind of Palm waves for hundreds of miles throughout the land of Egypt—a vein of summer in a lifeless world; the noble Pine woods of California and Oregon, like fleets of colossal masts on mountain waves—thought of these and many other lovely forms in garden and wood, and then wondered that any one could be so blind to the beauty of the natural forms of plants and trees as to write as this author does.

From the days of the Greeks to our own time, the delight of all great artists has been to get as near this divine beauty as what they work in permits. But this deplorable *vegetable sculptor's* delight is in distorting beautiful forms; and this in the one art in which we have the happiness of possessing the living things themselves, and not merely representations of them. The old people from whom he takes his ideas were not so foolish, as when the Yew was used as a hedge or was put at a garden gate it was necessary to clip it to keep it in bounds. Apart from the ugliness of the cocked-hat tree or other pantomimic trees, the want of life and change in a garden made up of such trees, one would think, should open the eyes of any one to its drawbacks, as in it there is none of the joy of spring's life, or summer's crown of flowers, or winter's rest.

The plea that such work gives variety does not hold, because

English cottage garden with protecting fence. Showing right use of clipped Yew. Great Tew, Oxfordshire.

wherever labour and time are wasted upon such things the true work of the garden does not, and very often cannot, get the attention it needs. In few of the places where such work is done, is seen much of beauty in the garden—that is, beauty of flower and form and fine colour such as an artist would put in a picture, and which is a picture in itself to begin with.

THE ABUSE OF YEW HEDGES IN FLOWER GARDENS.—In old days, whether in a manor house or castle garden, the use of Yew hedges had some clear motive of shelter or division, or clothing against massive walls as at Berkeley ; or at a cottage door, as a living shelter. But when we use Yew hedges from the mere desire for them, and without much thought of the ground or other reasons, we may find ourselves in trouble. At a place where Roses were earnestly sought, the Rose borders were backed up close by Yew hedges ; the Yews were not very troublesome the first year or two, but, as they grew, they became merciless robbers. There are many ways of growing Roses, but it would be difficult to invent any worse way than this, which leaves the gardener always “between the devil and the deep sea,” trying to keep back the hungry Yew roots all the while, it being quite easy to secure a background which, instead of eating up the Roses, would support and shelter them beautifully ; such as walls of solid or of open work, Oak palings, Bamboo and other trellises, or espaliers of bushy climbers, like Honeysuckle and Clematis. It is surely easy to enjoy the Yew without letting it eat up the very things we wish to cherish.

Another bad way is to place lines of Yew hedges so close together that the sun can hardly sweeten the ground between them, this being generally the result of carrying out some book plan, without thought of the ground or its use. More stupid still is cutting up level lawns with Yew hedges across them, or sometimes projected into them a little way, with flower beds in between, within a couple of feet of the all-devouring Yew :—and all this very costly Yew planting working for ugliness, and against the health, and even life, of all the flowers near. For ugliness distinctly, as while such broad and impressive Yew hedges as we see at Holme Lacy and in the older gardens are good in effect, it is quite different with small, hard Yew hedges, set one against the other and repeated *ad nauseam*.

It is not only the needs of our own greatly increased garden flora—new races of plants never known to the old people, such as our tea Roses and the rich collections of shrubs from Japan and other countries, that will not bear mutilation or robbing at the root—that should make us pause, as, even in such evidence that remains to us of old flower gardens on ancient tapestries and pictures, we may see some evidence that the lady had room in her flower garden to look around and work among her flowers, unencumbered by a maze

of robbing hedges. Some, perhaps, of these close lines of yews, set with such little thought, owe their origin to the maze idea ; but the maze was for a wholly different end, and in it we have only to grow its trees and the paths are free for the roots ; while in the rose and flower garden our costs and cares to get an artistic and beautiful result are too heavy to have them eaten up before our eyes by the hungriest of tree roots. If there were no other way to enjoy these evergreen trees, clipped or otherwise, one would not, perhaps, have so much to say against them ; but we have only to step out of the flower garden to indulge in the love of many evergreens to our heart's content.

CLIPPED EVERGREEN SHRUBS IN THE BEDS OF THE FLOWER GARDEN.—A gardener with shears in his hand is generally doing fool's work, but there is much difference between his clipping old or sheltering

Example of old topiary work.

lines of Yews, or even the Peacock in box, and the clipping which goes on in some gardens where beds are filled with small evergreen bushes instead of flowers. We may see it practised in gardens laid out by Paxton and his followers, their object being no doubt to get rid of the trouble of real flower-gardening, and also to have evergreen beds in winter. This effect may be obtained in a way, but the bushes usually get far too thick, and then the shears are used to keep them in bounds, and what ought to be graceful groups of flowers or shrubs of good form becomes flat, hard, and ugly. The clipping may be designed at first, but oftener it is done to repress overgrowth. A more stupid way of filling the beds of a flower garden could hardly be imagined, because we lose all the grace and form of the shrubs, and also the chance of seeing flowers growing among them, which is one of the prettiest phases of flower gardening when Lilies, Gladioli, and other graceful plants spring from groups of choice

evergreens. The end of all this laborious mutilation is to cause disease and overcrowding, and the best thing is to clear the deformed things away and plant in more natural ways. If we want flower beds, let us have them ; by doing so we can have varied life for more than half the year. If we want beds of choice evergreens we can have them without destroying their forms by the shears. There is a wide choice of beautiful things like Rhododendrons and Azaleas, and if we set these in open ways we can have flowers among them, thus doubling the variety of bloom obtainable from the surface, getting light and shade and the true forms of shrub or flower.

THE DISFIGUREMENT OF FOREST TREES BY CLIPPING.—Recently magazines and illustrated journals, in the great chase after subjects have dealt with the clipped gardens of England, and some of the most ridiculous work ever perpetrated in this way has been chosen for illustration. Of English counties, Derbyshire is the most notorious for examples of disfigured trees. The Dutch, who painted like nature, and built like sane men, left their plantations to the shears, but they always cut to lines or had some kind of plan, judging from their old engraved books. British clipping, however, has one phase which has no relation to any plan, and so far it exceeds in extravagance the methods of the Dutch, Austrian, and French, and that is the clipping single, and often forest, trees into the shape of green bolsters. The late Mr. McNab, of the Edinburgh garden, excellent planter though he was, had an idea that he kept his conifers in shape by clipping. A false idea runs through all growers of trees of the pine tribe, the most frequent victims of the practice, that these trees should be kept in a conical shape, the truth being that all the pine trees in the world in their state of highest beauty lose their lower branches, and show the beauty of their stem and form when growing in their natural way. With a few exceptions, it is the way of these trees to shed their lower branches as other trees shed their leaves. Even in countries where pines often stand alone, as on the foothills of California, I have often seen them with 100 feet or more of clean stem.

Articles on this subject are usually of the see-saw sort, the writer praising and blaming alternately, and wabbling about like a blind man in a fair. We are told that Elvaston, in Derbyshire, is not remarkable for natural beauty, and that the grounds there are so flat that landscape gardeners, in despair of any other planting, are compelled to have recourse to topiary work ; that “even that man of fame, ‘Capability’ Brown, seems to have shrunk from the work of laying out the grounds. Whereupon the earl demanded his reason, and Brown replied, ‘Because the place is so flat,’ &c.”

Instead of there being any truth in the assertion that we cannot

make level ground beautiful by planting in, natural ways, level ground has a great deal in it that is favourable to artistic ways of planting. That is to say, with such ground we may more easily secure breadth, simplicity, and dignity, get dividing lines in the easiest way, richer soil and finer and more stately growth and nobler shelter. Many of the most beautiful gardens of Europe are on perfectly level ground, as Laxenberg in Vienna, the English garden in Munich, not to speak of many in our own river valleys and in counties like Lincolnshire. What would be said of planting in all the flat countries of Northern Europe if this assertion were true, to say nothing of the absurdity of assuming that the only way out of the difficulty is in the stupid disfigurement of trees? I shall not imitate the example of these writers in leaving the matter in doubt, but give some reasons against the wasting of precious labour in order to rob trees of their natural charm. The old poets and satirists, who laughed at it, did not go into the reasons against clipping big trees, which are serious nevertheless.

LOSS OF FORM.—First of all is the loss of tree form—a wonderful and beautiful gift, so wonderful and beautiful, indeed, that the marvel is that we should have to allude to it at all, as in nearly every parish in England one has only to walk one hundred yards or so to come face to face with fine examples of good tree form. There is more strength and beauty of line in many an ash tree by a farmhouse yard than in all the clipped forest trees in Britain. Some protest against the cropping and docking of animals' ears and tails, but, when the worst is done in that way, the dog or the horse remains in full beauty of form in all essential parts, but if we clip a noble tree, which in natural conditions is a lesson in lovely form in all its parts, we reduce it at once to a shapeless absurdity.

LIGHT AND SHADE.—The second great loss is that of light and shade, which are very important elements of beauty. These are entirely neutralised by shaving trees to a level surface, whether the trees take the form of a line, or we clip them singly, as in the British phase of tree clipping. If we see old examples of the natural yew, a forest tree, and the commonest victim of the shears among evergreen forest trees, and if we look at them in almost any light, we may soon see how much we lose by destroying light and shade, as the play of these enhances the force and beauty of all the rest.

COLOUR.—The third objection is the loss of refined colour. In gardens we are so much concerned with garish colour that we often fail to consider the more delicate colours of nature, and such fine tone as we see in a grove of old Yews, bronzed by the winter, or in Ilex with the beautiful silver of the leaf, or a grove of coral-bearing Hollies. Even the smallest things clipped, such as juniper, have in a natural

way much beauty of colour if left alone. All the favourite trees for clipping are far more beautiful in colour in a natural state; the loss of the stem colour alone is a great one, as we may see wherever old Yews show their finely-coloured stems.

MOTION.—In the movement of these trees stirred by the wind, and the gentle sighing of their branches, we have some most welcome aspects of tree life. In groves of *Ilex*, as at Ham House, and masses of the same tree, as at St. Ann's, the effect of the motion of the branches is to many a beautiful one. This movement is also of great beauty in groves of old Yew trees, and is seen in every cedar and Pine that pillars the hills. The voice of the wind in these trees is one of the most grateful sounds in nature, and has often inspired the poet.

“I see the branches downward bent,
Like keys of some great instrument.”

And even when the storm is past we hear delicate music in the free pine tips.

“What voice is this? what low and solemn tone,
Which, though all wings of all the winds seem furled,
Nor even the zephyr's fairy flute is blown,
Makes thus for ever its mysterious moan
From out the whispering Pine-tops' shadowy world?

Ah, can it be the antique tales are true?
Doth some lone Dryad haunt the breezeless air,
Fronting yon bright immitigable blue,
And wildly breathing all her wild soul through
That strange unearthly music of despair?

Or, can it be that ages since, storm-tossed,
And driven far inland from the roaring lea,
Some baffled ocean-spirit, worn and lost,
Here, through dry summer's dearth and winter's frost,
Yearns for the sharp sweet kisses of the sea?”

DEATH AND DISEASE OF THE TREES.—The fifth objection is that the constant mutilation of trees leads to death and disease not unfrequently, as may be seen constantly at Versailles. In the Derbyshire examples, recently so much illustrated, the stems of dead Pines are shown in the pictures! It is simply an end one might expect from the annual mutilation of a forest tree, which the Yew certainly is, as we see it among the cedars on the mountains of North Africa, as well as in our own country and in Western Europe. Other trees of the same great Pine order are yet more impatient of the shears, and some of them, like the cedar, escape solely because of their dignity. However, we distort the Yew, which is in nature sometimes as fine as a Cedar.

ANNUAL COST.—The sixth objection is that of cost. Few

begrudge it if it gives a good result, but merely to use the labour of scores of men with shears is to miserably waste both time and money where there is so much of the country to be planted with beautiful trees. Where, as often in the French towns, there is much clipping, the waste of labour is as appalling as the result is hideous.

THE MAZE is an inheritance from a past time, but not a precious one, being one of the notions about gardening which arose when people had very little idea of the dignity and infinite beauty of the garden flora as we now know it. Some people may be wealthy enough to show us all the beauty of a garden and at the same time such ugly frivolities as this, but they must be few. The maze is not pretty as part of a home landscape or garden, and should be left for the most part to places of the public tea-garden kind. One of its drawbacks is the death and distortion of the evergreens that go to form its close lines, owing to the frequent clipping; if clipping be neglected the end is still worse, and the whole thing is soon ready for the fire.

Plan of Maze.

CHAPTER XXXI.

AIR AND SHADE.

THE glorious sun of heaven, giver of life and joy to the earth, gives, too, the green fountains of life we call trees to shade her, and this beautiful provision might often be borne in mind in thinking of our often hard and bare gardens! Air and shade, as we cannot, near houses in hot weather, enjoy the shade without free air, and shade may be often misused to cultivate mouldiness and keep the breeze away from a house, though it is very easy to have air and shade in a healthy way. To overshadow the house itself with trees is always a mistake, and sometimes a danger, though even against a house, by the use of climbers, like Vines, pretty creeper-clad pergola, and by the wise use of rooms open to the air, creeper-shaded, flat spots on roofs, so often seen in Italy and France, it is easy to have welcome shade even forming part, as it were, of the house. We have the gain, too, of the grace and bloom of the climbers, from climbing Tea Roses to Wistaria, and we get rid of the bald effect of such houses as Syon and the excruciating effect of the newer French châteaux, often on the warm side without gardens or shade of any kind, and hard as a new bandbox.

A little away from the house, shade of a bolder kind is always worth planning for. In planting for shade it is well to select with some care and avoid things that have a bad odour when in flower, like the Ailantus and the Manna Ash and ill-smelling undergrowth like Privet. In many places there is a fine field for cutting groups of pleasant shade trees out of the crammed shrubbery, neglected as that so often is, with dark barriers of Laurel, Privet, and Portugal Laurel. Nothing is easier than sweeping off and burning much of this evergreen rubbish, and getting instead shade over cool walks, or over paths leading through Ferns and Foxgloves; such woodland plants allow us to get light and shade and do not weaken the trees.

Vain attempts are often made in our gardens, public and private, to get grass to grow under certain trees which it would be much better to frankly accept as they are and gravel the spaces beneath

them for use as playground or for seats. In dealing with such trees we must be unsparing in cutting off the lower boughs, which are rarely of much use to the tree and often impede the air and movement underneath ; they should be cut carefully to an airy but not hard line.

Wych Elm on Lawn at Oak Lodge, Kensington.

Where the flower garden is small we may rightly object to much shade in it, and must get as much as we can outside it. In many cases in open lawn gardens, where we may pass easily from the flower beds into grassy, open ground near, we may have delightful groups of shade trees not far from the flowers, and this sort of garden, of which

there are so many in the level country, is that which is perhaps the most easy of all to keep cool, airy and sunny too.

But in large open flower gardens, which are often bare and hard, it is better to have some light shade. Great areas of gravel and flat beds everywhere are most tiresome to the eye, and in many large flower gardens, it would be an improvement to have covered ways of Rose and Jasmine or wreaths of Clematis and alleys of graceful trees such as the Mimosa-leaved Acacia, or other light and graceful trees. In that way we should get some of the light and shade which are so much wanted in these large chessboard gardens, and in getting the shade we might also get trees beautiful in themselves, or carrying wreaths of Wistaria or other climbers.

Among the most beautiful shade-giving trees are the weeping ones, which in our own day are many and beautiful, among them, the Weeping Ash, of which we see many trees even in the London squares. We are all so busy with exotics from many parts of the world, that the native tree does not always get a fair chance, and yet no deciduous tree ever brought to our country is for form and dignity finer than the mountain or Wych Elm. Trees over twenty feet round are not rare, and, being a native of the mountains of Northern England, its hardiness need never be in doubt. This tree is the parent of the large-leaved Weeping Elm (of which there are so many good trees to be seen), and the wild tree itself in its old age has also a weeping habit. But the weeping garden form is quite distinct and a tree of remarkable character and value, and like other weeping trees, it increases in beauty with age, like the grand old Weeping Beeches at Knaphill. The various Weeping Willows afford a welcome shade, and the White Willow and any of its forms give a pleasant light shade.

A fine kind of shade is that given by a group of Yews on a lawn near the house on a hot day—a living tent without cost, and this is almost true of any spreading tree giving noble shade, as the great Oak in the pleasure ground at Shrubland. There are many noble Horse Chestnuts which give great shade, as at Busbridge, and the Plane tree in Southern England gives noble shade.

There is no more beautiful lawn tree than the Tulip tree, and nothing happier in our country on an English lawn, in which its delightful shade and dignity are very welcome in hot weather, as at Esher Place and Woolbeding. Petworth also has a fine tree, but rather closed in by others. Owing partly to the attractive catalogues of conifers and other trees not of half the value of this from any point of view, young trees of these fine deciduous things are not so often planted as they used to be; and why should not a tree like this be grouped now and then, instead of being left in solitary state?

Trees with light shade might be welcome in certain districts, among the last being various *Acacias*, of which the common old American is good, while several beautiful varieties have been raised in France, light, elegant trees, especially the *Mimosa*-leaved one. In warm soils this would grow well and give very light shade. There are so many rapid-growing trees that in places devoid of shade trees it would not be difficult to establish some soon.

Those who have small gardens, and cannot have them robbed by the roots of trees, may get shade from climbers and often great beauty of flower from the climbers that give the shade. It is curious how little use is made of the Vine, with its beauty of leaf and form, for covered ways, loggias, and garden houses, not only in the country, but in town also. It is one of the best of plants for covering the fronts of houses, and good Vines spring out of London areas far below the level of the street, where it would be difficult to imagine worse conditions for the aëration of the soil or its fertility. These remarks apply not only to the common Vine, valuable though it is with all its innumerable varieties, but to the wild Vines of America and Japan, some of which are fine in foliage and colour.

The last few years we have seen so many hot seasons that one turns to the Continental idea of shade in the garden with more interest; and why should we not have outdoor loggia and Vine-covered garden rooms? We do not only neglect the outdoor shaded structures, but the even more essential loggia forming part of the house. A garden room entered from the house, and part of it, is a great comfort, and may be made in a variety of pretty ways, though never without provision for a few light graceful climbers.

After all is said about shade, the most essential thing about it in British gardens is not to have too much of it. Most of us plant too thickly to begin with; the trees get too close and we neglect to thin them, the result being mouldy, close avenues, dripping, sunless groves, and dismal shrubberies, more depressing than usual in a wet season. It is only when we get the change from sun to shade with plenty of movement for air that we enjoy shade. We cannot feel the air move in an over-planted place, and there are in such no broad breadths of sunlight to give the airy look that is so welcome. Over-planting is the rule; the regular shrubbery is a mixture fatal to the play of light and shade and air, and not only the sun is shut out, but often many beautiful views also.

Very harmful in its effect on the home landscape is the common objection to cutting down, or ill-placed trees crowded to the detriment of the landscape and often to the air and light about a house. The majority of the trees that are planted in and near gardens are planted in ignorance of their mature effects, the landscape beauty of half the

Air and shade: Type of weeping native lawn tree.

country seats in England being marred by unmeaning trees and trees out of place. I have known people who wanted to remove a solid Georgian house rather than take down a tree of moderate dimensions which made the house dark and mouldy and obscured the view of far finer trees beyond it, and it is not long since a man wrote to the *Times* after a storm to say that one of his Elm trees had fallen through the dining-room ceiling when he was at luncheon, and that Elms were not good trees to put over the house!

Where without the limits of the garden there are drives through old mixed or evergreen woods, like the Long Cover at Shrubland or the drive at Eastnor, it is important not to let the undergrowth close in on each side, as trees are very apt to do. It is difficult to give an idea of the difference in the effect of such a drive when "light and shade" are let into it, and when, as is commonly the case, the Yew, Box, and other things are clipped back to hard walls, good views, fine trees, and groups being all shut out by this neglect. It is better never to clip in such cases, but always to work back to a good tree or group, cutting encroachers clean out of the way, and so getting room for the air to move, the shade of the trees above being sufficient in each case. The pleasure of driving or walking is much greater when the air is moving, and when one can see here and there into the wood on each side, with perhaps groups of wild flowers and beautiful views into the country beyond.

The old fashion of having plashed alleys near the garden, of which there are good examples at Hatfield, Drayton, and other old gardens, was a pretty one, but as done with vigorous Lime trees it was troublesome and laborious work to keep down the vigour of such forest trees which, in point of looks, were not in any way the best to use for the purpose. However charming those old covered walks are it is well to remember that we have much nobler things for forming them now, that do not want cutting back, and that are beautiful in foliage and bloom. It is also well in planting such things to see that the shaded alley is sufficiently high and airy. There is no reason why it should not be made reasonably big, especially as we have noble climbers to cover it that do not keep rushing up in the air like the Lime and other forest trees which were used for this purpose in old times, when there were few trees to select from, and when probably the quick growth of the Lime was the cause of its selection. Its shade in this cut-down form is not so pleasant as the nobler climbers, which will cause no trouble in springing above the surfaces we wish them to cover.

PLANTING IN LIGHT AND SHADE.—This helps to get us out of the hard ways in which flowers are set in gardens. There is too sharp a line between the open parterre and the shady grove.

There are no gardens surrounded by more pleasant groves than English gardens generally, even small gardens having their belt of

Air and shade : Shaded walk, Belvoir.

trees, with opportunities for flower grouping in light and shade, but now for the most part occupied by heavy evergreens, massed together

and preventing all chance of light and shade, and even shutting out air and beauty.

We cannot do much good, in such cases, unless we first destroy the Privet and facile evergreens, like Laurels, which overrun everything, and then comes the question of the plants which will grow best in such places, as shade in gardens varies whether it comes from light-leaved or heavy-leaved trees, and there are so many different degrees of shade. We should think of the plants that grow in woody places naturally, as in our woods we may see handsome tall Grasses, Foxgloves, large Ferns, herbaceous plants like the French Willow and the Ragwort, tall Harebells, and many ground plants like Primroses and Bluebells. There is not any hard and fast line between plants that grow in shady places and other herbaceous plants, although some difference exists, and there are so many varieties of climate, elevation, and conditions of soil that the plants often vary in their ways. Foxgloves and Bracken, which are seen happy in the woods of the south, thrive on sunny rocky places in the north; so that there is an interplay among these things which helps us in making our gardens more varied. Not only we have to consider wood plants, but the fact that a great many plants of the northern world grow in partial shade, and we could arrange our borders, if we get out of stiff ways, so as to let the plants often run from the light into the shade.

In making borders through groves or shrubberies, it would be easy to have no hard line at the back of the border, but simply let the plants run in and enjoy the shade here and there. Where there might be some doubt of choice herbaceous plants thriving in shade there need be no doubt as to the larger woodland ferns and such plants as Solomon's Seal.

Among the interesting plants that thrive in shade are alpine and mountain plants. Many of these, being shrouded in clouds and enduring much rain in cool gorges, very often rejoice in shady places, as the varieties of the Irish Rockfoil (*Saxifraga Geum*), which carpet the ground in places that the sun never touches. Other Rockfoils have the same habit, including the large Indian kinds and their varieties. The Irises are often very beautiful in half-shady places, German Irises especially. By planting, too, in various aspects, shade and open, we get a succession of favourite flowers, that under a hot sun last but a short time. In the cooler light their colours have a greater charm—the blues more tender, the deeper colours still richer.

Pæonies are never handsomer than in subdued light, their colours richer and longer lasting than when bleached by the sun. This is true especially of the frailer single forms, which open out quickly under a hot sun and are gone all too soon. Many beautiful plants are happiest in the shade—not too dense—but where the sun's rays filter

through the tree-leaves. Gardens of great beauty may be made in the shade—gardens of greater charm than those who know not the store of plants for this purpose little dream of, and not confined to the hardy plant alone, but including also shrubs as well—as the hardy Azaleas. These are never so fine as when seen in shady or half shady places in a wood, as at Dropmore and Coolhurst, their colours more intense from the subdued light, and the flowers more lasting in the shade. Air, shade, and light are a trinity essential about a country house, and we cannot enjoy any one of them unless some thought is given to all.

Sun and Shade. (The Hoo, Welwyn).

CHAPTER XXXII.

LAWNS AND PLAYGROUNDS.

THE lawn is the heart of the true British garden, and of all forms of garden the freest and, may be, the most varied and charming, adapted as it is to all sorts of areas from that around the smallest house. It is above all things the English form of garden made best in the rich level valley land, and, with the least amount of trouble and labour to make or keep it, certainly gives the best result in effect. The terrace garden we have seen, in its origin and best meaning, arises from wholly different sort of ground from that on which we make a lawn. If the Italians and others who built on hills to avoid malaria had had healthy and level ground they would have been very glad of it, and thought it beautiful. With the lawn there is little or no trouble in securing fine background effects, variety, pretty dividing lines, recesses for any favourites we may have in the way of flowers, freedom, relief, air and breadth. There is room on the lawn for every flower and tree, from the cedar, and the group of fruit trees planted for the beauty of their flowers and fruit, down to rich beds of lilies or smaller flowers.

One of the most foolish dogmas ever laid down about a garden is that made in a recent book by an architect, in which we are told emphatically that there is no such thing as a garden to be made except within four walls. Many of the most beautiful gardens in the British Isles are without any aid but a background of trees and evergreens, and no trace of walls, which are absolutely needless in many situations to get the most artistic results in a garden. And lovely gardens may be made around lawns without marring the breadth and airiness which is the charm of a lawn, or in the least interfering with the use of its open parts as a playground.

CLIMBER-COVERED ALLEYS AROUND PLAY LAWNS.—Where there is space enough there are reasons in country places for

cutting off by a hedge a playground from the garden or pleasure ground, as is done at Madresfield and Campsey Ash and many of the older gardens; and what is used generally is the yew or holly, but clipped hedges give little shade and no flowers. Now, in the like position, if we adopt the pergola, we get shade, and many graceful flowers. Clematis, tall roses, wistaria, and almost every beautiful climber could be grown thereon, some better than on walls, because we can allow more *abandon* than on walls, and it is not at all so easy to crucify vine or climber on a pergola. We can have evergreens too if we wish, with garlands of handsome ivies among them, and players

Chambers Court, Tewkesbury. From a photograph sent by Mrs. Ward, Tewkesbury.

might rest in the shade and lookers on sit there to see the play. Various bold openings should be made on the play lawn side, and the whole so arranged as to be a sort of living cloister. Well done, the structure might be, apart from its shade and coolness and use as a dividing line, a garden of a very graceful kind, while the recent hot seasons lead one to think that the Italian way of putting a roof of vine leaves between one's self and the sun is worth carrying out in our own country.

Pergolas have various uses in covering paths which are too much exposed to the sun, and are a great aid in the garden, and there is no better way of growing beautiful climbing plants than a green covered

way, whether supported by oak posts, or brick or stone pillars as in Italy.

The ordinary covered ways made in England of plants are often too narrow and "pokey." In forming all such things a certain amount of freedom is essential; and we cannot enjoy the air in the usual narrow covered way, which, apart from its own error as to size, is also soon narrowed by growth. It should always be made at least wide enough for two people to be able to walk abreast. Where oak is not distinctly preferred, 14 in. brick pillars are best, and the plants take to them very soon. Common brown or rough stock bricks are far better for this use than showy red bricks: the last being often too the most costly. In stone districts stone would do as well or better, and it needs no fine dressing or designing after any pattern. It is better in fact done in the free way the Italians do it; but then in Italy every man is a mason, or knows what to do with stone, and also the stone there comes out in long posts or flakes, which serve as posts. This is also the case in the north of England, where beautiful posts of the green stone may be seen in use on the farms. In Cornwall, too, it would be easy to have stone pillars. We are in the iron age and many resort to iron, ugliest of all materials; but if simply done and not disfigured with galvanised wire, even iron may help our purpose if painted carnation green or some other quiet colour. If we use iron, we may take from its hardness by tying wooden trellis work over it, which is better for tying the climbers to than iron or wire, using the most enduring wood we have for this purpose. For this an excellent aid will be found in the bamboo stakes which now come in quantities to our ports as underpacking for sugar cargoes. These are sold in quantity at a reasonable rate, and are an excellent aid in making the iron pergola wired across and along the iron supports. Thus we get an enduring material, good in colour and excellent to tie the shoots of rose, clematis, or vine to.

The beautiful climbing shrubs and other plants that would find a good congenial home on such a pergola are a good reason for its use. Among them various graceful forms of our grape vine, as well as the Japanese and American wild vines, a group which now includes the Virginian creepers of our gardens, which are also useful, but not so good as the true vines; the lovely Wistaria, and not only the old Chinese kind, the best of all, but the beautiful Japanese long-racemed kind (*W. multijuga*); and various others too, though we think none come near to these in beauty; the brilliant flame Nasturtium in cool districts, and where light shade is desired; the green briar (*Smilax*) of America, and also the South of Europe, for warm soils; handsome

double and white-stemmed brambles ; wild and single roses ; box thorn, with its brilliant showers of berries ; European, American and Japanese honeysuckles ; jasmines ; over fifty kinds of ivy, the noblest of northern and evergreen climbers ; evergreen thorn, with its bright berries ; cotoneasters of graceful habit ; clematises, especially the graceful wild kinds of America, Europe, and North Africa. In mild districts particularly, the winter blooming clematis of North Africa and the Mediterranean Islands, which flowers in winter or early spring, would be very pretty and give light shade. The showy trumpet flowers (*Bignonia*), quite hardy in southern and midland counties ; and the Dutchman's pipe (*Aristolochia*), with its large leaves, would also be useful. The fine-leaved Lardizabala of Chili, the brilliant coral barberry of the same country (*Berberidopsis*) ; the graceful, if not showy silk vine (*Periploca*) of Southern Europe ; the Chinese Akebia, the use of the rarer climbers depending much on the climate, elevation, soil, and nearness to the sea.

THE PLASHED ALLEY is an alternative to the yew hedge and the covered way, but in some Elizabethan gardens it was often planted with trees of too vigorous growth, such as the lime, which led to excessive mutilation and eventual distortion of the tree. Now, with our present great variety of trees—some of them very graceful and light in foliage—it is by no means necessary to resort to such ugly mutilation ; and it would be easy, as an alternative to the pergola, the clipped hedge or the plashed alley, to have a shaded walk of medium-sized or low trees only. These might even be fruit trees ; but the best would be such elegant-leaved trees as the acacias, which preserve their leaves for a long time in summer. One drawback of the lime, in addition to its excessive vigour, is the fact that it sheds its leaves very early in the autumn, and, indeed, we have often seen the leaves tumble off in St. James's Park at the end of July, and in Paris also. It is most unpleasant to have in an alley a tree which is liable to such an early loss of its leaves. The common lime is a tree of the mountains and cool hills of Europe, and it cannot endure great heats and hot autumns ; whereas some of the trees of North America and other countries are quite fresh in the hottest days. Among these none is better than the acacia, of which, in France especially, a number of elegant varieties have been raised, as hardy as the parent species which charmed William Cobett, but more graceful in foliage. Among the best of these is the mimosa-leaved acacia, an elegant tree, which gives us a pleasantly shaded walk, and yet is not likely ever to become too coarse in habit.

FINE TURF IN AND NEAR THE FLOWER GARDEN.—Fine turf is essential in and near the house and garden—turf wholly apart from

the open park or playground. Flower beds are often set in turf, or there are small grassy spaces near the house or the garden, on the good effect of which depends very much the beauty of the home landscape, as coming so much into the foreground of what should be pictures. One reason why we should take care to get the best turf which the conditions of soil or climate allow is that no other country but ours can have such good turf. In many countries, even in Europe, they cannot have it at all, but grass seed has to be sown every year to get some semblance of turf. Where, however, our natural advantages are so great, our care should be to get the full benefit of them ; and though in many places the turf, through the goodness of the soil, is all that could be desired even in Britain, in others a very poor turf is often seen, and much effort is often given in vain attempts to get a turf worthy of a flower garden.

Many people think that any rough preparation will secure them a good sward, and merely trench and turf the ground ; even experienced ground workmen fail to get a fine turf for the flower garden, though they may lay turf well enough for a cricket ground. Others think that turf will come of itself, but are often rudely disappointed ; and therefore some instructions as to the best way of laying down turf, where the work has to be done from the beginning, and also for repairing it when out of order, may be useful to some readers. The following is written by Mr. James Burnham, who has made for me some of the most beautiful garden lawns I have seen, some of them laid in hot spring weather.

“FORMATION OF GOOD TURF.—Should the spot chosen be on heavy soil, such as clay, take the levels and fix them 16 feet apart around the outside of the piece intended for a lawn. Take some levels across the piece, then take 12 inches of earth out below the levels. Should any of these 12 inches contain good soil, wheel that on to the outside of the piece, removing all the clay to a place near and burning it into ballast, using slack coal. Find the natural fall of the ground, and place pegs 16 feet apart in lines from top to bottom the way it falls, then dig out the soil in line of pegs with a draining tool, 12 inches deep at top end, bottom end 18 inches deep. This will give a fall of 6 inches. Then lay in 2-inch drain pipes, with a 3-inch pipe at the bottom end for a main to take the water that drains from the sub-soil. See that this main is taken to some outlet. Cover the pipes with 3 inches of burnt ballast, and spread 3 inches of burnt ballast all over the piece of ground. Dig the ground over 12 inches deep, at the same time mixing the 3 inches of burnt ballast with the clay, taking care not to disturb the pipes or dig below them. After treading all over firmly, place on the surface 2 inches of burnt ballast, filling to the level with loam mixed with

the good soil you have laid on one side from the surface. If you have no good soil, fill up with loam mixed with coarse gravel, brick rubbish, and burnt ballast. Tread all over again as before, making it level with a spade, pressing in any lump or stone that appears level with the ground. No rake should be used. You have now 2 feet of trenched earth. Do not dig down deeper in one place than another. A stick cut 2 feet long by the worker's side is the best. He can, with the stick test his depth from time to time.

In laying the turf keep the joints of each piece half-an-inch apart. When it is all laid down pat it gently all over with a turf-beater. It is better to take up the turf that is a little higher than the rest and take out a little of the soil than to beat it down to the level. Then spread some burnt ballast, ashes from the burnt refuse of the garden, and the top 2 inches of soil from the wood, sifted through a half-inch mesh sieve, mixed well together, all over the grass. Move it about until all the joints in the turf are level. Wait for rain, then go over the lawn and take out all weeds. Give another dressing of the soil as before, adding to this a little road grit and old mortar. If no old mortar is available, slaked lime will answer. Move this about until all is level again. In the month of March or the first week in April, if the weather is fine, sow all over the lawn some of the best lawn grass seed. Get some fine Thorn bushes and lace them together in the shape of a fan heavy enough for two men to drag about the lawn in various ways. Roll with a light roller, and keep off the lawn until the grass has grown 3 inches, then cut it with a scythe. Roll with a light roller the first season, and when mowing with the machine is commenced, see that the knives are not set too close to the ground.

Should the ground selected for turf not contain clay, so much the better. Dig holes here and there 2 feet deep in the winter months. If no water lies at the bottom of the holes, this shows it will not want artificial draining; if there is water drain as on heavy soil. In trenching the ground, if the subsoil be bad, take 3 inches of this away, filling up to the level with good soil, to which have been added half-inch crushed bones in the proportion of four tons to the acre, fire brick rubbish and burnt ballast in the same proportions as for the heavy soil. Turf and treat as on heavy soil. If you have a good grass field, take the turf for your lawn, also top spit away, replace with rough soil, and place 3 inches of the loam that has been dug out upon the rough soil you have put in, then sow, bush harrow, and lightly roll.

TREATMENT OF OLD LAWNS.—Weeds, moss, and bare places on lawns show that they are worn out. To remedy this, take off the turf in rolls 3 feet long, 1 foot wide, and 1 inch thick. If the turf cannot

be rolled, take 6 inches of the surface away, then trench 2 feet deep, keeping the good soil on the top as you proceed. Tread firmly all over and fill up to the level with good soil; mix with the loam, burnt ballast, old brick rubbish, half-inch crushed bones, and road sidings or sweepings. Then turf and treat as in the case of new lawns. On old lawns there are very often handsome deciduous trees too close to which it would be dangerous to trench. To get grass to grow under these, take away 2 inches of the exhausted soil, replace with good, and sow thereon grass seed thickly. Rake the seed in gently, roll it lightly, and water when necessary. This may be repeated in the same way as often as the soil under the trees becomes bare.

In some cases where turf is scarce, a roll of turf 3 feet long and 1 foot wide may be taken and cut in half lengthways. With this form the outlines of the beds, which have been staked out previously, beat down to the level required, and bring up the intervening spaces to the level of the turf with good soil. Make this firm, rake it level, and on this sow some good grass seed. Bush harrow it over, roll lightly, and protect from birds where these are troublesome. Cut the grass when 6 inches high with a scythe, and keep it well watered during the summer if the weather is dry. In this way a beautiful lawn may be had at little expense as compared with turfing it completely over.

LAWNS ON PEATY AND SANDY SOILS.—In some parts of Hampshire and Surrey, where peat and sand abound, seeds are by far the best to use to form a good turf. Remove all peat from the site you wish for a lawn, pile it on the outside of the work and cast plenty of water upon it. Then take out 2 or 3 inches of the dark sand that lies under the peat, and cast this also over the pile of peat. Take out 12 inches of the sand, dig all over 12 inches deep and tread it firmly. Get all the road scrapings and road trimmings to be had with a little clay and stiff loam, and cast upon the peat pile. Having got together the quantity you think will fill up to your level, cut up small the peat you have in the pile and mix all well together with this, fill up to the level, tread firmly all over, then give everywhere a good coating of cow manure, turned 3 inches under the surface, and tread firmly all over. In the month of March sow thickly. Do not let the surface get dry the first summer, and cut the grass when 6 inches high with a scythe.

Attention should be paid to keeping all lawns free from weeds. Dress lawns once a year with one bushel of salt mixed with fourteen bushels of wood ashes not too much burnt, using for this purpose

refuse, underwood, waste faggots, old laurels or other condemned shrubs. When you see the wood is consumed spread the ashes abroad and cover them with good soil. Break the charred wood small, mix all well together, do not sift, spread upon the lawn, and roll it in."

Lawn Garden, Herts. Engraved from a photograph by Mr. Newman, Berkhamstead.

Stone bench (Dropmore).

CHAPTER XXXIII.

FLOWER GARDEN AND PLEASURE GROUND HOUSES, BRIDGES, SEATS AND FENCES.

THE first thing to be thought of in all building, apart from the house itself, is the absolute need of the structure, as there has been much effort lost in useless garden buildings, and no way of garden over-doing is so full of waste and ugliness. Recently we have seen attempts to revive the old garden houses, but the result has not often been happy. In old houses like Hatfield and Montacute, the little houses near the gate often had a true use at the entrance side, but now we see such things revived for the mere sake of carrying out a drawing, and as soon as built we see the aimlessness of the work, and then comes the difficult question of "planting it out" from different points of view. Isolated building in a garden is difficult to do with any good result, though at one period the building of temples was very common in pleasure gardens, and many of them are still to be seen. It is best, when these are of good form and structure, to keep them with care and make some simple use of them, by removing at once all suggestion of the grotto and having simple oak benches or other good seats. The interior also should be made simple in colour and free from covert for woodlice

or earwigs. It is in connection with the house, or part of its lower storeys, that garden shelters, loggias and the like may be most effectively made; of this we see examples at North Mymms and Bramshill, and where they give shade or a "garden room" as part of the house they are a real gain.

BRIDGES.—Few things about country houses and gardens are worse in effect and construction than the so-called "rustic work." It is complex and ugly as a rule, its only merit being that it rots away in a few years. It is probably at its worst in garden chairs, "summer" houses, and rustic bridges. An important rule for bridges is *never* to make them where they are not really needed, though the opposite course is followed almost in every place of any size where there is water. On rustic bridges over streams, natural or otherwise, there is much wasted labour. A really pretty bridge of a wholly different sort I saw once with the late James Backhouse near Cader Idris on a farm which had a swift stream running through it, to cross which some one had cut down a tree that grew near, and had chopped the upper side flat and put a handrail along it. Time had helped it with Fern, Lichen, and Moss, and the result was far more beautiful than is ever seen in more pretentiously "designed" rustic bridges. It is not, however, the far prettier effects we have to note, but the advantage which comes from strength and endurance. It looked very old and Moss-grown, and no doubt it is there now, as the heart-wood of stout trees does not perish like the sap-wood of the "rustic"-work maker. The sound oak tree bridge was the earliest footway across a stream, and it will always be one of the best if the sap wood is carefully adzed off. It would not please those, perhaps, for whom there is nothing good unless it has a pattern upon it, but it is a strong and beautiful way. Foot-bridges these should be called, as they are, of course, too narrow for any other purpose, but with a good oak rail at one side the tree bridge is distinctly better than a bridge of planks. Where stones are plentiful, stone put up in a strong, simple way is the best to make a lasting bridge, and a simple structure in brick or stone is better in effect than any rustic bridge. Where stream beds are rocky and shallow, stepping stones are often better than a bridge, though they cannot be used where the streams cut through alluvial soils and the banks are high.

Some of the worst work ever done in gardens has been in the construction of needless bridges, often over wretched duck-ponds of small extent. Even people who have some knowledge of country life, and who ought to possess taste, come to grief over bridge building, and pretty sheets of water are disfigured by bridges ugly in form and material. For the most frivolous reasons these

ugly things are constructed, though often by going ten yards further one could have crept round the head of the pond by a pretty path, aided, perhaps, by a few stepping stones.

EARTH-BANK BRIDGES.—But there are many cases where some kind of bridge is necessary in pleasure grounds or woodlands where there might be more excuse for the rustic worker's bridge. The difficulty of the light woodwork bridge is that it begins to rot as soon as it is put up, and we find that, even when done in the best way, with larch or oak, and by old-fashioned workmen, who get as much simplicity of form and endurance out of it as they can, the years pass so rapidly and

A garden room, by Harold Peto, Bridge House, Weybridge.

British rain is so constant, that rot and decay are all we get out of it, and very often such bridges fall into such a dangerous state before we have time to repair them, that animals often get into danger from them.

A much better way is the earth bank, with a drain pipe through, and this suffices where there is a slight, steady, or an occasional flow of water, and also to cross gorges or depressions. We can find the earth to make it on the spot, and by punning, and in the case of larger work of this kind, carting over it, we can get it to settle down in one winter to the level we want it, and soon have an excellent and permanent way across. Such banks will support any weight, and are as free from decay as the best stone bridge. One of their best points

is that the sides and approaches and slope of the earth bank can be made pretty at once by planting with Honeysuckle, Broom, Sweetbrier, or any other hardy things. Another advantage of the bank is, that the simplest willing workman can form it. The materials being on the spot, it is foolish to cart things a long way. Even when we have stone or brick at hand the labour has to be considered. By making a culvert of bricks and cement, the earth-bank is equally good to cross constantly running streamlets.

THE SUMMER-HOUSE is generally a failure and often a heap of decay. To make such a structure of wood that soon decays is labour wasted. It may be possible, by using the best woods and good oak

Oak-pale fencing, Surrey.

slabs, to make a summer-house which will be picturesque and enduring, but it is better to build it of stone or some lasting material and cover it with vines and quick-growing climbers.

One can make an enduring and charming summer-house out of living trees. An old Yew or a group of old Yews, or a low-spreading Oak (there is a fine example of this kind of living summer-house at Shrubland), an old Beech or a group of evergreen Oaks will make a pleasant summer-house, and with a little care for effect, and by pruning away old and worn-out branches, so as to get air and room without injuring the beauty of the trees, it is easy to form cool tents for hot days.

FENCES AND DIVIDING LINES.—The iron fence destroys the beauty of half the country seats in England, and the evil is growing every day. There are various serious objections to iron fencing, but we will only deal here with its effect on the landscape. Any picture is out of the question with an iron fence in the foreground. Where an open fence is wanted, nothing is so fine in form and colour as a split Oak fence and rails made of heart of Oak with stout posts.

A sawn wood fence is not so good. As Oak is so plentiful on many estates, good examples of split Oak post and rail fences should be more often seen. Oak palings are often used, and sometimes where a good live fence of Holly, Quick and wild Rose on a good bank would be far better ; but Oak paling is often a precious aid in a garden as a dividing line where the colour of brick or other walls would be against their use, or where for various reasons walls would not be desirable or a live fence suitable.

SUNK FENCES AND RETAINING WALLS.—Sunk fences of stone or brick are often of the highest value in the pleasure ground, and sometimes near the flower garden, as they help us to avoid the hideous mechanical fences of our day, and they are often the best way of keeping open views, especially if planted with a garland of creeping plants or wild roses above. They should be strongly if roughly built, without mortar, and they may be a home for beautiful plants. They should be made on a “batter” or slightly sloping

Simple form of garden seat, Warley Place.

back, the stones packed close together, *i.e.* without much earth and layers of alpine plants should be put between them. Retaining walls or sunk fences could be made admirably in this way, and where they permit of it may be made into beautiful alpine gardens. Apart from the sunk fence, there is often need for low retaining walls, especially in places of diversified surface. These walls also may be made the home of delightful plant beauty in the simplest way. Particulars of these things will be found in fuller detail in the chapter on Rock Gardens.

SEATS.—It is rare to see a garden seat that is not an eyesore. Few make them well and simply in wood, and there is always decay to be considered. Of our own woods, Oak is the best. Stout heart of Oak laths screwed into a simple iron frame without ornament make a good seat. They are best without paint and in the natural colour of the Oak wood. No seat is so good as one of good stone simply designed

and strongly made, and in our country one objection to stone is met by the use of a mat or a light trellis of Bamboo or split laths of Oak held together by cross pieces and placed on top of the stone. In Italy and France one often sees good stone seats, and there they are not expensive. I have made good stone seats out of steps and other stones which had been displaced in buildings. Stone seats should always be set on stone supports bedded in concrete. A good oak seat is one with strong stone supports, the top being a slab of Oak laid with two bars across its lower side to keep it in place. The top in this form being so easily removed, may be stored away for the winter, as wooden seats should always be. Tree stems of some size and little value may also be cut into the form of seats, and make very good ones for a time, but they soon decay. The common iron seats with cast patterns on them are ugly, but iron seats need not be so, and some old iron seats quite simply made of lath or rod iron were

Marble slab seat with Oak lattice cover.

fairly good, and it is not difficult to cover the seat with bamboo trellis-work or matting for the summer season. Some of the French wooden seats are simple and good in form, and, painted a nice carnation-leaf green, they look very well. Bamboos, which come in such quantities now in the sugar ships, might be more used for making pretty garden seats. Sometimes old tree stumps help to make useful seats, and the bole of the tree, if cut, makes a very good rustic seat. Where stone is plentiful, as in many hill and other parts, it is often easy to make useful seats out of blocks of stone in rocky places. Of this sort I saw some pretty examples at Castlewella and the rocky district around.

THE COVERED WAY may be a charming thing in a garden and make a home for climbers, as well as a shady way, and also form a valuable screen. Shade is more essential in other countries than in ours, and the Italian covered way is often a very picturesque object.

The best material to make the supports of is rough stone or brick. On an enduring support like this the woodwork is more easily constructed afterwards. Simple rough stone posts may be had in certain quarries in the north of England, in the lake country, but in the absence of these it will be better to build columns of brick or stone than to trust to any wood. In all open-air work the enduring way is true economy, and though we cannot all readily get the hard green stone gate posts stained with yellow Lichen of the farms about Keswick, or the everlasting granite fence posts that one sees in Italy, we should make a stand against work which has to be done over and over again. Of woods, Oak free of sapwood makes the best supports; Larch is good, but best of all, perhaps, is the common Locust tree, which, however, is seldom plentiful in a mature state.

Bower with stone table at end of garden. From a photo sent by the Marquis de Fontreira.

For all the other parts of covered ways nothing is better than old Oak branches or the stems of stunted Oaks, or of old stub Oaks that are often found about a country place, and are of very little value as timber. Larch lasts well in the absence of Oak, but is not nearly so good in effect. By using Oak with stone or brick supports, a covered way may be made which will last for years without falling into decay, as is the case with this kind of work when done with more perishable woods and without lasting supports. It would be far better to employ strong iron wire than wood of this sort. An advantage which woodwork has over iron lies in its good effect. Carefully done, a covered way made as above described may be picturesque even before there is a plant on it.

LIVING SUPPORTS.—A pretty way of supporting plants and forming covered ways is to use certain trees of a light and graceful

character for supporting climbers, just as the Italians often support their Vines on living trees kept within bounds. Such trees as the weeping Aspen, weeping Birch, and fruit trees of graceful, drooping forms, like some Apples, would do well, and would be worth having for their own sakes, while through the trees hardy climbers could freely run.

BOATHOUSES.—Among the things which are least beautiful in many gardens and pleasure grounds is the boathouse. Our builders are not simple in their ways, and are seldom satisfied with any one good colour or material to make a house with, or even a boathouse, but

A thatched summer-house.

every kind of ugly variegation is tried, so that harshness in effect is the usual result, where all should be simple and quiet in colour, as it is in boathouses on the Norfolk Broads made of reeds and rough posts. The simpler the better in all such work, using local material like Oak, which comes in so well for the posts, and reeds for the roof; but the simplest brickwork and brown tiles would be far better than the contrast of ugly colours which the modern builder both in France and England delights in. The place, too, should be carefully chosen and the building not conspicuous. It is well to avoid the cost of railway carriage in the making of simple structures like boat-houses, and also carting, which is such a costly matter in many districts. It is best to

use materials of the estate or country. Ivy and living creepers may help to protect the sides of airy sheds. Larch comes in well where Oak is not to be spared, and Larch shingling for the roof might be used, as is commonly done in farm-houses in Northern Europe and America. Little shelters for mowing machines, tools and the like can be made with wood covered with Larch bark, as at Coolhurst, and a very pretty effect they have, besides being less troublesome to make than the heather or thatched roofs, especially in districts where the good thatcher is getting rare. The chip roof, also, of the wooded country around London is an excellent one, lasting for half a century or so if well made, but the men who made it so well are now less and less easy to meet with. And on the whole the best roof for any structure that has to last is of tiles of good colour: tiles made and tested in the locality being often the best.

FOUNTAINS IN GARDENS.—In this moist climate of ours water needs to be used with great discretion. Above all things it must flow and not stagnate. Bacon, who said so many things about gardens well, summed up the case with his usual felicity:—"For fountains, they are a great beauty and refreshment; but pools mar all." No doubt we can all of us recall some pool of great beauty, some moat with little broken reflections that made almost all the charm of the garden wherein it lay, but as a general rule Bacon is right.

As nothing is drearier than a dry fountain except the exasperating trickle of one that refuses to be drowned out by the continuous drip of the eaves, it is better to place your fountain in a part of the garden which you are only likely to visit on a fine day, and if possible it should be set where its tossing spray will catch the sunbeams while you repose in the cool shade; then the supply of water may be as it should—unfailing. Fountains on such an extensive scale as those of Versailles or Chatsworth are only to be excused, when, as at Caserta, they run day and night from one year's end to the other. It is only in such great places too that large and monumental fountains, basin above basin, adorned with sculpture and connected by cascades, have any fitness, and even where they are fit they are apt, here in England,

Entrance to Bishop's Garden (Chichester).

to cease very soon to be fine. Lead is the best material for such fountain sculpture in our damp-laden atmosphere, as it discolours more becomingly than stone or marble. This tendency to discolour in blotches and afford a foothold for mosses and lichens, though a blemish on statues, is an added charm to the necessary basins and copings which should confine the waters of our fountain. A fountain is a work of art and as such should always be placed in the more formal portions of the grounds. The feathery spray of a jet is always a beautiful thing but can be ill-placed—as for instance, in the centre of a large and informal “piece of ornamental water.”

Vine-shaded bower.

The fountain in the Temple is one of the most charming examples of the single jet, rising from the centre of a circular basin and falling back with a melodious splash. It has lost some of its charm since it was surrounded by a clinker-built rockery in which nothing will grow. This sort of fountain should be set in a grass plot, and a few moisture-loving plants allowed to break the severity of its outline. I remember one such, only about 5 feet in diameter, in a lawn near London; a simple brick and concrete basin with a jet in the centre, which threw its spray up to the overhanging boughs of a stately elm, and nourished one of the most splendid clumps of *Osmunda regalis* I ever saw; Flowering Rush too thrived in its friendly

neighbourhood. There is a very attractive little fountain against the wall of the fruit garden at Penshurst. If the fountain be on a larger scale than these the basin may be made lovely in the summer with many varieties of aquatic plants, which being planted in boxes or pots can be removed to the greenhouse before the frosts set in.

One of the great merits of a fountain in a garden to the true lover of nature is the attraction it forms for the birds ; they will haunt its neighbourhood with delightful persistency, bathing and drinking at all hours of the day.

A fountain for the exclusive benefit of the birds was made in a garden in New England by sinking a saucer-shaped hollow, about 6 inches deep, in the lawn, which was allowed to become grass-grown like the rest of the turf ; in the centre stood up a jet which threw up a very fine spray. For an hour or two every morning and evening this was turned on, soon filling the hollow to the brim the effect was very pretty with the grass at the bottom of the water, and the birds soon learned to know the hours of the bath and came in flocks to enjoy it.—G. H. B.

Loggia Dropmore.
Engraved from a photograph by Mr. J. James.

CHAPTER XXXIV.

THE ORCHARD BEAUTIFUL.

THE spirit of beauty was at the birth of the trees that give us the hardy fruits of the northern world—Crab, wild Plum, Pear and Cherry—yielding back for us in their bloom the delicate colours of the clouds, and lovelier far in their flowers than Fig or Vine of the south. The old way of having an orchard near the house was a good one. Planted for use, it was precious for its beauty, and not only when the spring winds bore the breath of the blossoms of Cherry, Plum, Apple, and Pear, as there were the fruit odours, too, and the early Daffodils and Snowdrops, and overhead the lovely trees that bear our orchard fruits—Apples, Pears, Cherries, Plums, Medlars, Damsons, Bullaces, and Quinces. To make pictures to last round the year, I should ask for many of these orchard trees on a few acres of ground, none the worse if too hilly for the plough; a belt of Hollies, Yew, and Fir on the cold sides to comfort trees and men; with careless garlands of Honeysuckle, Rose, and fragrant Clematis among them here and there, and in the fence bank plenty of Sweet Brier and Hawthorn. If we see fine effects where orchards are poorly planted with one kind of tree, as the Apple (in many country places in our islands there are no orchards worthy the name), what might not be looked for of an orchard in which the beauty of all our hardy fruit trees would be visible? If we consider the number of distinct kinds of fruit trees and the many varieties of each, we may get some idea of the pictures one might have in an orchard, beginning with the bloom of the Bullaces in the fence. The various Plums and Damsons are beautiful in bloom, as in the Thames valley and about Evesham. The Apple varies much in bloom, as may be seen in Kentish and Normandy orchards, where the flowers of some are of extraordinary beauty. The Pear, less showy in colour, the Medlar, so beautiful in flower and in foliage, and the Quince, so pretty in bloom in Tulip time, must not be forgotten. The Cherry is often a beautiful tree in its cultivated as well as wild forms, and the Cherry

orchards in parts of Kent, as near Sittingbourne, are pictures when in bloom. There is no better work in a country place than choosing a piece of good ground to form an orchard ; and a dozen acres are not too much in a country place where there is land to spare.

Some may be deterred by the fear that their soil is too poor, and planting is more successful on the fruit tree soils of Devon, Hereford, and Kent than in some other districts ;

**Poor Soil should
not hinder.**

but the difference in soils is no reason why some counties and districts should be bare of orchards, and in many the soil is as good as need

be. Indeed, in the country south of London, where much of the land is taken up with orchards, we may see the trees suffering more from drought in dry years than they do on the sandstone soils of Cheshire or in Ireland and Scotland, where there is a heavier rainfall. Few of our orchard trees require a special soil, and where chalky or warm soil occurs, the best way is to keep to the kinds of fruit it favours most. But though the orchard beautiful must be of trees in all their natural vigour, and of forms lovely in winter as in spring and summer, the trees must not be neglected, allowed to perish from drought, or become decayed from bug, scale or other pests, and it should be the care of those who enjoy their beauty to protect them from all such dangers. The idea that certain counties only are suited for fruit growing is erroneous, and need not deter us from planting orchards of the hardier trees and of good local kinds. Much of Ireland is as bare of orchards as the back of a stranded whale, but who could say this was the fault of the country ?

Where we plant for beauty we must have the natural form of the tree. Owing to the use of dwarfing stocks, fruit gardens and orchards are now beginning to show shapes of

**The Trees to take
their Natural
Forms.**

trees that are poor compared with the tall orchard tree. However much these dwarf and pinched shapes may appeal to the gardener in his own domain, in the orchard beautiful they have no

place. For the natural form of all our fruit trees is good indeed, winter or summer. We know what the effect in flower-time is in the orchard pictures of such painters as Mark Fisher and Alfred Parsons, if we have not taken the trouble to see the finer pictures of the orchards themselves, seen best, perhaps, on dark and wet days in flower-time. Lastly, the effect of finely-coloured fruit on high trees is one of the best in our gardens. Therefore, in every case, whatever thinning of the branches we do, let the tree take its natural form, not only for its own sake or the greater beauty of natural form generally, but also for the interesting variety of form we get even among varieties sprung from the same species.

Clearly if we prune to any one ideal type of tree we can never see the interesting variety of form shown by the varieties of one species, as the Apple and Pear. Keeping to the natural form of each tree, moreover does not in the least prevent thinning of the branches where overcrowded—the best way of pruning.

We have not only to avoid ugly forms of training and pruning, but never in the orchard where the true way is to let the tree take its natural and mature form, should the practice of

**Root Pruning
in the Orchard.**

root pruning be allowed. Our orchard trees—especially the trees native of Britain like the Apple and the Pear—are almost forest trees in nature and take some years first of all to make their growth and then mature it. In gardens for various reasons men try to get in artificial ways the fruit that nature gives best at the time of maturity, so root pruning was invented, and it may have some use in certain soils and in limited gardens, but one would hardly think it would enter into people's heads to practise root pruning in the orchard ; though the word is a catching one and leads people astray. I have several times had the question seriously put to me as to how to root prune forest trees—a case where all pruning is absurd in any proper sense save in the way effected by the forest itself. The trees in the orchard should be allowed to come freely to maturity, and in the way the years fly this is not a long wait. By planting well chosen young trees every year the whole gradually comes into noble bearing, and the difference between the naturally grown and laden tree and one of the pinched root-pruned ones is great.

Cider orchards are picturesque in the west of England and in Normandy, and so long as men think any kind of fermented stuff good enough for their blood, cider has on northern

Cider Orchards.

men the first claim from the beauty of the trees in flower and fruit, and indeed throughout the year. The cider orchard also will allow us to grow naturally-grown trees and those raised from seed. Cider orchards are extremely beautiful, and the trees in them take fine natural forms. They have a charm, too, in the brightness of the fruit, and also one in the lateness of the blooms of some, many of the cider Apples flowering later than the orchard Apples. In some cider orchards near Rouen (Lyons-la-Forêt) I saw the finest, tallest, and cleanest trees were raised from seed ; the owner, a far-famed cider grower, told me they were his best trees, and raised from seed of good cider Apples. If he found on their fruiting that they were what he wanted as cider Apples he was glad to keep them ; if not, he cut their heads off and regrafted them with good cider sorts. These were free and handsome trees with good grass below them,

just like the Cherry orchards in the best parts of Kent, where the lambs pick the early grass. But however beautiful such an orchard, clearly it will not give us the variety of form and beauty found in the mixed orchard, in which Cherry, Apple, Plum, Pear, Medlar, Quince, Walnut, and Mulberry take a place; there also the various interesting trees allied to our fruit trees might come in, such as the true and common Service tree, Almond, Cornelian Cherry, and Crab.

Where we make use of grafted trees—and generally there is no choice in the matter—we should always in the orchard *use the most natural stock*. It is much better to graft Pear

Grafting. trees on the wild Pear than on the Quince, a union harmful to the Pear on many soils. If we

could get the trees on their own roots without any grafting it would often be much better, but we are slaves to the routine of the trade. The history of grafting is as old as the oldest civilisations—its best reason, the rapid increase of a given variety. In every country one or two fruit trees predominate, and are usually natives of the country, like the Apple in Northern Europe and the Olive in the South. When men found a good variety of a native fruit they sought to increase it in the quickest way, and so having learned the art of grafting, they put the best varieties on wild stems in hedgerows, or dug up young trees and grafted them in their gardens. The practice eventually became stereotyped into the production of the nursery practice of grafting many varieties of fruit trees on the same stock, often without the least regard to the lasting health and duration of the trees so grafted. In some cases when we use the wild form of the tree as a stock for the orchard tree we succeed; but grafting is the cause of a great deal of the disease and barrenness of our orchards. Where we graft, it is well to graft low; that is to say, in the case of Cider Apples, for example, it is much safer and better to take a tree grafted close to the ground than grafted standard high, as the high graft is more liable to accident and does not make so fine a tree. In the orchard the good old practice of sowing the stone or pip of a fine fruit now and then may also be followed with interest.

Even in the good fruit counties like Kent one may see in dry years orchards starved from want of water, and the turf beneath almost brown as the desert. Where manure is

Starved Orchards. plentiful it is well to use it as a mulch for such trees, but where it is not, we may employ various other materials for keeping the roots safe from the effects of drought. Not only the tree roots want the water, but the roots of the competing grass suck the moisture out of the soil. The competition of the grass could be put an end to at once, and the trees very much nourished, by the use of any easily found mulching from

materials which are often abundant in a country place. Among the best of these, where plentiful, is the common Furze, if cut down in spring and placed over the ground round the base of young or poor orchard trees. It prevents the grass from robbing the trees and lets the water fall through to the ground, helping to keep it there, too, by preventing direct evaporation; moreover, the small leaves falling off nourish the ground. So again the sweepings of drives and of farm or garden yards are useful, and also any small faggots—often allowed to rot in the woods after the underwood is cleared. Then also there are the weeds and refuse of gardens of all kinds which form detestable rubbish heaps that would be much better abolished, and all cleanings from the garden placed directly over the roots of young orchard trees.

Even rank weeds, which swarm about yards and shrubberies, would help, and one of the best ways to weaken them and help towards their destruction is by mowing them down in the pride of their growth in the middle of summer—nettles and docks, as the case may be—and instead of burning them or taking them to the rubbish heap use them over the tree roots. Even the weeds and long grass growing round the base of the trees, if mown and left on the ground, will make a difference in the growth and health of fruit trees. Such care is all the more needed if our orchard is upon poor or shaly soils in the dryer counties: in naturally rich and deep soil we need it less.

All fences should be of living things, at once the most enduring, effective, and in the end the best. We see the hideous result of the ironmonger's fence in marring the foregrounds of many landscape pictures. Holly, Quick, or Cockspur Thorn, with a sprinkling of Sloe or Bullace here and there, give us the best orchard fence; once well made, far easier to keep up than the iron fence. Yew is a danger, and a hedge of it should never be planted where animals come near, as they usually do, the orchard, and if the Yew comes by itself, as it often will, it should be cut clean out and burnt as soon as cut down. Holly is the best evergreen orchard fence for our country, and we should be careful about getting the plants direct from a good nursery—clean seedling plants not much over a yard high. The best time to plant Hollies is in May if growing in the place, but on light soil plant in autumn; all the more need to do this if we bring the plants by rail. Unless the soil is very light I should make the fence on a bank, because a turf bank is itself such a good fence to begin with, and a free Holly hedge on a good bank, with, perhaps, a Sloe here and there through it, is one of the prettiest sights of the land, and forms the best of shelters for an orchard in our country. Where shelter is much sought the hedge should not be clipped, and is much handsomer if free grown. The orchard fence should

Orchard bloom. Engraved from a picture by Mark Fisher.

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not be cut in every year to a hard line, but Sloe, and May, and Sweet Brier, and wild Rose left to bloom and berry, the hedge to be a shelter as well as a fence, and not trimmed oftener than every ten years or so. Then it should be cut down and woven together in the strong way seen in parts of Kent on the hills.

The English fruit garden is often a museum of varieties, many of them worthless and not even known to the owner. This is wrong in the garden, and doubly so in the orchard, where

Kinds to Plant. the fruit trees should be trees in stature and none of poor quality. Too many varieties is partly the result of the seeking after new kinds in the nurseries. In orchard culture we should be chary of planting any new kind, and with the immense number of Apples grown in our own country already, we may choose kinds of enduring fame, and it is the more necessary to do this now when good Apples are coming from various countries, where men do not plant a collection when they want a crop of a few first-rate kinds. So we should in our orchards never plant single trees, but always, if possible, having chosen a good kind, plant enough to make it worth gathering. Local kinds and local circumstances often deserve the first attention, and some local kinds of fruit are among the best. When in doubt always end it by choosing kinds of proved quality rather than any novelties that may be offered. Any fruit requiring the protection of walls or in the least tender should never be put in the orchard. It is probable that some of the fruit trees of Northern and Central Europe, and Russia, would be well suited for our climate, but as yet little is known of these except that they are interesting and many of them distinct. The vigour of the tree should be considered and its fertility. Kinds rarely fertile are not worth having, always bearing in mind, however, that a good kind is often spoiled by a bad stock or by conditions unsuited to it.

The beauty of flower of certain varieties may well influence in their choice. Once when talking with Mr. Ruskin of the beauty of the fruit as compared with the flower of our northern fruit trees, he said in reply to some praise of the fruit beauty: "Give me the flower and spare me the stomach-ache!"

In view of the confusion brought about by fat catalogues, new varieties of doubtful value, the number of early kinds worthless for winter and spring use, and the planting of untried kinds, a good rule would be to put any kind we propose to plant under separate study as to its merits in all ways, and only plant one kind a year. The kind chosen for orchard culture should be of undoubted merit and distinction, and of high quality when cooked, without which apples to

keep are worthless. In fixing but one kind a year, the first consideration should be its quality, and the second its constancy in bearing, as to which there is a great difference in apples. Hardiness and vigour are essential, and our judgment as regards orchard planting should never be influenced by the produce of trees grafted on the paradise or other stocks which limit the natural growth of the tree.

Apples known for many years, like the *Blenheim*, *Kentish Filbasket*, *Wellington*, *French Crab*, *Sussex Forge*, *Warner's King*, *Yorkshire Greening*, *Tom Putt*, *Reinette Grise*, *Bramley's* and *Alfriston* should never be left out of our consideration in this respect, as, however they may be affected by situation or soil, their value has been proved, and that is a great point, as in the case of new varieties chosen for some one minor quality, such as colour, it is only after they have been grown for years we begin to find out their bad qualities.

Some of the most beautiful things in our garden or home landscapes are the orchards of the west of England, more often planted with the Apple than with the Pear. The Pear

Pear Orchards for beauty.

tree in this country should be much more grown as an orchard tree, for its beauty even if not for its fruit, which yearly grows in value. Some Pears of our own time, like *Doyenné du Comice* and *Beurré Dumout*, are worth a score of the old kinds. The Pear tree is finer in form and stature than the Apple, and it is not rare to see trees in Worcestershire of the size of forest trees. Such trees, with their varied and picturesque form, are worth thinking of when planting for beauty.

The use of the Quince as a dwarfing stock for many years past in England has been against the Pear as an orchard tree. No Pear grafted on this stock ever succeeds as a standard tree. In our fertile valleys and the rich soil of gardens the Quince is for some kinds often a good stock, but over a large area of poor sandy and chalky land it is worthless; and its use has done much harm to Pear cultivation. In using the Pear, or natural stock, we may hope that it will do well on any land, be it heavy Wealden clay or on upland soils. It is true we must wait for results; the standard Pear is a forest tree in its way, and must be allowed time to mature, but it is surely better to let the years run by than to plant trees which may never succeed as standards. For trees so planted to endure we should choose good kinds that ripen in our country, and see, in every case, that they are grafted on the wild Pear—their natural stock—since we cannot easily get them on their own roots, though it would interest me much to see them on their natural roots, and I have two Pears so grown which look far healthier than any others. The most important point is that of varieties. We should never plant any but

good Pears, which, as standards, will ripen in our country under any fair conditions, such Pears as *Beurré Giffard*, *Jargonelle*, *Beurré Goubault*, *Beurré Dumont*, *Beurré d'Amanlis*, *Beurré Hardy*, *Fondante des Bois*, *Louise Bonne*, *Rousselet de Reims*, *Doyenné du Comice*, *Marie Louise*, *Urbaniste*, *Soldat Laboureur*, *Triomphe de Jodoigne*, *Comtesse de Paris*, *Nouvelle Fulvie*, *Bergamotte Saumier*, *Charles Cognee*, *Doyenne d'Alençon*, *Josephine de Malines*, *Suzette de Bavay*.

Much has been said of late about the advantages and disadvantages of planting in grass; but most growers of Kent and other orchard counties have long known that in hop, arable, and any other land, the trees show quicker growth and greater vigour at first. It is not everyone, however, that cares to break up grass to plant an orchard, and we can do very well without grass by mulching the ground round each tree for a few years, until they have gained a good hold.

These words were fresh penned when I came across the following notes by M. Charles Baltet of Troyes. "The habit, the foliage, and the fruit of the Pear tree will leave nothing to be desired, no matter in what soil or climate it may be grown. Prolific, large-fruited varieties such as *Beurré de l'Assumption*, *William*, *Van Marum*, and others, will always be a delight to the fruit lover, but the artist who looks for effect from the natural appearance of the trees, if he wishes for luxuriant growth will find it in the Pear known as the *Curé*, *Conseillier de la Cour*, and others. *Beurré Hardy*, *Vanquelin*, and *Duke de Nemours* have long upright branches; those of the *Beurré d'Amanlis*, *Bon Chrétien*, and *Triomphe de Jodoigne* spread out more or less horizontally, or even curve downwards; *Arbre courbé* and *Nouvelle Fulvie* would not be out of place as drooping trees; while we may admit a group of Pear trees which grow as natural pyramids, such as *Fondante du Panisel*, *Beurré de Nantes*, *Fondante de Noël*, *Beurré d'Angleterre*, and a number of others, including *Charles Ernest*.

"The beautiful foliage of the *Sucrée de Montluçon*, *Delpierre*, and *Triomphe de Jodoigne*, is rivalled by that of the *Mikado* and *Daimyo*, two varieties of Japanese origin, with large, thick, and somewhat cottony leaves. The German *Kopertscher*, the Belgian *Délices de Jodoigne*, the American *Philadelphia*, the French *Gil-ô-Gile*, present the same characteristic."

**Pear foliage
effects.**

Mr. Baltet omits to notice the fine colour of the leaves of many Pear trees in autumn, and I find that this seems to be intensified in the few trees I have on their natural roots.

"The observer who notices the features of each variety knows that

Marie Guisse, *Monseigneur des Hons*, and *Royal d'Hiver* are the first to show their buds in the spring, while *Martin sec*, *Madame Loriol de Barny*, and *Herbin*, are slow to shed their leafy clothing in the autumn. *Bonne d'Ezée* and *Doyenné d'Alençon* are the earliest to flower, and *Alexandrine Douillard*, *Sylvange*, and *Nouvelle Fulvie* protect their clusters of flowers with sheltering rosettes of leaves as soon as they open. If we wish for Pear trees with double flowers we have *Comte Lelieur* and *Beurré de Naghin*, with their regular outline, or the double-flowered *Bergamotte* and *Calebasse Oberdieck*, with their drooping petals. Without being able to compete with the coloured barks of the Birch, the Scarlet Dogberry, or the veined Maple, we may be content with the ash-coloured bark of the *Bési Dubost*, the ochrey *Passe Colmar*, the violet *Beurré Giffard*, the purple *Doyenné Flon aîné*, the dark brown *Bon Chrétien de Bruxelles*, and the bright-barked *Fondante Thirriot*. We have beauty of stem in *Van Mons*, *Deux-Sœurs*, *Angélique Leclerc*, *Beurré Lebrun*, and others, the last having a stem which looks as if spotted with carmine. The study of local fruits has provided us with the *Poirier de Fosse*, which in the department of the Aube is as large and tall as an Oak. A group of some of these sorts in either park or garden would give us as much pleasure as any isolated tree or clump of trees."

And here we may also say a word for some of the Wild Pears of Europe, particularly the little-known species of the region of the Danube and Southern Russia. Many of these

Wild Pears. eastern kinds are distinct and beautiful in growth and appearance, and their leaves take on the richest autumn colouring, in shades of purple, crimson, orange, and gold, which would give fine effect in the wild garden even if valueless in other ways. The autumn colour of some of our orchard Pears is also beautiful, particularly in some soils; an orchard of Pears is finer in this way than any of our other fruits.

And apart from these are the Pears grown for Perry, an interesting group of which we have no knowledge in the home counties, though in some parts of the west they are grown. So that on the whole there is no lack of fine things to go to the forming of what would prove a charming addition to many a country seat—a Pear orchard with the trees all in their natural forms.

Fruit trees grown in any way are fair to see in the time of flower and fruit, but our orchard must be in turf if we are to have the best expression of its beauty. In fruit

Staking Orchard Trees. gardens where the whole surface is cultivated with small fruits below and taller trees overhead we may get as good, or, it may be, better fruit, but we miss the finer light and shade and verdure of the

orchard in turf, the pretty incidents of the ground, and the animal life among the trees in spring, as sheep in Kent, and the interest of wild gardening in the grass. Also the orchard turf, by its shade or shelter, or in some way, becomes most welcome nibbling for lambs and calves in the spring. A gain of the orchard in turf is that we can plant it on any ground, however broken or steep, and in many parts of the country there is much ground of this sort to be planted. Now, while we may in the garden or the fruit garden plant trees without stakes, we cannot do so in the grass orchard, because of the incursions of animals; therefore staking is needed, not only to support the tall and strong young trees which we ought to plant, but also to guard against various injuries. The best way is to use very strong stakes and make them protect and support the trees, and also carry the wire netting which is essential wherever rabbits, hares, goats, or other browsing animals exist. The best way to do this is to have a very stout stake—Larch or old Oak. Sometimes in the repairing of old sheds a number of old oak rafters are rejected—excellent for staking young trees in orchards, first digging the hole and putting the stake firmly into a depth of 3 feet below the surface. Cradles of Oak and iron are much in use; the first is very well in an Oak country where labour is plentiful; iron is costly and ugly, and not so good as the single stout stake, which is easy to get of Larch or stub Oak in many country places. The common way of tying a faggot of Quicks or any thorny shrub is often good when done by a good fencer. The trees should be tied with care with soft ropes of straw or jute, and when planted be loosely but carefully wired with netting well out of the reach of browsing animals. This wiring is supported well by the strong stake, and, well done, it keeps rabbits and hares, as well as cattle, at bay, and, worse than all for trees, young horses. A usual way in Kent is to drive in three stout stakes, 6 feet or more in height, round the tree, and fasten cross-bars to them. This can be done at a total cost of about 10*s.* a tree, and should last twelve to fifteen years.

One of the reasons for a good orchard, from the point of view of all who care for beauty, is its value for wild gardening. It is so well

fitted for this, that many times Narcissi and

**The Orchard Wild
Garden.**

other bulbs from the garden have even established themselves in its turf, so that long years after the culture of the flowers has been given up in the garden, owing to changes of fashion, people have been able in old orchards to find naturalised some of the most beautiful kinds of Narcissi. Where the soil is cool and deep, these flowers are easily grown, and in warm soils many of our hardiest and most beautiful spring flowers might easily be naturalised. On the cool

side of the orchard bank, Primrose and Oxlip would bloom long and well, and on all sides of it Daffodils, Snowflakes, Snowdrops, wild Tulips, or any like bulbs to spare from the garden ; and from the garden trimmings, too, tufts of Balm and Myrrh to live for ever among the grass of the bank. The robin would build in the moss of the bank, the goldfinch in the silvery lichen of the trees, and the thrush, near the winter's end, herald the buds with noble song.

Bold planters need not hesitate to adorn some of their orchard trees with graceful climbing plants. A few of these climbers would

be too vigorous eventually for the fruit tree, but

**Climbers on
Orchard Trees.**

a good many are never so on vigorous orchard trees. The most picturesque planting I ever did was to put a number of white Indian Clematises

(*C. Montana*) with some orchard trees. They grew in a most picturesque way, and took a different habit on almost every tree. The autumn-flowering Clematis (*flammula*) is such a light grower that it would not make much difference to the tree, and there are a number of wild Clematis with the same light character that would not hurt an orchard tree. Some of the fine-leaved Vines, too, would give a dash of rich colour in the autumn, and do little harm, and some of the more fragile Honeysuckles might also be tried. In the south of France the common blue Passion-flower and various kinds of climbing Roses will often reach out from the garden hedge and take possession of the nearest trees, and Olive and Orchard trees may be seen beautifully robed in this way. Even the hardy winter Jasmine, when crowded by other things upon a bank, I have known to clamber up into the branches of a little Cherry tree, with very pretty effect. One of the prettiest effects I have every year is a cross, due to a plant of the white travellers joy (*Clematis viticella alba*) growing on a double Cherry tree. We first have the bloom of the cherry, and then weeks after comes the fair white Clematis, flowering for weeks all over the Cherry and doing no harm.

CHAPTER XXXV.

LABOURS FOR GOOD OR EVIL : SOILS : WATER : DRAINING : EVAPORATION : ROTATION : WEEDS AND RUBBISH HEAPS : MONOTONY : STAKING : GLASS : WASTED LABOUR IN MOVING EARTH : WOODEN TRELLISING BEST.

THE cost of the making and keeping of the gardens and pleasure grounds of the British Isles is too vast to realise ; no other people in the world spending so generously on their gardens and plantations—not a selfish end either, as all noble planting and gardening add to the beauty of the land. In every case it is therefore worth asking, does the labour so freely given work for good ends :— for ugliness or beauty ; waste in stereotyped monotony ; or days well spent in adding to the treasures of our gardens and plantings, both in enduring variety and in picturesque effects ; pictures, in fact, all round the year ? In any case there is immense and hideous waste in misapplied labour and bad art, and therefore some of these enemies of good work deserve a little thought.

SOILS GOOD AND BAD.—Most garden lovers strive for an ideal soil, but this does not always lead to happy results, and, even if we could have it, would only lead to monotony in vegetation. No doubt many will seek at all costs for the soil called the best, but the wisest way is rather to rejoice in and improve the soil fate has planted us on. A good deep and free loam is best for many things, and from the view of high cultivation or market work, deep valley soils are almost essential, but we often see poor peats giving excellent results, from a flower gardening point of view, in enabling us to grow with ease many more kinds of plants than could be grown on heavy soil. How fertile sand may become with good cultivation is shown by the fact that some of the very best soils for hardy plants are those that have been poor sea sand, but improved by cultivation, and sometimes such soils are drought-resisting, as on reclaimed seashore lands. Yet now and then we see certain sandy soils absolutely refuse to grow Roses and Carnations, and in such cases it is often better to give up the struggle. Chalky hills are wretched for trees and some shrubs, but there are few soils more congenial to garden vegetation than some chalky soils, and chalk tumbling into a valley soil is often excellent. In limestone

soils people often take much trouble to get peat, in the vain hope of growing a few *Rhododendrons*, labour which would be better bestowed on improving the staple of the natural soil of the place.

The most hopeless soils are the true clays, but the word "clay" is used in a loose way by many who have never seen a real clay. In the east of England and in Ireland, for example, the term is often used for dark free soil. The true clay which occurs in the northern suburbs of London and near Horsham, Sussex, is not a soil on which a man could get a living, or if he does so he will get one anywhere! With such a soil our only hope is to cart good earth on to the ground. Whatever the nature of the soil in a given garden, it should to a large extent govern what we grow. If happy enough to have a sandy peat, how easy it is to grow all the lovely evergreens of the northern mountains, which rejoice in such soil—things which, if they live on loamy and heavy soils, are never really happy thereon. On such soil, too, all the most beautiful kinds of hardy shrubs may be grown without trouble, and planted among these shrubs the Lilies and hardy bulbous flowers of Japan and America. If a deep and at the same time poor sea sand comes in our way, we can make perfect bulb gardens on it, and also grow trees and flowering shrubs very well after a time.

LOCAL AND NATURAL SOILS.—Soil must not always be blamed for failure with certain plants, because rainfall, elevation, and, very often, nearness to the sea will affect plants very much. Thus shrubs that do well near the sea will, on the same kind of soil, perish far inland. It is essential to study the secret of the soil and find out the plants that thrive best on it. Once free from the limits and needs of the flower garden proper, the best way will often be to use any local peculiarities of soil instead of doing away with them: A bog? Instead of draining it keep it and adorn it with some of the often beautiful things that grow in bogs; A sandy knoll? Plant with Rosemary or Rock Roses; A peaty, sheltered hollow? Make it into a beautiful *Rhododendron* glade, and so get variety of plant life in various conditions.

Then, as regards the soil and the natural habitats of plants, there is no doubt that it is useful to know where they come from, whether plains, valleys, or rocks, and what soil they grow on; but it is a knowledge that may sometimes mislead, because rainfall and elevation and other causes may lead us to suppose results due to soil which are really owing to accident of position. Many of the beautiful plants of the mountains of the East, such as *Aubrietia*, and a number of rock plants which grow in any soil, would do no better if we tried to imitate their actual conditions of life in their native habitats, which are often absolutely different from the soils of our lowland gardens in which many rock plants thrive and endure for years.

CULTIVATION AND WATER.—Many think that heavy watering is necessary in seasons of drought, and it may be worth while showing how such heavy labour may be avoided. There are soils which are so thirsty, like the hot sandy soils of Surrey, that watering is essential, and some chalky soils, too, are almost hopeless without heavy watering, while water is often extremely difficult to get enough of on dry hills. But under general conditions there is not much trouble in getting rid of this labour and its attendant ugliness. The essential thing is to make the beds deep enough. Even with the best intentions, many people fail to do this, and workmen in forming gardens are sometimes misled as to the depth of soil in beds, made when gardens are being laid out, the soil when it settles being really much less than it seems in the making. The best way for those who care for their flowers is to dig the beds right out to a depth of 30 inches below the surface before any of the good soil is put in. Then, if for general garden use such beds are filled in with good, rich, loamy soil and are gently raised, as all beds should be in wet countries, 4 inches or 6 inches above the surface, they will rarely be found to fail in any drought. Much depends on the size of the bed; the little, angular, frivolous beds which have too often been the rule in gardens cannot resist drought so long as broad simple beds. With these precautions, and also autumn and winter planting, we ought, in the British Isles, to free ourselves from much of the heavy labour and cost of watering, and it would be better to have half the space we give to flowers well prepared, than always be at work with the water barrel.

To be busy planting in autumn and early winter is a great gain too, because the plants get rooted before the hot time comes, and the kind of plants we grow is important as regards the water question. If it is merely the mass of bedding plants with which many places are adorned in summer, these being all put out in early June, in the event of a hot summer there is nothing else to do but water all the time, or we lose them, as of course the roots are all at the surface in June. But where we have deep beds of Roses, Lilies, Carnations, Irises, Delphiniums, and all the noble flowers that can be planted in autumn or winter, we may save ourselves the labour of watering often. Well prepared beds of choice evergreen or other flowering shrubs, with Lilies and the choicest hardy flowers among them, also resist drought well. Thus it will be seen how much we gain in this way alone by the use of right open-air gardening.

What is here said, although true of the south of England and dry soils generally, is not so as to soil on cool hills, and in the west country where the rainfall is heavier. In such cases it is not nearly so important to have the soil so deep, and a good fertile soil half the depth, with copious rain, may do. But, taking the country generally, there

is no doubt that such deep culture well repays the doing. The farmer is often unable to alter the staple of his ground owing to its extent, but the flower gardener, dealing with a much smaller area, should never rest until he has got a deep as well as a good soil. This is given to many by Nature in rich valley lands, and on such happy soil the flower gardener's main work as regards the labours of the soil is changing the crop now and then, with some modification of the soil to suit certain plants.

SOFT WATER BEST.—Where, however, owing to the dryness of the soil or subsoil or to shortness of the rainfall, we have to resort to much artificial watering, it is a great point to save the rain water as the best of all water not only for household uses, but for plants. Next to it comes river water, but to the gardens that want most water, rivers, unfortunately, do not come, so that for garden use it would often be very wise to do what people do more in other countries than ours, and that is, save all the rain water we can instead of letting it run to waste, as it does so often.

DRAINAGE.—In our country too much thought and labour are given to drainage in the flower garden, to the neglect of change of plants and deep cultivation, and during our hot summers some way to keep water in the beds is more important than getting rid of it. Some soils, too, are in little need of artificial drainage, such as free sands, sandy loams, chalky and limestone soils, and much ground lying high, and much alluvial land. Houses are not usually built on bogs or marshy land, and in the course of years the ground round most houses has been made dry enough for use, and hence elaborate work in drains, bottoming with brick-rubbish or concrete, is often wasted labour. In some years even in the west country we may see plants lying half-dead on the ground for want of water, and the same plants in deep soil, and where no thought was given to drainage, in perfect health at the same time. There are places where, owing to excessive rainfall and the wet nature of the soil, we may have to drain, but it is often overdone.

Apart from the over-draining for ordinary garden things, it may be well to remember that flower garden plants in our country are often half starved through drainage, like Phlox and scarlet Lobelia, which in their own country are marsh plants, or inhabit the edges of pools. In the southern country they simply refuse to show their true character where the ground is drained in the usual way. The men who began the crusade about draining land in this century found its effects so good on sour, peaty clay and saturated land, and talked so well and so much about it, that some harm has been done—draining where it does more harm than good not being uncommon.

Gardeners' land and farmers' land are usually wholly different.

Drainage is often the simplest and best way for the farmer to alter the tilth and texture of saturated and cold or sour land, whereas the flower gardener, dealing with a small space for his beds, has the power of altering the tilth and texture of his land in a thorough way, and so making it open to the influence of rain and air. The position of the flower garden also is usually wholly different from that of agricultural land. The flower garden itself is frequently raised, and in a terraced or at all events often dry position, where the main drainage is long settled, and gently raising the surfaces of flower beds, to a height say of 4 inches to 6 inches, enables us to get rid in our flower beds of the surface water, which very often troubles the farmer, and which he can best get rid of by drainage. By raising our beds slightly—not in the ugly way practised in the London parks—we free the surface of any water lying on it, and this is a good plan to follow, except in hot and shallow soils, where it would be better not to raise the surface above the level.

ROTATION IN THE FLOWER GARDEN.—Flower gardeners do not think enough of change of crop, or what in farming is called rotation. A farmer soon comes to grief if he does not change his crops, but in gardens one may see the same plants grown in the same beds for many years. A cause of the poor growth of hardy flowers is want of change of soil, and in addition the soils in which they grow are often robbed by a network of hungry tree roots. There are botanic gardens in Europe where the same wretched plants have been starving in the same soil for fifty years, and little ever done to help them. So, again, there are favourite borders in gardens which are almost as much in want of a change, but, owing to their position sometimes being a favourite one, people hesitate to give it to them. In such cases we should prepare a new border for the plants and remove them, and trench, renew and improve the soil of the old beds or borders, afterwards taking a crop as different as possible for a year or two. If we take a crop of annual flowers, the annuals rejoice in the fresh ground, and they might be followed by a year of Carnations, after which a return might be made to a good mixed border. When, however, we do change a border or bed, the staple of the soil ought to be made deep enough—changed if need be. In dealing with a soil which is too rich in humus, an addition of lime will improve it, but generally the soils are too poor, and require renewing and deepening. Bedding plants have the advantage of fresh soil and often a total change every year, and hence the bright vigour they often show when the seasons are fair. A little of the same generous change would help Roses, Lilies, and all the finer things in an equal degree, though many of these will be quite happy in the same soil for years if it be well prepared at first.

WEEDS AND RUBBISH HEAPS.—Upon suggesting once in a beautiful garden in Essex that an opening should be made from a pleasure ground into a picturesque grove of old Oak trees, we were met with the objection that the rubbish heap was there ; and, on making our way in, this was found to cover half an acre almost picturesque in its wild up and down heaps of rubbish, earth, leaves, branches and broken crockery, &c. A fire was kept alight for six months in the year to get rid of some of this rubbish, and this being very near the house, was a frequent nuisance in certain states of wind and air. This is a common state of things, but as wrong in practice as it is unnecessary. We gain nothing by destroying organic matter by fire, but lose a good deal and get only the ash. The garden weeds, the good soil scraped up with them, and the many other things that go to make up these rubbish heaps would be of far more use put directly over young trees to protect and nourish them. Refuse of hard materials, such as iron or delf, should be buried separately ; and if any roots of bad weeds occur, they may be burned at once where they are. Yet there is no practice more firmly established than the ancient one of the garden rubbish heap, often disfiguring spots which might be pretty with ferns or shrubs, encouraging vermin, filth, and vile odours, all things that we do not want in or near the flower garden or pleasure ground. We may see these heaps made even where labour is scarce and the gardener is over-weighted with work, he adding to his toil by barrowing or carting away weeds and earth. This means moving the costly product two or more times : (1) to the rubbish heap ; (2) turning over and burning ; and (3), finally, again removing the result in ash ; whereas we may easily, as in the above and many other cases in a garden or pleasure ground, get rid of it at once by one move, and find it acts in a more useful way, even as a fertiliser, than when we go through the ugly labours, pains, and penalties of forming the regulation rubbish heap. Nor does this plan in the least prevent us burning where burning is a prompt aid in getting rid of the roots and bad weeds or any worn-out branches or roots that incommode us ; but in such a case we burn on the spot and scatter the refuse there or thereabouts. Here are a few instances of other ways of getting rid of what usually is carried or carted to a rubbish heap, that were carried out during one summer in my own garden.

Protecting Hollies.—A very fine group of Hollies was planted on a slope facing south. Seedling trees of the largest size that could be planted with safety were brought from a distance by rail. These were planted in May, and afterwards any grass mowings, prunings, weeds, clearings, reeds, dead roots of shrubs, &c., that happened to be near, were placed at the base of each Holly for about 3 feet all round ; also, where any ground near was cleared of summer

weeds, these were also put over the roots, even branchlets of evergreens being used, as preventing the direct action of the sun. Not one of these Hollies was lost in spite of the drought, though the turf near, on the same slope, was like dust, but the covering of waste material given kept the earth about the trees moist during the drought.

A Bamboo Plantation.—A plantation of hardy bamboos was made in quite a different situation in mid June—a hollow slightly shaded with trees, and therefore not nearly so much exposed to danger as the southern slope above mentioned. It is known, however, that bamboos are the better for mulching in any situation, and as there was no manure at hand, and even if there had been it would have needed a good deal of carting, the waste and weeds near were placed over the surface of the ground. In this case, mowings, dead flower-stems, scum of a pond (which was very bad this year, coming off in masses of most indestructible stuff), were laid over the surface of the bamboo plantation, in which the plants did remarkably well, and never turned a leaf. On taking up some plants of the Japan bamboo, which had been put in too thickly and were wanted for another place, we found the roots and suckers growing finely after only five months' growth.

Protecting Young Orchards.—An orchard of fine young standard trees was planted in 1897 on a rather steep slope to the south, where the soil was not good. Faggots of little value, the sweepings of roads, and any vegetable refuse about the yards were put over these 4 feet all round. It would be impossible to see trees healthier or less affected by the starving drought of the hot year. Such aid would not be so precious in good valley land, but in many soils it is of the greatest help.

Using Weeds Where They Grow.—Very often weeds are removed from the surface of garden ground which would be much more useful if left where they grew—buried, if there be room, or allowed to dry up if cut off very small, as they always, if possible, should be. The upper surface of garden ground is the best of it, owing to mulching and manuring, and to take away the best of the ground is bad gardening. What would become of the farmer who systematically removed an inch of the surface of his best fields? It would be folly; and it is no less so in the garden. The winter being a very mild one, encouraged the growth of weeds very much, and, where there was other work going on, they got too big. A plantation of barberries, evergreen and others, was in this state in early summer, the weeds nearly as high as the bushes. They were cut down with much labour, and I just came upon the scene when the carter was beginning to take away the surface of rich weeds and soil, and I left the weeds and soil where they were, spreading them equally

over the surface. As it happened, this was followed by many dry weeks, and the dead weeds formed a protection for the bed itself, which did not suffer in the least during the heats. To remove this mass of stuff would have been a costly labour, the surface would have been exposed to direct evaporation, and the plants starved by the drought.

Fallen Leaves.—Sometimes leaves are massed in these rubbish yards, and the leaf question is bound up with it. Many people fidget at the sight of beautiful leaves in autumn, instead of enjoying them, as Shelley did, and gardeners are often sweeping them up when they would be much better employed planting good plants or shrubs. What are we to do with the garden leaves? We cannot, it is true, have them in drifts in the flower garden, but it is better to let them all fall before we take much trouble in removing them. In gathering them up, we may best add them to a place set apart for leaf mould. But in every case where they may be let alone, it is much better to let them stay on the surface of wood, grove, shrubbery, or group of shrubs, for protection and nourishment for the ground. If any one during the hot years that we have recently had—such as 1893—stood on a height in a woody country, he would see that, while the fields were brown and bare, and cattle and crops distressed for want of water, the wood retained its verdure, and the growth of the year was as good as usual. Why is this? It is explained by the beautiful function of the leaf, which not only does the vital work of the tree, but also shields the ground from the direct action of the sun, and when the leaf has fallen its work is not half done, as it protects and nourishes the roots throughout the year, so that in the hottest years the fibres of the trees find nourishment in decaying leaves. This surely is a reason that leaves should not be scraped out from beneath every shrub or tree, and there is no reason whatever why they should form part of the rubbish heap.

And let it be noted that it is not only the better use of the waste as a fertiliser that is a gain, it is the saving of very troublesome labour, often occurring in the warmest part of the year, when every hour is precious over the really important work of the garden—getting in crops of all kinds at the right time and in the best way. Also we save the disfigurement of the rubbish yard itself, and get rid of the smoke of the fires kept going to consume it—another nuisance about a country house or garden. The ash, the one result of all the waste of labour and filth of the rubbish heap, is certainly of some use, but not one-sixth the good of the stuff used in the direct way. And it is not only the summer aid we gain, but all we put on in this way settles down in winter to a nice little coat of humus, which nourishes the roots and protects them from frost as well as heat.

WEEDS AND THEIR SEEDS.—The destruction of the seeds of weeds is the only shadow of reason for the rubbish heap, but it is bad gardening to let weeds go to seed. And though certain areas of town gardens have no neighbours from which seeds can be blown, this is not so in the country, where weed seeds from woods and fields and young plantations abound in the air. There is no good remedy for weeds except early and regular hoeing and cleaning. Moreover, there are many conditions in which even if we do allow weeds to go to seed, they can be used as a mulch; as, for example, in young orchard and turf and other planting in or near turf where weed seeds can do no harm. Burning therefore should be kept to a few essential uses. The source of success in flower gardening is to be always busy sowing or planting; there is scarcely a day or a week when some things have not to be planted or attended to if we want a succession of beauty; but when the men are from morn to night busy hoeing and watering and with other routine work, it is difficult to get time for securing the successions of plants of various kinds on which the lasting beauty of a garden at all seasons, depends.

The old labour of grubbing up walks, which was so constant and dreadful in the very heat of summer, is got rid of by weed-killers, of which one dressing a year will sometimes suffice to keep the walks clean, and, better still, prevent us from having to rip up the surfaces of the walks, which was common in every garden until quite recently, and is carried on still in many places. The great gain of abolishing ignoble routine work, in this and all ways we can, is that we have time for the real work of the garden, in adding to its beauty with new or beautiful things and improved ways of growing and arranging them.

FIRE AS A CLEANSER.—A fire on the spot is a great aid in the garden when active changes have to be made, and foul borders or shrubberies renovated or replanted. Where, in stiff soils, Twitch and other bad weeds take possession, with perhaps a number of worn-out shrubs, the simplest way is often to burn all, not trying to disentangle weeds from the soil in the usual way, but simply skinning the surface 2 inches, or more if need be, and burning it and the vital parts of the weeds, first removing any plants that are worth saving. In light soils the labour of cleaning foul ground is less than in heavy, adhesive soils, but fire is a great aid in all such cases. If we are removing ugly and heavy masses of Laurels or other evergreens, which have never given grace or flower to the scene, we should burn them root and branch at the same time, the result being that we get rid of our worst weeds, and turn enemies like Goutweed into ashes. This weedy surface of garden ground is often some of the best of the soil, and it is much better to keep it where it is, but purified. Regular cleaning will keep down all young weeds, but it is a struggle to get the old and

bad weeds out of the soil, owing to the broken roots of Bindweed, Twitch, and Goutweed which escape the closest forking and sharpest eyes. Next there is barrowing or carting to take the weeds to some rotting heap, while, on the other hand, the friendly fire eats up and kills at once the whole of the weeds, and converts them and the burnt surface they infested into good earth, and all this is gained at once without barrow or horse labour. So that, whatever we may think of cremation for ourselves, it is a good friend in fighting weeds and in helping us to thoroughly cleanse foul garden ground. We have not even the trouble that they had with Don Quixote's books—to carry them into the yard to burn them—as we can so often burn the weeds on the spot, insects and grubs included.

EVAPORATION.—Mulching or covering the surface with various kinds of light materials, such as leaf mould, cocoa fibre, manure, and sand, or anything, in fact, which gives an inch or two of loose surface to the earth and prevents evaporation, is a great aid on many soils, but not so important where the beds have been thoroughly prepared, at least not for Roses, Carnations, and many of the best flowers, because, if the roots can go down and find good soil as far as they go, they really do not want mulching, save on very hot soils. Mulching of various kinds or loosening the surface of the ground is, moreover, much easier to carry out in the kitchen and fruit gardens or orchard than in the flower garden, all the surface of which should be covered with living things during the fine season. This is the prettiest way and is not difficult to carry out, as we often see it in cottage gardens and in Nature itself, where the health of the forest and other fertile lands depends to a certain extent on the ground being covered with vegetation, which of itself prevents direct evaporation. Taking a hint from this, I am very fond of covering the surface with dwarf living plants of fragile nature, which do not much exhaust the soil, and which in very hot weather may help to keep it moist. This is done in the case of Roses and other plants which, being rather small and bare at first, want some help to cover the ground, and a number of very pretty plants may be used for this purpose, which will give us bloom in spring and good colour on the ground. This, of course, prevents the use of manure, hitherto common on the surface of flower beds, Roses especially. It is much better that the aid of manure should be given at the root instead of the surface, and if we have plenty of manure and rich soil, there is no need for surface mulching it. Covering the surface with living plants is worth doing, for the sake of the effect alone, even if we have to pay for it in other ways. One result of it is that we may have a beautiful spring garden in addition to the summer garden—that is to say, if our garden is planted for summer and autumn with Roses and the like, by the use of Tufted Pansies and other dwarf plants in the beds we get pretty effects early in

the year, and through this living carpet may come up many pretty bulbs. Thus we may have in the same beds, with a little care and thought, two or three different types of flower life.

The plants that may be used in this way are numerous, and mostly rock and mountain plants of Europe and cold countries, evergreen, often bearing pretty flowers and good in colour at all seasons, spreading into pretty carpets easily, and quite hardy, taking often a deeper green in winter, so that used over permanent beds they help to adorn the flower beds in winter ; and through them in the dawn of spring the early Crocus, Scilla and Windflower come up to find themselves in green turf of Thyme ; Rockfoil ; Stonecrop ; or varying these according to soil, altitude or position ; the cooler north favouring many mountain plants, though some face the ardours of the warmer sun.

THE WASTE OF MONOTONY.—A grievous source of wasted effort in gardens is monotony arising from everybody growing what his neighbour grows. Thus it comes that the poor nurseryman who attempts to grow new or rare trees or shrubs very often finds them left on his hands, so that many country nurseries only grow a few stereotyped things, and we see public gardens and squares in London given over to the common Privet, the common Lilac let to run as a weed, and the common Elder, as in Lincoln's Inn Fields.

Every lover of the garden could do something to check this fatal monotony by taking up some plant, or family of plants, for himself, which perhaps he is unable to find in the nursery gardens near at hand. There are not only many beautiful species of plant which are excluded from the ordinary nurseries, but even special nurseries, as for Roses, often exclude good kinds from their collections. It is not only the introduction of new plants or species we have to think of, but the raising of new forms (hybrids or varieties), the fine cultivation of neglected groups, as the beautiful forms of our native Primrose by Miss Jekyll ; the making more artistic use of old and well-known plants ; the skilful adaptation of plants and trees to the soil so as to get the highest beauty of which it is capable without excessive care, and without the deaths visible in many places after hard winters. Those who seek to vary the monotony of gardens must be prepared to face some trouble, and they must not take the least notice of what is thought right in the neighbourhood, or of what can be obtained from the nearest nursery garden. The further afield they look, probably the better in the end it will be for them if they would escape from the trammels of monotony.

ATTACHING CLIMBERS AND FRUIT TREES TO WALLS.—Perhaps the most miserable of all garden-work is that of nailing the shoots of trees to walls, on cold days, and the value of climbing plants now in our gardens is so great, that the best mode of

attaching them to walls is a question which, though it may seem a small one from some points of view, is important, and by no means settled for the best. In our self-styled scientific age—the age also of the galvanised iron church and the ironmonger's fence, which is no fence—our gardens have been invaded by galvanised wire, which is put up at great expense on garden and house walls, and is thought to be an essential improvement in all new work. The question does not merely concern walls for climbers round the house, but also the fruit garden. In our cold country we cannot ripen the Peach or the choicer fruits without the aid of walls; galvanised wire is used in many gardens, but many growers discover that its effect on the trees is not good. There is a foundation of fact in these complaints, and they are common to French and English gardeners. In France, where the cultivation of wall fruit to supply the market with Peaches and fine winter Pears is carried out well, the best growers are against the use of galvanised wire, and think it much better to have the wooden lattice only against the wall; so they keep to the older and prettier way of trellising the wall. For those who care about effect this is well, for whatever harm the wire may do to the tree, of its ugliness there can be no doubt. The old French and English way of fixing branches to walls—having trellis-work made of Oak in about 1 inch strips—was a very good one. Chestnut, too, was used, and was thought to be the best, and is often used now in France. One advantage of such woodwork is that it looks well on the walls even before we get our plants up, and there is the great facility of being able to tie where we wish, thus avoiding the use of nails and the other miseries of training against walls.

I use Bamboos in forming trellises, with very good results. Trellis-work made of Oak or Chestnut lasted for many years, and was efficient, and a well-made trellis of this sort saves us all the trouble and injury to the wall of pock-marking it with nail holes, forming nests for destructive vermin.

There remains the question of fixing our lattice-work of Oak, Chestnut, Pine or Bamboo. In old walls, holdfasts must be driven; in new ones, pieces of iron with strong eyes should be laid along here and there in the courses of brick or stone as the work goes on.

It is a great thing to be relieved from the ugliness and injury of the galvanised wire. We would like to go a little further and keep to old ways of tying things on walls. Those who look through their bills may perhaps come upon items, and not small ones, for tarred twine and other bought means of tying. In old times people would have used the shoots of the yellow Willow, which did the work of tying fruit trees to walls better than any tarred twine as far as the main branches were concerned. To say that it is impracticable now is nonsense, as in some great nurseries where millions of plants are

sent out every year, every lot is tied with Willow. Also, the French way of using a Rush for tying, instead of twine or matting, is an excellent one. It is a Rush which is harvested and dried carefully, and it is the simplest thing in the world to tie with so as to allow for the free growth of the branch, and yet keep the shoot quite secure.

THE STAKING OF TREES AND SHRUBS.—Whether staking trees and shrubs or wind-waving is the worst evil is doubtful, but much harm is done by staking, and it is costly and troublesome, especially so for those large trees that are seen in pleasure grounds, surrounded by a kind of crinoline of galvanised wire. The evil of staking arises largely from planting trees too big as “specimens.” To plant these is tempting to many, but generally we get a much better result from small trees that want no staking; but planting ornamental trees of considerable size is so common that staking is frequently done, and very often the trees are injured by the stakes, not only at the root, but also much in the stem, which sometimes leads to canker. It is known that canker (as in the Larch) enters the trees more readily where the wounds are ready to receive the spores, and we often see fruit-trees badly cankered through staking.

The wire-roping business for trees is a nuisance, as the ropes cut in if neglected in the least, and the tree often snaps there, and when the ropes are finally removed the trees often go down in gales. The best cure for the waste and dangers of staking is to plant small trees, but often where this is not done for any reason (and sometimes there may be good ones, as in planting vigorous-growing Poplars to shut out things we do not care to see) we may do good by cutting in the side shoots close to the stem. This leaves the tree with little for the wind to act upon, and we escape the need of staking without injury to the tree. Transplanting trees involves so much injury to the roots that somewhat reducing the tops does good in all ways.

At Kew, when a large tree is transplanted, it is guyed up with three lengths of soft cord (commonly called “gaskin”) if it appears likely to become loose. This is better than a stake, cheaper, and less likely to injure the stem by abrasion. A tree with branches low enough can be stayed by driving into the ground three stout stakes at equal distances round the tree, nearly at the circumference of the branches, and tying a branch to each of the stakes.

The picturesque grouping of trees and shrubs is a gain in the avoidance of the trouble and danger of staking. For example, the pinetum, as seen in many country seats, is a scheme in which trees are isolated and dotted so as to encourage them as “specimens,” which is the wrong way and the ugly way. In Nature these trees are almost always massed and grouped in close ways, so that they shelter each other and if in planting them we plant as a wood, closely, thin-

ning them very carefully, we find them make trees and give better effects than in the common way they are generally placed, as the trees protect and comfort each other, and shade the ground. I have planted true pinetums in this way, the trees in which have stood violent gales without giving way, and which were never staked, any more than they are on their wild mountain homes. But in this case, as with sailors, we must begin young.

WASTED LABOUR IN GLASS-HOUSES.—Among the evils of the “bedding” and “carpet system” is the need of costly glass-houses in which to keep the plants all the winter, not one in ten of these plants being as pretty as flowers that are as hardy as the Grass in the field,—like Roses, Carnations, and Delphiniums. It is absurd to grow Alternantheras in costly hothouses, and not to give a place to flowers that endure cold as well as Lilies-of-the-Valley. Glass-houses are useful helps for many purposes, but we may have noble flower gardens without them. To bloom the Rose and Carnation in mid-winter, to ripen fruits that will not mature in our climate, to enable us to see many fair flowers of the tropics—for these purposes glass-houses are a precious gain; but for a beautiful flower garden they are almost needless, and the numerous glass-houses in our gardens may be turned to better use. It would not be true to say that good hardy flower-gardening is cheaper than growing the half-hardy plants that often disgrace our gardens, as the splendid variety of beautiful hardy plants tempts one to buy, and it is therefore all the more necessary not to waste money in stupid ways, apart from the heavy initial cost and ceaseless costly labour of the glass-house system of flower garden decoration.

For those who think of beauty in our gardens and home landscapes, the placing of a glass-house in the flower garden or pleasure ground is a serious matter, and some of the most interesting places in the country are defaced in that way. In the various dividing lines about a country house there can be no difficulty in finding a site for glass-houses where they cannot injure the views. There is no reason for placing the glass-house in front of a beautiful old house, where its colour mars the prospect, though often, in looking across the land towards an old house, we see first the glare of an ugly glass shed. If this were the case only in the gardens of people lately emerged from the towns to the suburbs of our great cities, it would not be so notable; but many large country places are disfigured in this way. And, apart from fine old houses and the landscape being defaced by the hard lines and colour of the glass-house, there is the result on the flower garden itself; efforts to get plants into harmonious and beautiful relations are much increased if we have a horror in the way of glass sheds staring at us. Apart from the heavy cost of coal or coke, the smoke-defilement of many a pretty garden by the ugly vomit of these needless chimneys; the effect on young gardeners in

leading them to despise the far more healthy and profitable labours of the open garden ; all these have to be considered in relation to the cost, care and ugliness of the glass nursery as an annual preparation for plants for the flower garden, these plants being with few exceptions far less precious in every way for flower garden or for room than those that are quite hardy.

A few years ago, before the true flower garden began to get a place in men's minds, many of the young gardeners refused to work in places where there was no glass. A horrid race this pot and kettle idea of a garden would have led to : men to get chills if their gloves were not aired. I met the difficulty myself by abolishing glass altogether. Only where we do this we must show better things in the open-air garden, than ever flourished in a glass house.

WASTED LABOUR IN MOVING EARTH.—Next to moving heaven, the heaviest undertaking is that of moving earth, and there are no labours of gardening men that lead to more wasted effort, where care and experience are not brought to bear on the work. Labour in many parts of the country has become dearer, and the question of moving earth without needless waste of energy is a serious one for all who have much groundwork to do. We may often see instances of misuse of labour ; the soil from foundations carted far, and then put deep over the roots of old trees, to their death or injury. A man of resource in dealing with ground would place this soil in some well-chosen spot near, having first removed the surface soil, and, resurfacing with it, planted it with a handsome group of beautiful shrubs or trees, so that the surface would in no ugly way differ from the general lie of the ground near. The presence of carts and horses seems very often to lead to waste of labour in carting earth when barrows and a few planks would do the work better.

In necessary groundwork there is inevitably much moving of earth in getting levels, carrying roads and paths across hollows, and for various other reasons. We should make a rule of getting the soil in all such cases as near at hand as possible. Mistakes in levelling ground are frequent, and often lead to twice moving of soil. The best man for groundwork is often one with a good navvy's experience, and many such men know how to make heavy groundwork changes without putting a barrowful of soil in the wrong place. Very often spare soil has to be removed, and in this necessary work ugly mounds are made, when, by a little care in choosing the place well and never leaving any ugly angles, but making the ground take the natural gradation of the adjacent earth, it could be well planted. Hardy trees take well to such banks if the good soil is kept on the top, as it should always be.

¶ The same remarks may serve for the moving of turf, gravel, stones

and soil, save that to get good soil for the formation of beds, we must go where the good soil is ; whereas for the bottoms of roads and paths, the support of banks, base of terraces or mounds, much saving may be effected by getting what we want in the nearest possible place, never fearing to make a hollow if need be, as that can be so easily planted with some free-growing tree or shrub ; the hardy Pines, like Scotch, Corsican, and Silver Firs, being excellent for this, as they thrive in almost any earth, and often on surfaces from which the whole bed of fertile soil has been removed.

Apart from essential groundwork, there is the diversifying of ground artificially, as may be seen in our parks, owing to the false idea that you cannot make level ground picturesque with planting. Proof that this is not impossible may be seen in many a level country planted by Nature, as in the forest plain and in many a park and pleasure ground both in Germany, France, and Britain. Trees are given to us to get this very variety of broken surface, and the idea that to make a place picturesque we must imitate—and usually badly imitate—naturally diversified ground is most inartistic. No doubt broken ground has many charms, but so has the fertile plain, and the best way is to accept and enhance the beauty of each variety of surface. To do so is the planter's true work. In cities and suburbs there is often occasion to conceal ugly objects, and earth, if to spare, may be used well and wisely in raising at once the base of a plantation of young trees ; but an enormous amount of labour given to making artificial mounds might be saved without any loss, and with much gain to garden design.

There are yet certain landscape gardeners who make mounds or earth-pimples everywhere, regardless of the growth of the plants. If people would only spend more on good planting and less on trying to "diversify," as they call it, the surface, it would be better for our gardens. In many cases when planting time comes, so much effort has been spent on needless groundwork, that there are no means to spare for the best work of all in garden making, namely, good planting. But any one can make earth dumplings of the sort we see too many of, while planting to give enduring and beautiful effects requires a knowledge of trees and shrubs.

In our public parks the mania for foolish groundwork may be often seen, one of its results being the burial of the tree base, surrounded, perhaps, with a brick-lined pit-hole, as in St. James's Park. Shooting earth and rubbish to fill up the hollows on such a precious space as Hampstead Heath is common, and as the surrounding district is busy in building, these attempts are, we fear, often the result of finding a shoot for earth and rubbish. Therefore the bringing in of such rubbish should be absolutely forbidden, as the only effect of this filling up of

hollow places is to destroy the incidents of the ground, usually far prettier in form than the results of smug levelling up, or, worse still, the formation of such artificial mounds as we see examples of in the parks. Even the squares in our level Thames valley are not exempt from outrage of this kind, of which, perhaps, the most hideous example is that of Euston Square, in which a high and ugly earth-bank has been put all around the Square, so steep that even the cheap nursery rubbish of the London squares—Privet and Elder—refuses to grow upon it, and so in the summer days, instead of the grass and tree-stems and cool shadows, a bank of dusty rubbish meets the eye!

Another serious source of waste of the inexperienced in ground-work is burying the top surface, the most precious, and in many cases the result of ages of decay of turf and plants. In alluvial land and light friable hill soils this mistake does not so much matter, but in heavy land where there is a clay subsoil it is fatal. The first thing in all groundwork is to save the top soil with the greatest care, for the sake of using it again in its proper place; and how to save it, so that it may be available at the end of the work, is one of the most essential things the good ground-worker has to think of.

Trenches for the reception of pipes, drains, and foundations should not be opened until the materials are at hand, as in wet weather doing so often leads to the sides falling in and much needless labour. The direction of walks, roads, or designs for beds, borders, or gardens, should be carefully marked out and looked at from every point of view before carrying them out, having regard to their use and their relation to all things about them, and not merely to any plan on paper. Attention to this will often save much labour in groundwork.

A cause of much waste of labour in moving soil is the usual way of treating mud after the cleansing of artificial ponds—often a poor inheritance to leave to one's children. The silting up with mud goes on for ever, and while the mere expense of getting this out of the pond bed in any way is usually great, the cost is often increased through the idea that the stuff is of manurial value. This leads people frequently to heap it up on the banks to dry, then to liming it, and eventually to moving it on to the land, these various labours adding to the disfigurement of the foreground of beautiful ground often for a long time. Pond mud has very little manurial value generally, though it will differ to some extent according to the sort of soil the supply comes from. Usually, however, it has very slight value, and any labour bestowed upon it from that point of view is nearly always wasted. The best and simplest way is to put it direct on to some poor pasture near, or on to any ground where it may be got rid of with least labour to man or horse. Where the pond is ugly in outline and not essential

either for its beauty in the home landscape or for its uses for fish or water store, it may often be worth considering whether the best way would not be to let the water off and turn the mud bed into a handsome grove of Willows and Dogwoods, and an excellent covert at the same time. I know nothing among trees quite so good in effect in the landscape, winter and summer, as the white, red, and yellow Willows, with an undergrowth of the red Dogwoods.

LABELS.—Where possible it is best to do without labels, except where we grow many kinds of things that differ by slight shades, as Carnations and Roses. The contents of a garden are usually in a state of change; we are continually adding to and taking from them; new plants are introduced; a severe winter kills a number of shrubs, which we determine not to replant. Fashion changes the garden vegetation too, and then the permanent labels, cast and burnt into hardware and cemented in cast iron, are thrown aside. I prefer a label which can be used again, such as a cast-iron label of “T shape”, or, in other words, a slip of cast iron with an oblong head slightly thrown back. These are cast very cheaply in the iron districts. We have to paint them and write the names of the trees on them when they come to hand; but that can be readily done by a handy painter in winter. In a large garden, where much naming is required, the best way is to train a youth who is likely to remain in the place, by placing a copy of the desired kind of letters before him. It is an advantage to give the label a coat of copal varnish when the letters are dry, and generally to use white letters on a black or dark ground, and give three coats of black over one of red lead. These are the best labels for the shrubs and choice young trees of a pleasure ground or flower garden. The painting will last for twenty years, and if we cease to cultivate the plants to which they belong, the labels may be repainted.

With big trees it is always a mistake to use a ground label. The best labels for large trees are made of pieces of tin about $4\frac{1}{2}$ inches by $3\frac{1}{2}$ inches. About half an inch of the upper edge should be bent at a right angle so as to form a little coping for the label, two holes should be made just beneath the little angle, through which a strong copper wire should be put and firmly nailed to the tree. Place it so as to be easily read, at about $5\frac{1}{2}$ feet from the ground. Paint it dark brown or black with white letters and it will last for many years. All

Simplest label for trees.

Position for tree label.

labels inserted in the grass in pleasure grounds are liable to be pulled up by mowers or others, and in this way to get lost, while the labels on the stems are safe from such mishaps.

For low trees and bushes to which copper wire may be fixed with ease, the simplest and most enduring labels are those that are made of cast metal galvanised, and as they are very enduring they are best for hardy trees and shrubs. The words on them should be as few as may be, and all needless ones omitted. Thus in fruit-tree labels it is needless to use the word Pear or Apple, but simply the variety, as "Ribstone." This plan makes these labels more legible than when they are crowded with letters. For half-hardy plants,

Cast-iron labels; the simplest, neatest, and best form for shrubs, bold herbaceous plants, and for all cases where the label has to be fixed in the ground.

annuals, and plants of a season only, wooden labels are often the most convenient. In most gardens it is the practice to write the name at the part that goes in the ground, and to go on from thence to the top—a bad way, for the label always begins to decay at the base, and thus the beginning of the name is lost, while the end of it may be quite legible. After a little practice it

becomes as easy to write from the top as from the other end, and, in writing the names, always begin as near the top as possible.

The use of the wooden label should be given up in favour of labels with raised or incised letters. The main reason is that the endurance of the wooden label is too slight; moreover, some kinds of good stamped-metal label are less conspicuous in the garden than the wooden label, and any kind of conspicuous label is bad. As regards labels for large gardens and trees, at Kew they now use a lead label of their own stamping, so that should many labels get out of use, as is the case in large collections, it is easy to melt them down and use the metal again for trees and enduring plants of all kinds.

FLOWER GARDEN PESTS.

By no means the least of the difficulties that the cultivator of plants has to contend with is the number of different kinds of insects that feed on the objects of his care, at times rendering all his efforts of no avail. To keep a garden tolerably free from insect pests is never an easy task, and in some seasons an utterly impossible one, but a great deal may be done by a little well-directed care. Prevention is, of course, "much better than cure," and a great deal may be done in this way by never allowing any weeds to grow in a garden, as the insects that feed on them often prefer those in cultivation. A weedy, uncared-for corner in a garden is a regular nursery for all sorts of insects. Rubbish, stones, and the refuse of a crop should never be allowed to lie about, as they form a welcome shelter to many kinds of pests. Anything taken from a plant that has been attacked by an insect or fungus should at once be burnt. Some plants suffer most from the attacks of insects when they are quite young; in such cases the plants should be pushed into vigorous growth as quickly as possible by suitable cultivation. Birds should be encouraged in gardens. Few persons realise the enormous number of insects killed by them, especially during the breeding season, when nearly all the young birds are fed on animal food. Toads also are most useful creatures in gardens, and should be encouraged far more than they are. All dead leaves should be collected and burnt, unless they are required for leaf-mould, when they should be made into a heap as soon as possible. Any leaves that do not fall with the others should be picked off and burnt, as they often contain chrysalides. When borders are being dug, a sharp look-out should be kept for chrysalides or cocoons which may be turned up. Any ground that is not in use should be kept well hoed and broken up. This will keep down weeds and expose any insects which may be in the soil to the birds. As soon as the attack of any insect is noticed, steps should at once be taken to check it, as in

this case the old proverb, "A stitch in time saves nine," is especially true. If ants are seen running over plants, it is generally the case that the latter are infested by aphides or scale insects, and when ants make their nests at the roots of plants it will often be found that the roots are attacked by one of the root-feeding aphides.

Remedies will be applied in a more intelligent manner if those who use them are acquainted with a few elementary entomological facts; so it may be mentioned that a typical female insect when in a perfect state lays eggs; from these are hatched grubs, maggots or caterpillars, according to the kind of insect; these usually feed voraciously and increase rapidly; they change their skins several times, and when full grown become chrysalides; from these in due course the perfect insect emerges. Butterflies, moths, beetles, bees, wasps, ants and some other kinds of insects undergo these changes, which are very marked. Others, such as crickets, grasshoppers, cockroaches, bugs, earwigs, green flies and scale insects, really go through the same changes, but they are much less apparent; the young just hatched from the egg very much resembles its parents. It is, of course, very much smaller and is never winged, but there is a general family resemblance between them. The young one as it grows at times changes its skin, and at a certain change the wings may be seen in a very rudimentary condition. The insect is then in the state that answers to the chrysalis state in the other insects, and on the next change of skin the insect appears in its mature condition. After attaining this period in its existence it never grows. A butterfly, bee, wasp, fly, or whatever the insect is, when in its perfect state never becomes any larger. All insects in their mature condition have a general similarity in their structure, although it may not always be easy to trace the three divisions in which they are formed, namely, head, thorax or forebody, and body, which in a wasp are particularly well marked.

The head is furnished with the organs of the mouth, the feelers or antennæ, and eyes. To the forebody are attached the legs and the wings. The body contains the breathing, digestive and other internal organs. Every insect should have three pairs of legs and two pairs of wings, but in some kinds the latter are altogether wanting, or there is only one pair. Insects do not breathe through openings in their heads, as the higher animals do, but, as a rule, through pores arranged along their sides, which lead into tubes that convey the air to all parts of the body.

Insecticides act upon insects in different ways; some smother the insects by clogging their breathing apparatus, or by their action on their skins, others by poisoning their food. Those first mentioned should be used in the case of insects which feed by suction, the others when the insects have biting mouths. Insecticides, as a rule, have no effect on the eggs, so that it is always best in the case of insects that breed very rapidly to use them again in the course of a few days, and perhaps even a third time, so as to make sure that the pest has been exterminated. There are now several kinds of spraying machines and spraying nozzles in the market. With them the insecticides can be used much more economically than with an ordinary syringe, and they can be applied with greater ease to the undersides of the leaves where the insects are as a rule.

INSECTICIDES.

Carbolic acid (crude) 1 pint, soft soap 1 quart, water 1 gallon, or carbolic acid 1 part, water 50 to 100 parts.

Paraffin 1 wineglassful, soft soap 1 pint, mixed very thoroughly together with a little hot water, and then add one gallon of water. This must be kept well stirred.

PARAFFIN EMULSION.—Soft soap 1 quart, well mixed in 2 quarts of boiling water, while hot add 1 pint of paraffin oil, churn or pump the mixture through a garden engine for 5 or 10 minutes, then dilute ten or twelve times with water, and add a quarter of a pint of turpentine. Or condensed milk 1 to 1½ pints, water 3 pints, mix together and add 1 gallon of paraffin, churn until it forms a butter, dilute with ten or twelve times its bulk of water.

Abol, Antipest, and Paranaph are of much the same composition and of the same efficacy.

QUASSIA EXTRACT.—Boil 6 ozs. of quassia chips in a little water for half an

hour, strain off the liquor and add it to 4 ozs. of soft soap and mix thoroughly in 5 gallons of water; if it is to be used to kill red spider, add half a pound of flowers of sulphur.

TOBACCO WATER.—Boil 1 oz. of strong tobacco in half a gallon of water and strain when cold.

SOLUBLE PARAFFIN.—Half a pint to 2 gallons of water for mealy bug, quarter of a pint to 2 gallons of water for aphides or red spider.

The water used with insecticides should always, if possible, be soft water; if this be impossible add a little soda.

PLANTS AND THEIR PESTS.

Anemone	See	snake millipedes and wire-worms.
Aster	,,	common dart moth.
Auricula	,,	common dart moth.
Balsam	,,	common dart moth.
Carnations	,,	aphides, bulb mite, Carnation fly, frog hopper, earwig, red spider, thrips, and wire-worms.
Chrysanthemum...	,,	aphides, frog hopper, earwigs, Marguerite Daisy fly, plant bugs.
Cyclamen	,,	aphides, black Vine weevil, slugs, wireworms.
Dahlias	,,	common dart moth, earwigs, thrips.
Ferns	,,	black Vine weevil, frog hopper, plant bugs, various caterpillars.
Fuchsia	,,	aphides, red spider.
Gladiolus	,,	red spider, wireworms.
Hyacinth	,,	bulb mites, Narcissus fly.
Lilies	,,	aphides, bulb mites, wireworms, snake millipedes.
Mignonette...	,,	white Cabbage butterfly.
Narcissus	,,	bulb mite, Narcissus fly, snake millipedes.
Pæonies	,,	Rose beetle.
Pansies	,,	slugs, snails, snake millipedes.
Phlox	,,	frog hopper, thrips.
Rose	,,	aphides, bell moths, Rose beetle, Rose gall fly, red spider, scale insects, sawflies.
Stocks	,,	snake millipedes.
Verbascums	,,	Mullein moth.

ANTS (*Lasius niger*).—Ants are not injurious directly to flowering plants in any way, but they are so at times by making their nests at the roots of plants. When this is the case it will generally be found that the plant is infested at the roots by one of the root-feeding aphides, and that the ants chose the locality on that account, so that they might benefit by the sweet substance secreted by the aphides. When a plant is overrun by ants it is an almost certain sign that it is infested by aphides or scale insects. Ants may be destroyed by pouring boiling water, paraffin oil, carbolic or sulphuric acid, diluted with ten or twelve times their bulk of water, into their nests. If in a position in which it is undesirable to use any of these, a garden pot with the holes at the bottom

closed and partially filled with leaves should be inverted over the entrance to the nest, and the ground round the nest kept well watered ; the ants will soon leave the damp earth and move their nest into the dry pot. In about a fortnight the pot may be removed and its contents thrown into a pail of boiling water.

APHIDES (the family to which the green-fly and other nearly allied insects belong) may be destroyed in various ways, but whatever means are used no time should be lost in applying them as soon as the insects are noticed, as the latter increase and multiply in the most rapid manner. Spraying or syringing the plants is one of the most effectual methods of killing these pests. For this purpose use the extract from 6 oz. of quassia chips, 4 oz. of soft soap, well mixed and added to 5 gallons of water ; paraffin emulsion, or a quarter of a pint of soluble paraffin in two gallons of water. They may also be destroyed when the plants are wet by dusting them with snuff, powdered tobacco, or Pyrethrum powder (commonly known as insect powder), or they may be killed by tobacco smoke. This can be effected out of doors by covering the plant with some tolerably airtight cloth and applying the smoke with a fumigator. When pruning Roses in the spring or autumn, the shoots cut off should always be burnt, as they may have some eggs of these insects on them.

BELL MOTHS OR ROSE TORTRICES (*Tortricidæ*).—The caterpillars of several members of this family attack the leaves and flower-buds of Roses, rolling up and feeding on the leaves, and eating the young petals, or making holes in the buds. From the sheltered positions that they occupy, insecticides are almost useless ; pinching the curled leaves is the easiest way of killing them, if you can be quite sure that the intended victim has not dropped out before your fingers closed on the leaf ; or a basket may be held under the leaf or bud, which should be cut off so that it falls into the basket. The leaves and buds should then be burnt or crushed.

THE BULB MITE (*Rhizoglyphus echinopus*).—This little mite feeds on the bulbs of Hyacinths, Daffodils, and probably on those of other bulbous plants. It also attacks the stems of Carnations. It is impossible to make any insecticide reach them while the bulbs are in the soil, and even when taken up, as the mites work between the scales of the bulbs, it is only after many hours soaking that they can be reached. For this purpose use the extract from 4 oz. of quassia chips mixed in 2 gallons of water, or 3 lb. of sulphide of

potassium dissolved in one gallon of water. The bulbs should be allowed to soak in one of these mixtures for twenty-four hours, and even then it may not be successful, as it is very difficult to make fluid pass freely between the scales of the bulbs, as there is often air imprisoned there. Immersing the bulbs in water at a temperature of 120° Fahr. for a quarter of an hour would, I believe, kill them ; the mites when taken from the bulbs and placed in water at 115° Fahr. died in less than five minutes. The mites are only about one-twentieth of an inch in length, and are of a milk-white colour, and may be easily mistaken for grains of sand, but they may readily be detected with a good pocket lens.

THE CARNATION FLY (*Hylemyia nigrescens*).—The grubs of this fly feed on the pith of the stems of Carnations, doing much injury to the plants. The grubs, each about three-eighths of an inch in length, are nearly white with dark heads. There is no remedy but burning the affected plants.

THE COCKCHAFER OR MAY BUG (*Melolontha vulgaris*).—This insect is injurious to plants both as a beetle and as a grub ; the cockchafers feed on the leaves of various trees, and the grubs on the roots of most plants. It appears to be useless to try and kill the grub with any insecticide, but strong salt and water, or gas liquor diluted with ten times its bulk of water, renders the soil distasteful to them. The only practical way of destroying them is to open the ground round a plant which is attacked and find the grub. When full grown the grubs are each about two inches long and half an inch in diameter. They usually lie in a curved position, are whitish in colour, but the tail, which is the thickest part of the body, is bluish. As they take three years to come to maturity, one grub will do an enormous amount of damage in the course of its life. The cockchafers may be shaken or beaten off the trees in the middle of the day, when they are generally sluggish, and crushed or collected as they lie on the ground.

DADDY-LONGLEGS OR CRANE FLY (*Tipula oleracea*).—The grubs of this insect are among the most mischievous of our garden pests, as they destroy the roots of turf and many other plants they will eat right through the tap-root, and then go on to another plant and do the same. They are greyish brown grubs ; when full grown they are each about one and a half inches long and about a quarter of an inch in diameter, thickest near the tail, and tapering towards the head. They are commonly known by the name of leather jackets. They are

very difficult to kill, and when below the surface of the ground, as they usually are, no insecticide can be made to reach them with fatal effect. Watering very thoroughly with strong liquid manure, such as a solution of guano, salt, or nitrate of soda, has been found beneficial, as it is distasteful to the grubs and stimulates the plants. They may be trapped by burying slices of Turnips, Mangold, Carrots, or Potatoes about an inch below the surface; each slice should have a small skewer stuck into it, so that it may be more easily found; or by laying pieces of board, slates, tiles or bricks about, the grubs often roam about at night, and shelter themselves under such things during the day. The traps should be examined every morning.

THE COMMON DART MOTH (*Agrotis segetum*).—The caterpillars of this very common moth live on the roots of many different plants grown in gardens. Their favourites are Auriculas, Dahlias, China Asters, and Balsams. They usually feed on the crowns or just below them, and often bite right through the roots. They feed at night, lying hidden under stones, clods, or some similar shelter during the day. Warm soap and water applied to the roots of the attacked plants until the cracks and holes in the ground are filled will bring the caterpillars to the surface, but turning up the ground with a spud and picking out the pests is the most practical way of killing them. A full-grown caterpillar is from one and a half inches to two inches in length, and are of a smoky yellow colour with various small black spots and paler longitudinal stripes.

THE EARWIG (*Forficula auricularis*) feeds on many kinds of flowers, but is particularly fond of those of the Dahlia, Chrysanthemum and Carnation. The only way of destroying them is by trapping them, or, as they are night feeders, by catching them on the flowers after dark. The best traps are the hollow stems of Sunflowers or Broad Beans, from which they may be blown into a basin of boiling water, or water on which a little paraffin is floating, small garden pots filled with dry Moss or hay, or pieces of paper crumpled up. Or pieces of sacking or canvas, tied so that they hang in folds, or folded and laid upon the ground at the foot of the plants, are also very useful traps. In fact anything in which they can hide during the day is useful.

THE FROG-HOPPER (*Aphrophora spumaria*).—The well-known little masses of froth so often seen on plants, and commonly called cuckoo spit or frog spittle, are formed by this insect when in its im-

mature state, as a covering to itself, and the amount of sap withdrawn from the plant for the sustenance of the insect and the formation of the froth is very considerable and the cause of much injury to the plant. Honeysuckles, Lavender, Lilies, Carnations, Phloxes and grasses are among the plants which suffer most from their attacks. The best way to destroy this insect is to remove it with a small, stiffish brush, which should then be dipped in a pan of water; or the shoots and leaves may be drawn through the fingers, which should be dipped in water, to remove the froth and insects, before cleansing another leaf. Syringing is not of much use, as probably only the froth would be washed off.

THE MARGUERITE DAISY FLY (*Phytomyza affinis*).—The grubs of this insect burrow in the leaves of these Daisies, and also in those of Chrysanthemums, Cinerarias, and other composite plants, and feed on their inner substance. When many leaves are attacked in this way, the plants are not only rendered unsightly by the discolouring and blistering of the leaves, but they suffer very considerably in health. The best way of destroying this insect is by cutting off the infested leaves and burning them, or, if the attack has only just commenced, by pinching the leaves at the part where the grubs are. Syringing with insecticides is not of much use, as they would not reach the grubs, but they would have the effect probably of preventing the flies from laying their eggs on the leaves, if they could be applied at the right time.

THE MULLEIN MOTH (*Cucullia verbasci*).—The caterpillars of this moth feed on the leaves and flowers of the Mulleins, and when abundant quite ruin the appearance of the plants. When full-grown they are about two inches long and of a greenish-white colour, with a yellow band across each joint, on which are several large black spots, so that they are conspicuous insects and may easily be picked off by hand.

PLANT BUGS (*Hemiptera*).—These insects are often injurious to the foliage and buds of plants, the buds of Chrysanthemums being frequently injured by them. These insects, of which there are many species, are provided with a long beak, with which they suck the juices of the leaves and buds. They vary much in size; the species that attacks Chrysanthemums is about one-eighth of an inch in length, the head and forebody are black, and the wings brownish yellow. The perfect insects run and fly readily, so that

it is not easy to kill them, but in their immature condition they have no wings, and may be killed by syringing or spraying the plants with paraffin emulsion or quassia extract and soft soap.

RED SPIDER (*Tetranychus telarius*).—This most annoying pest is often very destructive to the foliage of plants, particularly to those which are dry at the roots. The best way of destroying them is by spraying or syringing with one of the following mixtures: 1 lb. of flowers of sulphur and 2 lbs. of fresh lime, boiled in 4 gallons of water, then add $1\frac{1}{2}$ lb. of soft soap, and, before using, 3 more gallons of water; or the extract from 6 oz. of quassia chips, 4 oz. of soft soap, and half a pound of flowers of sulphur, well mixed, added to 5 gallons of water; paraffin emulsion; or 2 oz. or 3 oz. of Gishurst compound in 1 gallon of water.

THE ROSE BEETLE OR GREEN ROSE CHAFER (*Cetonia aurata*).—This handsome metallic green beetle is unfortunately very injurious to the flowers of the Rose, Pæony, Candytuft, Lilac, Elder, and several other trees and plants. Their grubs also are destructive to the roots of many plants. They are very much like those of the cockchafer, and are frequently mistaken for them, and are each about $1\frac{1}{2}$ inches in length and scarcely half an inch in diameter, of a dirty white colour. The tail, which is the thickest part of the insect, is bluish. They lie in a curved position some 2 inches or 3 inches below the surface, so that no insecticide can reach them. Watering very freely with liquid manure or soapsuds is distasteful to them and may make them shift their quarters. The beetles are each about three-quarters of an inch in length, and are so conspicuous that they may easily be picked off the flowers.

THE ROSE GALL-FLY (*Rhodites rosæ*).—These gall-flies lay their eggs in the young shoots, and in the midribs of the leaves of Briers, the young grubs from which form the curious mossy galls formerly known as "bedeguars," sometimes 2 inches or 3 inches in diameter, often seen on Briers, and at times on other Roses. The best way of destroying this insect is to cut off and burn the galls.

THE ROSE SAWFLIES (*Hylotoma rosarum* and others).—The grubs of these insects feed on and do much damage to the foliage of Roses. Some (the species just named among them) eat away the leaves, leaving only the thicker ribs; others feed only on the upper surface of the leaves, and do not touch the lower skin or the veins; another species rolls up the

leaves into tubes about the size of a quill pen and feeds within this shelter; another lives on the pith of the young shoots. The grubs mostly become chrysalides in the earth, so that after a bad attack it is best to remove the earth from under the bushes to the depth of about 3 inches and burn it, or bury it not less than 1 foot below the surface. The grubs should be picked off by hand, or the bushes may be syringed or sprayed with paraffin emulsion, or quassia extract and soft soap, or Paris green. In the autumn cut off and burn any shoots that appear to be withered, as they may contain chrysalides.

SCALE INSECTS (*Coccidæ*).—These insects infest Roses, Cotoneasters, &c. To destroy them spray or syringe with paraffin emulsion, or quassia extract and soft soap; then, if possible, any of the insects that are on the stems or shoots should be scraped off. In the course of a few days spray again to make sure of killing any of the young that escaped the first application.

THE GARDEN SNAIL (*Helix aspersa*).—There is practically nothing to be done in the way of killing them but hand-picking. Thrushes are very fond of them.

SLUGS.—There are several kinds of slugs that infest gardens; the commonest is *Limax agrestis*, its ravages being only too well known. Small heaps of bran, each placed on a small piece of slate or board, make good traps. Dusting with fresh lime is very useful, and large numbers may be killed of an evening if the plants that are attacked and the ground round them are searched with the aid of a lantern. If the slug be stabbed or cut through with a sharp-pointed knife at the shield (that part just behind the head) the creature dies immediately.

SNAKE MILLIPEDES (belonging to the genera *Julus*, *Blanjulus*, and *Polydesmus*).—These creatures are among the most annoying pests in gardens, as they are so difficult to destroy. They feed on the roots of Lilies and other bulbs, Anemones, Pansies, Stocks and various plants in the flower garden. Few insecticides have any effect on them, as their skins are so horny and smooth; but a strong solution of salt or nitrate of soda will kill them if it can be made to reach them. They may be trapped by laying bricks, slates, tiles, pieces of board, turf or Cabbage leaves about, as the millipedes are fond of creeping under such things. They may be distinguished from the centipedes—with which they are often confused, and which are of great use in gardens—by the slowness of their movements, while the centi-

pedes are very active. There is, however, one exception, the luminous centipede, a long, thread-like creature, 2 inches to 2½ inches in length, which, in spite of its extraordinary number of legs, moves with the greatest deliberation. The snake millipedes, according to the species, when full-grown each measures from half to 1 inch in length, and are composed of a great number of joints. With the exception of the "flattened snake millipede," they are nearly cylindrical in form.

THRIPS (*Thrips adonidum*).—This insect is more injurious to plants grown under glass than to those in the open air; but Phloxes, Carnations, Dahlias, and some other plants often suffer from their attacks. Syringing or spraying with paraffin emulsion, quassia extract and soft soap, Gishurst compound, or tobacco water are the best remedies for outdoor use.

VARIOUS CATERPILLARS.—Besides the caterpillars already mentioned, most plants in the flower garden are liable to be attacked by the caterpillars of various moths, which it is hardly necessary to enumerate. Suffice it to say that they are best destroyed by hand-picking.

THE WHITE CABBAGE and TURNIP BUTTERFLIES (*Pieris brassicæ* and *P. rapæ*).—In the flower garden the caterpillars of these butterflies are very injurious to the leaves of *Tropæolums* of various kinds and *Mignonette*. The plants should be carefully looked over, and the caterpillars picked off. If very numerous, syringe or spray with paraffin emulsion.

WIREWORMS (the grubs of various species of "click beetles," *Elateridæ*).—These well-known pests are by no means easy to get rid of, and as they are over two years in coming to maturity, if left alone they have plenty of time to do a great amount of harm. They attack various flowering

plants, but they are particularly fond of Carnations and plants of that nature. Those belonging to the largest species when full-grown are three-quarters of an inch in length, and much resemble a piece of brass or copper wire of that length, and they are almost as tough. No insecticide is of much use, and trapping them is the best way of destroying them. Slices of Carrots, Turnips, Potatoes, or Rape-cake buried about an inch below the surface make good traps. Each should have a small skewer stuck into it to show where it was buried. They should be examined every morning. Fortunately most birds are very fond of them.

WOODLICE, if found to congregate at the base of a wall or in other positions, may be killed by pouring boiling water over them. They may be trapped by laying bricks, tiles, or pieces of slate or board near their haunts, which they will creep under. Toads kill great numbers of them. Or they may be poisoned by laying pieces of Potato about which have been boiled in water in which some arsenic has been placed.

EARTH-WORMS.—These creatures, of which there are several species, do no harm in gardens or lawns, and indeed are very beneficial, but there are some small worms belonging to a nearly related family, the *Enchytræidæ* (they have no English name), which are very injurious to many plants, feeding on their roots and the lower parts of their stems; they very much resemble very small earth-worms; they are generally about half-an-inch in length, but some of the species are an inch long. They are white, about the thickness of a packthread. Soaking the soil in which they are with lime-water kills them.

G. S. S.

THE
ENGLISH FLOWER GARDEN
AND HOME GROUNDS

PART II

CONTAINING THE FLOWERS, TREES, FLOWERING SHRUBS,
EVERGREENS, AND HARDY FERNS FOR THE
OPEN-AIR FLOWER GARDEN IN THE
BRITISH ISLES, WITH THEIR CUL-
TIVATION AND THE POSITIONS
MOST SUITABLE FOR THEM
IN GARDENS

"A garden is a beautiful book, writ by the finger of God : every flower and every leaf is a letter. You have only to learn them—and he is a poor dunce that cannot, if he will, do that—to learn them and join them, and then to go on reading and reading. And you will find yourself carried away from the earth by the beautiful story you are going through. . . . And then there are some flowers that seem to me like overdutiful children : tend them but ever so little, and they come up and flourish, and show, as I may say, their bright and happy faces to you."—DOUGLAS JERROLD.

THE
ENGLISH FLOWER GARDEN
AND HOME GROUNDS

ABELIA. — Beautiful shrubs, of the Honeysuckle order, little grown in our country, and best in warm districts. They form a small group, natives of the hills of China and Japan, the uplands of India, and Mexico. Few of them are hardy in all parts of our country. In mild districts, with light soil, in sheltered corners or on warm walls, they do best and are hardiest in light, warm soils. Their flowers in drooping clusters are charming, and last long, and the good effect is continued after their fall by the coloured sepals, which retain their beauty far into the autumn. They may be increased by layers in spring, or by cuttings under a handlight during summer.

Rock Abelia (*A. chinensis*).—A pretty shrub, usually of dense growth, 3 to 5 feet high. The hardiest kind grown; to do well it needs a warm light soil and a sheltered spot. The flowers, about an inch long, are in clusters of a pale blush colour, fragrant, and lasting for several weeks in early autumn. Even after the flowers drop the reddish sepals are still ornamental amongst the few late border flowers. China. There is a variety having larger flowers, and greater vigour and hardness. Syn. *A. rupestris*.

Mexican Abelia (*A. floribunda*).—This beautiful shrub is the finest we have, but save in warm southern and western parts must be grown under glass; even in the south it is best as a wall shrub, when its evergreen leaves and drooping flowers are well seen. The flowers, coming in March and April as drooping clusters from every joint, are of a bright rose or rosy-purple, about 2 inches long, and hang for many weeks upon the plant. It does best in light soil, and when grown in pots should be kept rather close at the root. Mexico.

Dwarf Abelia (*A. serrata*).—A low evergreen bush upon dry and sunny hill-sides in China and Japan. It is smaller in all its parts than the other Chinese species, growing little more than 3 feet high, with solitary pale red flowers, which are large and sweet, appearing in March.

Twin-flowering Abelia (*A. spathulata*).—An elegant evergreen shrub flowering in April. White, marked with yellow in the tube, coming in pairs from every joint and about an inch long. The leaves are rather long, finely toothed, with a pale purplish edging.

Indian Abelia (*A. triflora*).—A lovely shrub, needing the shelter of a wall; being of robust growth, it soon makes a fine growth, of good habit, and branching freely. The flowers, coming in threes at the end of summer, are cream or pale yellow flushed with pink, their beauty enhanced by the rosy colour of the unopened buds. Grown in pots or tubs it forms a good plant for the greenhouse where it may not be grown in the open. Hills of Northern India.

ABIES (*Silver Fir*).—Beautiful evergreen trees of northern and mountainous regions, many hardy in our country, and valuable timber trees in their own. Some of the Indian and Japanese Silver Firs suffer in our country by starting too early in our open winters and harsh springs; in their own frost-bound mountain lands the young shoots only start when all danger is past. One remedy for this is the selection of exposed positions which will not encourage early growth, and also not making the soil so rich as is the rule. In our country, as with many of the conifers, the usual way is to put them apart as "specimens," but that, from an artistic point of view, and that of health, is not always the best. Where there is room these trees should be grouped together so as to shelter each other. Grafting of rare kinds is often resorted to, which should always be on their own roots.

There is much confusion of names owing to the American trees having originally been sent over under various names, and from different localities. The following selection includes the most distinct so far as the trees are known. In this, as in many other families, there are a variety of variegated and other sorts which are given fine names, these are generally useless

Abies magnifica. From a photograph by the Earl of Annesley, Castlewellan.

to those who seek the natural dignity of the tree. We do not refer to geographical varieties which may be valuable as coming from diverse climates.

A. AMABILIS (Cascade Mountains Fir).—A tall, massive tree with deep bluish-green foliage, and dark purple cones thriving in Britain. It is not easy to get it true to name and on own roots, and owing to propagating by grafting from side shoots the trees do not make a good leader. British Columbia.

A. BALSAMEA (Balsam Fir).—A slender northern forest fir rarely attaining a height of more than 80 feet, and much smaller in high Arctic regions. Hardy in our country but somewhat uncertain as to soil. N. America.

A. BRACHYPHYLLA (Jesso Silver Fir).—A handsome and hardy tree, over 100 feet high, with bright green foliage and short leaves. The densely crowded leaves are very silvery underneath, and the effect of a healthy tree good. Japan.

A. BRACTEATA (Santa Lucia Fir).—A stately tree, often 150 feet high in its native country. The foliage is long and rather scattered, sharply pointed. It is injured in some districts by starting early in the spring. There are very few good specimens of it in Britain, the best being at Tortworth Court and Eastnor. N. W. America.

A. CEPHALONICA (Cephalonian Fir).—A vigorous Fir of about 60 ft. high, hardy in this country in a variety of soils, but is best planted in an exposed position to prevent it starting into growth too early. In Britain, it is handsome till it reaches a height of about 30 ft., when the leaders give way and the side branches grow vigorously. Even in old specimens with several heads it forms a picturesque tree. Greece.

A. CILICICA (Mount Taurus Fir).—A graceful tree, 40 ft. to 60 ft. high, with slender branches. It grows freely, but is apt to be injured by spring frosts; the leaves are soft, and of a peculiar shade of green where it thrives. Cilicia.

A. CONCOLOR (Hoary White Fir).—A whitish tree of medium height, with thick, grey bark. The flat leaves are about 2 ins. long, and it has small, pale yellow cones. It is hardy in Britain, and a rapid grower. Colorado.

A. FIRMA (Japanese Silver Fir).—A tree of sometimes 150 feet in height, with light brown bark and foliage of a glossy green. Hardy in Britain, and grows freely when established, although it is late in starting. It is a handsome tree with short branches and stiff habit. Japan.

A. FRASERI (Allegheny Fir).—A forest tree, reaching 90 feet high in its own country, with smooth bark having resinous blisters. It is allied to the Balsam Fir, but has shorter and more oval cones, and leaves with silvery undersides. Mountains of Virginia, N. Carolina, and Tennessee.

A. GRANDIS (Puget Sound Fir).—A beautiful and stately tree of over 200 feet, with dark

green cones 2 to 3 inches long, and dark shining leaves, white below. Hardy and free in various parts of Britain; best in moist soils, trees in Scotland at Ochertyre being over 60 feet high in 1899. N. W. America.

A. LASIOCARPA (Alpine Fir).—A beautiful spire-like tree 150 feet high with white bark, and very small cones, purple, 2 to 3 inches long, and red male flowers, the foliage luxuriant and gracefully curved. Alaska, B. Columbia.

A. LOWIANA (California White Fir).—A lovely tree, often 150 feet high, long leaves and light green cones, turning yellow at maturity. Oregon to Southern California.

A. MAGNIFICA (California Red Fir).—A stately mountain tree of 200 to 250 feet, with brown bark (red within), and very large light purple cones 6 to 8 inches long. The foliage is dense on the lower branches, but thinner towards the top, of olive-green. Grows rapidly in Britain. N. California.

A. MARIESI (Maries' Silver Fir) is a tall, pyramidal tree with robust spreading branches and dark purple cones 4 to 5 inches long. Japan.

A. NOBILIS (Columbia Fir).—A mountain tree, 200 to 300 feet high, with deep glaucous foliage and brown cones 5 to 7 inches long. Hardy and rapid grower in Britain. Oregon.

A. NORDMANNIANA (Crimean Fir).—A beautiful dark green tree, with rigid branches and dense dark green foliage and large cones. Hardy and good grower in Britain. Caucasus and Crimea.

A. NUMIDICA (Mount Babor Fir).—A tree of medium height with bright green foliage. Hardy in this country, but may fail from starting too early. Mountains of N. Africa, growing with Cedars and our British Yew.

A. PECTINATA (Silver Fir).—A noble tree of the mountains of Central Europe, often planted in Britain, and growing well over 100 feet high at Longleat, Burton Park, and many other places. It was the first of the Silver Firs planted in Britain, and one of the best. When young it grows well in the shade of other trees, and it is an excellent tree to plant for shelter, as it will grow in the most exposed situations, and in peaty as well as ordinary soils.

A. PINSAPO (Spanish Silver Fir).—A large Fir, with bright green prickly foliage, thriving in almost any soil and in chalky districts. Often suffers from too early a start in spring, and the usual method of isolation by which the grass exhausts the moisture. Spain.

A. SACHALINENSIS (Saghalien Silver Fir).—A tall tree with greyish-brown bark, narrow leaves and small cones. It is hardy, and of distinct and graceful habit, a native of Japan and Saghalien.

A. VEITCHI (Veitch's Silver Fir).—A tall tree of over 100 feet. The bark is light grey and the leaves a bright glossy green with silvery streaks, the cones being a purplish-brown. Japan.

A. WEBBIANA (Webb's Fir).—An Indian Fir, sometimes nearly 100 feet high, and one of the

most distinct. The leaves are deep glossy green with silvery undersides, and the cones are large. A variety Pindrow is without the silver markings. Both suffer much from spring frosts. Himalayas.—F. M.

ABRONIA (*Sand Verbena*.)—Small Californian annuals or perennials of a trailing habit, with showy blossoms in dense Verbena-like clusters. *A. arenaria* (*A. latifolia*), a honey-scented perennial, has trailing stems and dense clusters of lemon-yellow flowers; *A. umbellata*, also an annual with succulent trailing stems and clusters of rosy-purple, slightly fragrant flowers; *A. fragrans*, forming large branching tufts from 1½ to 2 ft., and white flowers which expand late in the afternoon, and then emit a delicate vanilla-like perfume; *A. villosa* is a fine species with violet flowers, and *A. Crux Masta* a pretty species with white scented flowers. *A. arenaria* and *A. umbellata* should be planted in rather poor, light, and dry soil, on an open, well-drained border or rockwork. The seeds often remain dormant some time before vegetating; those of *A. umbellata* germinate more readily. *A. fragrans*, which does not ripen seed in this country, is best in friable soil, and is larger than the others. Abronias flower in summer and autumn, and are pretty and effective when well planted. *Nyctagineæ*.

ABUTILON.—Plants mostly requiring greenhouse temperature in winter, but growing freely out-of-doors in summer, and a graceful aid in the flower garden,

Abutilon, Boule de Neige.

at least in the southern counties. *A. Darwini* and its forms, as well as the varieties related to *A. striatum*, under favourable conditions, grow from 4 ft. to 8 ft. in height. They can be made bushy by stopping, and they flower better than they do in pots. They are useful among the taller and more graceful plants for the flower garden, and are easily raised from seed and cuttings. *A. vitifolium* is a

very handsome wall-plant in mild districts, and several sorts may be grown in the open air in gardens in warm sea-shore districts. *A. Sellowianum marmoratum* is a fine variety. Among the best in cultivation are the following, and new varieties are often raised: *Admiration*, *Anna Crozy*, *Buisson d'Or*, *Darwini majus*, *Elegantissimum*, *Grandiflorum*, *Lemoinei*, *Lady of the Lake*, *Leo*, *Orange Perfection*, *Boule de Neige*, *Delicatum*, *Pactole*, *Darwini tessellatum*, *Thompsoni variegatum*, *vexillarium variegatum*, *Brilliant*, *King of Roses*, *Canarybird*, *Golden Queen*, and *Scarlet Gem*.

ACACIA (*Tassel Tree*).—Beautiful shrubs and trees, mostly thriving in warmer countries than ours, but a few are grown out of doors in the warmer parts of our country. *A. Julibrissin*.—By reducing this to a single stem and using young plants, or those cut down every year, one gets an erect stem covered with leaves as graceful as a Fern, and pretty amidst low-growing flowers. The leaves are slightly sensitive: on fine sunny days they spread out and afford a pleasant shade; on dull ones the leaflets droop. It is better raised from seed. *A. lophantha*, though not hardy, grows freely in the open air in summer, and gives graceful verdure among flowers. It may easily be raised from seed sown early in the year to give plants fit for putting out in early summer. Plants a year old or so, strong and well hardened off for planting out at the end of May, are best. In Cornish and South Devon gardens various kinds thrive in the open air. *A. affinis* is the most common. In many cases *A. affinis* is grown as *A. dealbata*. The leaves of the former are green, while those of the latter are bluish, and its flowers are less bright in colour. A group of *A. affinis*, about 35 feet in height, was a wonderful sight at Tregothnan at the end of March, being simply covered with golden blossom, which was thrown into high relief by a background of *Ilex*. *A. verticillata* is another fine kind, flowering later in the spring. It is a rapid grower, reaching a height of 15 feet in a few years, generally growing in the form of a broad based cone, with its lower branches but a foot or so from the ground. When in flower it is so covered with its pale yellow blossoms that no foliage is discernible. *A. armata* may be seen as a bush 7 feet high and as much in diameter. *A. ovata*.—This I have only seen as a bush some 3 feet high, very pretty when bearing its yellow flower-balls. *A. longifolia* is another handsome tree with leaves some-

thing like those of an Oleander, and bright yellow flowers. *A. melanoxyton* at Tresco is about 50 feet in height, and there are good examples on the mainland. Other species I have met with are *A. riceana*, *A. lophantha*, *A. calamifolia*, *A. linifolia*, *A. latifolia*, and *A. platyptera*.—W. D. F.

ACÆNA.—Alpine and rock plants belonging to the Rose family. Though not pretty in their flowers, if we except the crimson spines that give a charm to the little New Zealand *A. microphylla*, these plants have a neat habit of growth that fits them for very dwarf carpets in the rock garden, and now and then, to cover dry parts of borders and tufts on the

Acæna microphylla.

margins of borders, among the most useful being *argentea*, *millefolia*, *pulchella*, *ovalifolia*, and *sarmentosa*, all of free growth and increase.

ACANTHOLIMON (*Prickly Thrift*).—Dwarf mountain herb plants of the Sea Lavender order, extending from the east of Greece to Thibet, and having their headquarters in Persia. The flowers resemble those of *Statice* and *Armeria*, but the plants form branching, cushion-like tufts; the leaves are rigid and spiny. They are dwarf evergreen rock-garden and choice border plants. We have had the following species for years, but have not been very successful in propagating any except *A. glumaceum*, which is the freest in growth, the others being very slow. Cuttings taken off in late summer and kept in a cold frame during winter make good plants in two years, but by layering one gets larger plants sooner. All are hardy, and prefer warm, sunny situations in sandy loam. There are only a few kinds in cultivation, such as *A. glumaceum*, *venustum*, and *androsaccum*. *A. Kotschyi* is handsome, with long spikes rising well above the leaves and white

flowers; *A. melananthum* has short, dense spikes, the limb of the calyx being bordered with dark violet or black; and other pretty species, not all in cultivation perhaps, are *cephalotes*, *acerosum*, *laxiflorum*, *libanoticum*, and *Pinardi*, which, so far as we know them, thrive best on the sunny rock-garden, in light deep soil. Where large plants of the rare kinds exist, it is a good plan to work some cocoa-nut fibre and sand, in equal parts, into the tufts in early autumn, but before doing this some of the shoots should be gently torn so as to half sever them at a

Acantholimon glumaceum.

heel; water to settle the soil. Many of the growths thus treated will root by spring. Cuttings made in the ordinary way are uncertain, but August or September is the best time to try them.—E. J.

ACANTHOPANAX.—*A. ricinifolium* is the most striking of the shrubby Araliads, hardy and grows freely at Kew. Professor Rein, of the University of Bonn, mentions trees 90 feet high, with stem 9 feet to 12 feet in circumference in the forests of Yezo, the great northern island of Japan. *A. sessiliflorum* is a new species, a native of China, Manchuria, and Japan. It has wrinkled, dark green leaves, formed of three to five leaflets, the midribs having a few scattered bristles. *A. spinosum*.—A small shrub with leaves divided into five segments (sometimes only three). The stem is armed with a few sharp prickles. This plant is more frequently grown in a greenhouse than out of doors, more especially the variegated form. They are both hardy in sheltered positions,

although they do not grow so freely as indoors. *A. palmatum atro-sanguineum*, *p. sanguineum*, which have very rich crimson foliage, and *pinnatifidum*, in which the leaves are much divided, are the finest of the Japanese kinds. The plants should not be grafted.—W. J. B.

ACANTHUS (*Bear's-breech*).—Stately perennials with fine foliage, mostly coming from the countries round the Mediterranean, and hardy, though the foliage may suffer now and then. On rocky banks, borders of the bolder sort, and in almost any position among the more vigorous hardy plants they look well, and will live in shade, yet to flower well should have full sun. Acanthuses succeed best on warm, deep soil, though they will grow in almost any garden soil. They are easily increased by division of the roots in winter, and may be raised from seed. *Acanthaceæ*.

Acanthus.

There are several hardy kinds:—*A. hispanicus*, *A. longifolius*, *A. mollis*, *A. m. latifolius* (*A. lusitanicus*), *A. niger*, and *A. spinosissimus*.

ACER (*Maple*).—Trees, mostly of northern regions, often of the highest value in pleasure-ground planting, some of the species breaking into a great number of varieties. Among the best are the Silver

Maple (*A. eriocarpum*), naturally a very beautiful tree, though we get from it variegated and other forms which are not

Acer circinatum.

of much value, except the cut-leaved one. The Norway Maple (*A. platanoides*), a beautiful tree, has many varieties, the purple ones being effective. The common Sycamore Maple (*A. Pseudo-platanus*) has also a number of variegated and other varieties, though none of them better than the natural tree; it is doubtful if there is any finer tree than this when old. The sycamore walk in the Bishop's Garden, at Chichester, and the trees near Knole House, remind us of its fine qualities for avenues or groups; and it is the best of forest trees to face the sea, as it does in Anglesey and many other places. Our Native Maple (*A. campestre*) is also a pretty tree, seldom planted in gardens, but of which fine trees may be seen at Mereworth in Kent and many other places. The variegated forms are usually tree rubbish. The Virginian or Red Maple (*A. rubrum*) is a beautiful tree, as also the Sugar Maple (*A. saccharinum*) and the Colchic Maple (*A. latum*). The Japanese Maples are interesting and beautiful, but not quite hardy and robust, except in the most favoured districts. Moreover, the fine varieties are often grafted, which makes them still less able to endure severe weather. *A. Negundo* is the kind which has given us the much overplanted variegated Maple so common in gardens. *A. Ginnala* is worth mentioning as a low tree—almost a shrub—whose leaves die off a rich red in colour. The North American and European species are hardy as forest trees and thrive in almost any soil, but the Southern American kinds and Japanese Maples want warmer soils and positions to thrive in our climate. The variegated varieties in this family are too many, and our

nurserymen insist upon sending out many forms which, however attractive they may appear to them in the hand, planted out soon give a poor and even harmful effect.

The known and cultivated species are the following : *Acer campestre*, Europe ; *caudatum*, N. India ; *circinatum*, California ; *cissifolium*, Japan ; *carpinifolium*, Japan ; *cratægifolium*, Japan ; *creticum*, Asia Minor ; *diabolicum*, Japan ; *distylum*, Japan ; *eriodarponum*, N. America ; *glabrum*, N. America ; *grandidentatum*, N. America ; *Heldreichi*, E. Europe ; *heterophyllum*, E. Europe ; *hyrcanum*, Caucasus ; *insigne*, Persia ; *japonicum*, Japan ; *Lobeli*, S. Italy ; *macrophyllum*, California ; *micranthum*, Japan ; *monsperulanum*, S. Europe ; *Negundo*, N. America ; *nikoense*, Japan ; *opulifolium*, Europe ; *palmatum*, Japan ; *pectinatum*, N. India ; *pennsylvanicum*, N. America ; *pictum*, Japan ; *platanoides*, N. Europe ; *Pseudoplatanus*, Europe, Asia ; *rubrum*, N. America ; *rufinerve*, Japan ; *saccharinum*, N. America ; *Sieboldianum*, Japan ; *sikkimense*, N. India ; *spicatum*, N. America ; *tataricum*, E. Europe ; *Volxemi*, Caucasus.

ACHILLEA (*Milfoil*, *Yarrow*). — Hardy herbaceous and Alpine plants spread through Northern Asia, S. Europe, and Asia Minor, varying in height from 2 in. to 4 ft., their flowers being pale lemon, yellow, and white, but rarely pink or rose. They grow freely in most garden soils, and, with the exception of the dwarfer mountain species, increase rapidly. Some of the large kinds are fine plants for groups, as *A. Eupatorium*. The alpine kinds, such as *A. tomentosa*, are for the rock-garden, or margins of choice borders.

The best of the larger kinds are excellent for large groups in mixed borders and also in shrubberies ; among the best being *A. Eupatorium*, *A. Fili-pendula*, *A. millefolium roseum* (a rose-coloured variety of a native plant), and *A. Ptarmica* (the Sneezewort), the double variety being one of the best perennials. The variety known as the "Pearl" is a larger improved form. *A. Ægeratum* (Sweet Maudlin) is a distinct old kind, about 2 feet high.

The dwarfer species come in for groups for the rock garden or the margins of rock borders, and, occasionally, as edging plants, most of them growing freely and being easy of increase ; but some of the higher Alpine kinds are not very enduring in our open winters. Among the best are *A. aurea*, *A. rupestris*, *A. tomentosa*, and *A. Clavennæ*.

ACIPHYLLA (*Bayonet Plant*).—Singular and distinct New Zealand plants. *A. Colensoi*.—Forming a spiny bush. *A. Lyalli* is similar in habit but is smoother in all its parts, the leaves being divided into sharp spines. *A. squarrosa* is the best known species, thriving in free soil and sunny parts of the rock garden : they are more curious than attractive from a garden point of view.

ACONITUM (*Monkshood*).—Tall and

handsome herbaceous plants, of the Buttercup order, dangerous from their poisonous roots. There are many names—not so many species,—of value for our gardens. They should not be planted where the roots could be by any chance dug up by mistake for edible roots, as they are so deadly : almost all the kinds may be easily naturalised in copses or shrubberies away

Aconitum Napellus (Monkshood).

from the garden proper, or beside streamlets or in openings in rich bottoms.

The best kinds are *A. Napellus* and its forms, *versicolor* and others ; *A. chinense*, *A. autumnale*, *A. japonicum*, and *A. tauricum* ; *A. Lycoctonum* is a yellow-flowered and vigorous species. They are from 3 ft. to 5 ft. high and flower from July to September. *A. Fortunei*, the old *A. chinense* of gardens, is the best for late blooming.

ACORUS (*Sweet Flag*).—Waterside or marsh plants of the arum order, easily cultivated, and of wide distribution. *A. Calamus* (Sweet Flag) is a marsh or waterside plant, now naturalised in most parts of Europe. A variety has gold-striped leaves. *A. gramineus* (Grass-leaved Acorus) has a slender creeping rhizome covered with numerous Grass-like leaves, from 4 in. to 6 in. in length, and there is a variety with white-streaked

leaves. This plant is often seen in the little bronze trays of water-plants in Japanese gardens and houses. China.

ACROCLINIUM.—*A. roseum*, the only species, is a pretty half-hardy annual from Western Australia, growing over 1 foot high with rosy-pink flowers, used as "everlasting" flowers. Seeds should be sown in frames in March, and the seedlings planted at the end of April or early in May in a warm border; or the seeds may be sown in the open ground in fine rich soil at the end of April. If the flowers are to be dried, it is best to gather them when fresh and young—some when in the bud state. This annual might be made graceful use of in mixed beds. There is a white variety. *Compositæ*.

ACTÆA (*Baneberry*).—Vigorous perennials of the Buttercup order, 3 ft. to 6 ft. high, thriving in free soil; flower spikes, white and long, with showy berries. The white Baneberry has white berries with red footstalks. The var. *rubra* of *A. spicata* has showy fruit; the plants are best suited for rich bottoms in the wild garden, as though the foliage and habit are good, the flowers are short-lived in the ordinary border, and somewhat coarse in habit. *A. spicata* (common Baneberry or Herb Christopher), *A. racemosa* (Black Snakeroot), *A. alba* (white Baneberry), having white berries with red stalks, and one or two American forms of the common Baneberry are in cultivation. The flowers have often a very unpleasant smell.

ACTINELLA.—North American composites of which there are three kinds in gardens, dwarf-growing plants with yellow flowers. The finest is *A. grandiflora* (Pigmy Sunflower), a native of Colorado, an alpine plant with flower-heads 3 in. in diameter, growing from 6 in. to 9 in. high. The other species, *A. acaulis*, *A. Brandegei*, and *A. scaposa*, are somewhat similar. They are all perennial, and thrive in a light soil.

ACTINIDIA.—Climbing summer-leaving shrubs of the Camellia order from Japan and China, thriving in warm rich soil. They all have climbing or twining stems and bear waxy white flowers. *A. Kolomikta* should be grown against a wall or against a buttress or tree trunk placed against the wall, on which the stems support themselves. The leaves are brightly tinted in autumn, and the flowers of *A. polygama* are fragrant. *A. volubilis* is free-growing and has small white flowers.

ADENOPHORA (*Gland Bellflower*).—Hardy perennials of the Bellflower family, 18 in. to over 3 ft. high. They are

mostly from Siberia and Dahuria, with flowers generally blue in colour. Some of the most distinct species are *A. coronopifolia*, *A. denticulata*, *A. Lamarckii*, *A. liliiflora*, *A. polymorpha*, *A. stylosa*, and *A. pereskiaefolia*. In these occur slight variations in colour and size of flower. Their thick fleshy roots revel in a rich loam, and like a damp subsoil; they are impatient of removal, and should not be increased by division. Unlike the *Platycodons*, they seed freely, and are easily increased.

ADIANTUM (*Maidenhair Fern*).—Elegant ferns, few of which are hardy, growing best in a rough fibry peat, mixed with sand and lumps of broken stone or brick. *A. pedatum*, the hardy N. American kind, is charming among shade-loving plants in the wild garden with the more beautiful wood-flowers, such as *Trillium*, *Hepatica*, and blue *Anemone*, in moist soil. *A. Capillus veneris*, the British Maidenhair Fern, is best in a sheltered nook at the foot of a shady wall, and in the southern warmer countries might be found near fountain basins and moist corners of the rock garden and hardy fernery. There are several varieties or forms of this Maidenhair.

ADLUMIA (*Climbing Fumitory*).—Climbing biennial plants. One species only (*A. cirrhosa*) is known, a rapid grower.

Adlumia cirrhosa.

Its Maidenhair-Fern-like leaves are borne on slender twining stems with abundant white blossoms, about $\frac{1}{2}$ in. long. There is a variety with purple flowers. It thrives in a warm soil, and its place is trailing over

a shrub or twiggy branch, placed either against a wall or in the open.

ADONIS (*Pheasant's Eye*).—Beautiful perennial or biennial plants, belonging to the Buttercup order, chiefly natives of cornfields in Europe and Western Asia, dwarf, with finely divided leaves, and red, yellow, or straw-coloured flowers. *A. vernalis* (*Ox-Eye*) is a handsome Alpine herb, forming dense tufts 8 in. to 15 in.

Adonis pyrenaica.

high of finely divided leaves in whorls along the stems, blooming in spring, with large, yellow, Anemone-like flowers 3 in. in diameter. Of *A. vernalis* there are several varieties, the chief being *A. v. sibirica*, which differs in having larger flowers. *A. apennina* is a later-blooming form, and is a good plant for moist spots on the rock-garden. *A. pyrenaica* is from the Eastern Pyrenees, but with broader petals. *A. amurensis* is a new kind from Manchuria, with finely cut leaves, blooming with the snowdrop, and seems to be of easy culture. *A. Davurica* is a very early kind. *A. autumnalis* is a pretty bright-coloured annual.

The rock-garden or borders of sandy loam suits the perennial kinds well. Division, or by seed sown as soon as gathered.

ÆSCULUS (*Horse Chestnut, Buckeye*).—The Horse Chestnuts are mostly medium-sized trees, hardy in nearly every soil, and excellent for park and garden. The common variety is an exception as to

size, and one of the most beautiful of flowering trees. There is at least one handsome variety of it with very long spikes. The red Buckeye (*Æ. Pavia*) is a handsome small tree, with dense and large foliage, together with bright red flowers in large loose clusters in early summer. Sometimes it rises from 15 to 20 ft. high, but some of its varieties are only low-spreading or trailing shrubs. *Æ. humilis*, *pendula*, *arguta*, and *laciniata* are forms of *Æ. Pavia*, and the plants are useful for grouping with taller trees. *Æ. flava* (the yellow Buckeye) is common, and sometimes 40 ft. high. It has something of the habit of the red Horse Chestnut (*Æ. rubicunda*), but smoother leaves. A variety called *purpurascens* (sometimes *Æ. discolor*) has much showier flowers, larger, and of a reddish tint. The *Æsculi*, named in gardens and nurseries as *Æ. neglecta*, *hybrida*, *pubescens*, *Lyoni*, *rosea*, and *pallida*, may be included in one of the foregoing species, and some differ but slightly from them. They are all low trees or large shrubs, coming into leaf early and losing their foliage in early autumn, especially in light or dry soils. One of the best of all the forms is the brightly-coloured *Æ. Brioti*. A distinct species is the Californian Buckeye (*Æ. californica*), which in this country does not usually rise above shrub height. It has slender-stalked leaves, broad leaflets, and in early summer dense erect clusters of white or pinkish fragrant flowers; a valuable hardy tree. Quite different from the rest is the North American *Æ. parviflora* (dwarf Horse Chestnut), a handsome shrub, 6 ft. to 10 ft. high, flowering in late summer. Its foliage is much like that of other *Æsculi*, and its small white fragrant flowers are in long, erect, plume-flowers. A variety of the preceding, *Æ. macrostachya*, is an August-blooming North American shrub of great beauty. The growth is spreading and bushy, with creamy white flowers in dense plummy spikes. A specimen on the outskirts of the lawn is effective. We have grouped the Pavias with the *Æsculus*.

ÆTHIONEMA.—A beautiful group of Alpine and rock plants found on the sunny mountains near the Mediterranean. They grow freely in borders of well-drained sandy loam, but their true home is the rock-garden. The tall *Æ. grandiflorum* forms a spreading bush about 1 ft. high, from which spring numerous racemes of pink and lilac flowers. It also grows well in borders in ordinary soil, and, when in flower in summer, is among the loveliest of

alpine half-shrubby plants. As the stems are prostrate, a good effect will come from planting them where the roots may descend into deep earth, and the shoots fall over the face of rocks at about the level of the eye. Easily raised from seed, and thrive in sandy loam. There are many species, but few are in gardens. All the cultivated kinds are dwarf, and may be grouped with alpine plants. The other best kinds are *A. coridifolium*, *A. pulchellum*, *A. persicum*.

AGAPANTHUS (*African Lily*).—Beautiful bulbous plants from the Cape, with blue or white flowers in umbels on stems 18 in. to 4 ft. high. *A. umbellatus*, the old kind, is hardy in some mild seashore districts, and a fine plant in rich warm soil, but better for the protection of leaves or cocoa fibre round the root in winter. It is worth growing for the flower garden and vases in summer, but should be protected in winter by storing under stages, in sheds or cellars. The fleshy roots may be so stored without potting. Enjoys plenty of water during out-of-door growth, and is easily increased by division. Various new kinds have been introduced, but their out-of-door value has not been so well tested as the favourite old African Lily. Of the best-known kind, *A. umbellatus*, there are several varieties; *major* and *maximus* are both larger than the type, and of *maximus* there is a white-flowered variety. There is a smaller one with white flowers, one with double flowers, and variegated-leaved kinds. *A. Saundersonianus* is a distinct variety with deeper-coloured flowers than the type.

The largest is *A. umbellatus giganteus*, the flower-spikes of which attain a height of from 3 ft. to 4 ft., with umbels bearing from 150 to 200 flowers. The colour is a gentian blue, while the buds are of a deeper hue. *A. u. pallidus* is a pale porcelain blue, a short-leaved variety. *A. u. minor* is a dwarf variety. Of *A. umbellatus* there is a double-flowered variety, a distinct plant. There is, moreover, *A. u. atrocæruleus*, a dark violet variety. *A. u. maximus* has flower-stalks 4 ft. long, and full heads of flowers, one set opening while a second is rising to fill up the truss as the first crop fades. *A. u. Mooreanus*, deciduous and hardy; it grows from 12 in. to 18 in. high, has narrow leaves, and comes true from seed. *A. u. albiflorus*, a pure white kind, also is deciduous, the leaves turning yellow in autumn and dying off. It forms a stout root-crown.

AGATHÆA (*Blue Daisy*).—*A. cælestis* is a tender spreading Daisy-like plant, with blue flowers, useful for the margins of beds.

There is also a pretty golden variegated form. It is among the prettiest of the half-hardy bedding plants, but is not so effective or good on heavy soils. Cuttings or seed.

AGAVE.—Tropical-looking succulent plants of the Amaryllis order, of which the common kind, *A. americana*, and its variegated varieties are useful for placing out-of-doors in summer in vases or pots plunged in the ground, and also for the conservatory in winter. When the plant flowers, which it does only once, and after several years' growth, it sends up a flowering stem from 26 ft. to nearly 40 ft. high. The flowers are a yellowish-green, and are very numerous on the ends of the chandelier-like branches. It may be placed out-of-doors at the end of May, and should be brought in in October. Easily increased from suckers. *A. Deserti*, *utahensis*, *cærulescens*, and *Shawi* have lately come into cultivation, and are supposed to be hardy, in which case they will be interesting for the rock-garden. North America. *A. applanata* var. *Parryi* is said also to be hardy.

AGERATUM (*Floss Flower*).—Half-hardy herbaceous plants, varying in height from 6 in. to 24 in., with pale-blue, lavender, or white blossoms. The dwarf Ageratums are among the best, but all are greatly overvalued, though they are among the most lasting of summer bedding plants, and as they will withstand a few degrees of frost they may be planted out earlier than most of the bedding plants. The flowers are not readily injured by rain, and do not fade in colour, but continue the same throughout the long flowering season. There are numerous varieties of varying merit, some in good soil attaining a height of 2 ft., and others not more than 6 in. The very dwarf kinds are disappointing; they flower so freely, and the growth of the plants is so sparse, that they always appear stunted. For back lines in borders, or for grouping in mixed flower borders, there is no variety better than the oldest kind, *A. mexicanum*. They strike best when placed on a gentle bottom-heat, and will winter in any position where there is plenty of light, and the temperature does not go below 40°. Cuttings.—W. W.

AGROSTEMMA (*Rose Campion*).—*A. coronaria* is a beautiful old flower, of the Pink family, hardy and free, most at home in chalky and dry soils. It is a woolly plant, 2 ft. to 3 ft. high, bearing many rosy-crimson flowers, in summer and autumn, easily raised from seed, excellent for borders, beds, and naturalisation on dry banks. It is biennial or often perishes on

some soils. There is a white variety and a double red one; the last is a good plant. The name is sometimes given to the annual *Viscarias*. *A. Githago* is a large annual, occasionally grown in botanic gardens. *A. Walkeri* is a hybrid between *A. coronaria* and *A. Flos-Jovis*, very compact, free flowering, and rich in colour.

AGROSTIS (*Cloud Grass*).—A large family of Grasses, the best of which

Young Ailantus tree with Cannas.

in the garden are the annual kinds so useful when dried. There are some half-a-dozen annual kinds grown, the best *A. nebulosa*, which forms delicate tufts about 15 in. high, and is useful for rooms. If cut shortly before the seed ripens and dried in the shade, it will keep for a long time. The seed may be sown either in September or in April or May, and lightly covered. *A. Steveni*, *multiflora*, and *plumosa* require the same treatment. *A. Spicaveriti* is very graceful, especially if grown from self-sown seeds. *A. pulchella* is also useful for the same purpose, dwarfer and stiffer than *A. nebulosa*.

AILANTUS (*Tree of Heaven*).—A Chinese hardy tree, young plants of which cut down every year give a good effect. It should be kept when young with a single stem clothed with its fine leaves. This can be done by cutting

down annually, taking care to prevent it from breaking into an irregular head. Vigorous young plants and suckers in good soil will produce handsome arching leaves 5 ft. or more long, not surpassed by those of any stove plant. Cuttings of the roots.

AIRA (*Hair Grass*).—Graceful grasses, of which one of the prettiest is *A. pulchella*, with many hair-like stems, growing in light tufts 6 in. high. It is useful for forming graceful edgings, amongst plants in borders, or for pots for rooms. Its delicate panicles give a charm to the finest bouquets. Seed may be sown either in September or in April. This comes from South Europe, and the British *A. caespitosa* is handsome. *A. c. vivipara*, with its innumerable panicles of graceful viviparous awns, resembles a miniature Pampas Grass. *A. flexuosa* (the Waved Hair grass) is a pretty and graceful perennial. Of easy culture in ordinary garden soil.

AJUGA (*Bugle*).—A small family of dwarf herbs of the sage order, flowering in spring and early summer, and having purplish flowers. They grow on mountain or lowland pastures, are easily cultivated and increased by division. *A. genevensis* is among the best, and is distinguished from the common native Bugle (*A. reptans*) by the absence of creeping shoots. The flower-stems are erect, from 6 in. to 9 in. high; the flowers deep blue, and in a close spike. It is suitable for the

Ajuga genevensis.

front of mixed borders or for the margin of shrubberies, and also for naturalising. There is a white variety of *A. reptans*, also a form with variegated leaves, and another with purplish ones, this being finer than the type.

AKEBIA.—Of these climbing or twining shrubs of the Barberry order, *A. quinata* is best known. It comes from China, hardy, is a good plant for a trellis, pergola, or wall, growing 12 ft. or more high. It is best to let it run over an Evergreen, being then better protected against cold winds, which may injure its flowers. It has long slender shoots, and fragrant claret purple flowers of two kinds—large and small, which are produced in drooping spikes. The Japanese *A. lobata* is a climber of elegant habit, the flowers small, dull, and fragrant.

ALISMA (*Water Plantain*).—Water plants, of which two are fitted for growing with hardy aquatic plants. *A. Plantago* is rather stately in habit, having tall panicles of pretty pink flowers. When once planted it sows itself freely. The other kind is *A. ranunculoides*, a few inches high, in summer bearing many rosy blossoms. Both are adapted for wet ditches, margins of pools, and lakes. *A. natans* is a small floating pretty British plant. There are one or two Chinese kinds, single and double.

ALLIUM (*Garlic, Onion*).—Liliaceous bulbs not often of value for the garden, and frequently with an unpleasant odour when crushed; to growers of collections there are some interesting kinds, of which a few are worth growing. They thrive in ordinary soil, the bulbs increasing rapidly, some giving off little bulblets, which in some soils make them too numerous. The following are among the kinds worthy of culture: *A. neapolitanum*, *paradoxum*, *ciliatum*, *subhirsutum*, *Clusianum pulchellum*, *triquetrum* (all with white flowers), *azureum* and *cæruleum* (blue), *pedemontanum* (mauve), *Moly* and *flavum* (yellow), *fragrans* (sweet scented), *oreohyllum* (crimson), *descendens* (deep crimson), *narcissiflorum* (purplish), *Murrayanum*, *acuminatum*, and *Macnabianum* (deep rose). These mostly grow from 1 ft. to 18 in. high, some 2 ft. or 3 ft.

ALLOSORUS (*Parsley Fern*).—*A. crispus* is a beautiful little British Fern found in mountainous districts. It requires abundance of air and light, but should be shaded from the hot sun. In the rock-garden it does well between large stones, with broken stones about its roots, and its fronds just peeping out of the crevice.

ALNUS (*Alder*).—A neglected group of trees which have some value in moist places and to help to bind the banks of streams. Of the native kind *A. glutinosa* there are several varieties, and of the cut-leaved one there are fine specimens at Wynnstay and many other places. *A. incana* has also several varieties seldom of more value than the wild tree. Among other cultivated kinds are *japonica*, *cordifolia*, *barbata*, *occidentalis*, *oregona*, and

Alnus glutinosa.

serrulata: all of easy culture. None are of greater value as to effect than our own native kind.

An advantage the tree possesses is its tendency to retain its foliage. There is, however, a great deal of difference in this respect among the species and varieties. Although in a state of nature most of the Alders are found near water, they will grow well in Britain in all but the lightest soils.

ALONSOA (*Mask-flower*).—Mostly Peruvian annual plants, of the Snapdragon order, of which the best species are *A. Warscewiczii*, having small bright orange-red flowers; *A. linifolia*, and *A. acutifolia*,—a slender-growing herb; *A. incisifolia*, also a pretty kind; similar to this is *A. myrtifolia* of vigorous habit with flowers larger than any other kind, and of a more intense scarlet than those of *A. linifolia*; *A. albiflora* has pure white flowers, yellow in the centre, and *A. linearis* has a profusion of light scarlet flowers. All the species are easily grown, both in pots and the open ground: from seed in spring and also by cuttings in the spring.

ALOYSIA (*Sweet Verbena*).—*A. citriodora* is a fragrant-leaved bush with small and not showy flowers. Its pale green foliage goes well with any flower, and it may be grown against a sunny wall, where, if protected by a heap of ashes over its roots and a warm straw mat over

its branches, it will pass through the winter safely. If uncovered too soon in spring, the young growths get nipped by late frosts. It is increased from cuttings and is a hardy wall plant in mild seashore districts, but not so common, owing to the cold, in inland districts. Verbenæ order, Chili. Syn. *Lippia*.

ALSTRÖMERIA (*Peruvian Lily*).— Handsome tuberous plants of the Amaryllis order, which require a richly manured and thoroughly warm and well-drained soil, the best place being a south

The plants should be procured in pots, as they rarely succeed from divisions, and, once planted, should never be interfered with. Place them in rows about 18 in. apart, and with 1 ft. from plant to plant. If planted during the winter, they should be placed from 6 in. to 9 in. deep, so as to keep them from frost; and a few inches of half-rotten leaves shaken over the soil. Should there be any difficulty in obtaining established plants in pots to start with, seed may be had; and this sown in pots or beds where the plants are to re-

Alströméria (Peruvian Lily).

border, or along the front of a wall having a warm aspect, where, if the soil is not light and dry, it should be made so. Dig out the ground to the depth of 3 ft., and spread 6 in. or so of brick rubbish over the bottom of the border. Shake over the drainage a coating of half-rotten leaves or short littery manure, to prevent the soil from running through the interstices of the bricks, and stopping up the drainage. If the natural soil be stiff, a portion should be exchanged for an equal quantity of leaf soil, or other light vegetable mould, and a barrow-load of sand.

main. The seeds should be sown 2 or 3 in. deep, with three or four in a patch. If well treated, they will begin to bloom at a year old, and if not disturbed will increase in strength and beauty every season. If one takes the seed of Alströmérias as soon as it is ripe and sows it, every seed will germinate the first season. It is also much better to sow three to five seeds in each pot and let the seedlings remain in the same pot the first year. The young plants of Alströmérias are very difficult to handle, being as brittle as glass, and a very great

percentage will die if replanted when still young.

When grown in masses in this way they are very beautiful, as every stem furnishes a large number of flowers, varying much in their colour markings. While growing and blooming they should have occasional watering, otherwise they get too dry, and ripen off prematurely. A good mulching of old Mushroom dung or of leaf soil is a great assistance while in bloom. When going out of flower carefully remove the seed-heads, otherwise the plants are apt to become exhausted, as almost every flower sets. In removing the pods, do not shorten the stems or reduce the leaves in any way, as all are needed to ripen the tubers and form fresh crowns for the following year. Anyone having deep light sandy soil resting on a dry bottom may grow these beautiful flowering plants without preparation; all that is necessary being to pick out a well-sheltered spot, and to give the surface a slight mulching on the approach of severe weather. No trouble is involved in staking and tying, for the stems are strong enough to support themselves, unless in very exposed situations. They last long when cut.

The species in cultivation are

A. aurantiaca (*A. aurea*).—A vigorous growing Chilian kind, 2 ft. to 4 ft. high, flowering in summer and autumn. The flowers are large, orange yellow, streaked with red, and umbels of from 10 to 15 blooms terminating the stems.

A. brasiliensis.—A distinct kind with red and green flowers, and dwarfer than the preceding. Known also as *A. psittacina*.

A. chilensis.—A quite hardy kind from Chili, with many varieties that give a wide range of colours from almost white to deep orange and red.

A. Pelegrina.—Not so tall or robust as the last; but the flowers are larger, whitish, and beautifully streaked and veined with purple. There are several varieties, including a white one (*A. p. alba*) which requires protection. When well grown it is a fine pot plant, compact, and crowned with almost pure white flowers. It is called the Lily of the Incas. *A. peregrina* is synonymous.

Other good kinds are the hardy variable-coloured *A. versicolor* (*A. peruviana*) and St. Martin's flower (*A. pulchra*); this, however, requiring protection.

ALTERNANTHERA (*Joy-Weed*).—Little tropical weeds of the *Amaranthus* order, which, owing to their colour, have

been used in our gardens far beyond their merits. These tender plants are natives of Brazil, and can be used only in the more favoured parts of the country. The varieties range in colour of foliage from dull purple to bad yellow, and why they are used in flower gardens is a question to which no good answer can be given.

ALTHÆA (*Hollyhock*).—Biennial or perennial plants of the Mallow family consisting chiefly of coarse-growing plants. Some, such as *A. rosea*, from which the Hollyhock has sprung, are showy garden flowers. The other wild species are generally characterised by great vigour, and hence are not very suitable for the choice flower garden. They thrive in almost any situation or soil. Among them *A. armeniaca*, *officinalis*, *narbonensis*, *cannabina*, *ficifolia*, *Hildebrandti hirsuta*, *caribæa*, *Froloviana syriacus*, *lavateræfolia* are the best—mostly natives of S. Europe and the East, flowering in summer and autumn.

A. rosea (*Hollyhock*).—One of the noblest of hardy plants, and there are many positions in almost all gardens where it would add to the general effect. For breaking up ugly lines of shrubs or walls, and for forming back-grounds, its tall column-like growth is well fitted. So, too, it is valuable for bold and stately effects among or near flower beds. Cottage bee-keepers would do well to grow a few Hollyhocks, for bees are fond of their flowers.

CULTURE.—Deep cultivation, much manure, frequent waterings in dry weather, with occasional soakings of liquid manure, will secure fine spikes and flowers. Hollyhocks require good garden soil, trenched to the depth of 2 ft. A wet soil is good in summer, but injurious in winter, and to prevent surface wet from injuring old plants left in the open ground remove the mould round their necks, filling up with about 6 in. of white sand. This will preserve the crowns of the plants. It is best, however, if fine flowers are desired, to plant young plants every year, as one would Dahlias, putting them 3 ft. apart in rows at least 4 ft. apart; or if grouped in beds, not less than 3 ft. apart. In May or June, when the spikes have grown 1 ft. high, thin them out according to the strength of the plant; if well established and strong, leaving four spikes, and if weak two or three. When for exhibition, leave only one spike, and to get fine blooms cut off the side shoots, thin the flower buds if crowded together, and remove the top of the spike, according to

the height desired, taking into consideration the usual height and habit of the plant. By topping you increase the size of the flower, but at the same time shorten its duration, and perhaps disfigure its appearance. Stake them before they get too high, tying them securely, so as to induce them to grow erect. The most

Althæa rosea (Double-flowered Hollyhock).

robust will not require a stake higher than 4 ft. If the weather is dry, they may be watered with a solution of guano or any other liquid manure poured carefully round the roots, but not too near the stem. But it is in the garden, not the exhibition, one wants the Hollyhock.

PROPAGATION is effected from eyes, cuttings, seeds, or careful division. Holly-

hocks may be propagated by single eyes, put in in July and August, and also by cuttings put in in spring, on a slight hot-bed. Plants raised in summer are best preserved by putting them in October into 4-in. or 5-in. pots in light, rich, sandy earth, and then placing them in a cold frame or greenhouse, giving them plenty of air on all favourable occasions. Thus treated they will grow a little in winter. In March or April turn them out into the open ground, and they will bloom as finely and as early as if planted in autumn. Plants put out even in May will flower the same year. If seeds are sown in autumn in a box or pan in heat, as soon as they are ripe, potted off and grown on in a pot through the winter, and planted out the following April, they will flower in the same summer and autumn. If allowed to remain in the beds or borders where they have flowered, choice Hollyhocks often perish from damp, or from snow settling round their collars, or penetrating the cavity left by the too close removal of the flower-stems. At the approach of winter, say in October, carefully lift all it is desired to save, and lay them close together in a slanting direction, at an angle of about 45° , in a warm mellow soil at the foot of a wall or hedge, where, in hard weather, shelter can easily be given. The ground that is to receive them can then be thoroughly worked in winter, and if a little rotten turf is put in with them when replanted in March or April, good spikes and large flowers may be expected. Choice and scarce varieties may be either potted up or planted out in a frame. Potting them is the better way, because they can be placed in a greenhouse or vinery, on shelves near the glass. Some of the stools will have numerous growths starting from them, and unless the plants have a little heat early in the year, many of the cuttings cannot be propagated soon enough to flower the same season. Growers in the south of England have an advantage with these spring-struck cuttings as there is quite three weeks' difference between the time of flowering in the south and in the northern districts of England and in Scotland. Root-grafting gives the propagator a little advantage, and early in the year the plants are propagated more readily in a light frame fixed in a heated propagating house. A hotbed is uncertain, as there is sometimes too much heat, and then not enough. Although the young side shoots of old stocks will root in a gentle bottom-heat in spring, they may also be increased in July, just before the

plants come into flower. The side shoots from the flower-spikes, or the smaller flower-spikes, if they can be spared, should be cut up into single joints, and dibbled in thickly in a prepared bed in a frame or pit, where they can be kept close and cared for by shading from bright sunshine, and sprinkling occasionally with water that has been warmed by standing in the sun. Nearly every cutting will then develop a bud from the axil of the leaf, rapidly strike root, and make a good strong plant by the following spring; as a rule, young plants propagated at this season give the best spikes. When cutting down the flowering stems of Hollyhocks after blooming, they should be left a good length, as they are impatient of damp about their crowns; in spring the old stems may be removed altogether. Owing to the Hollyhock disease it is often a better plan to abandon the named kinds increased from cuttings and resort to seedlings only for stock. This way is all the more sure, as seed growers of late years have fixed and separated the colours so that a fine variety of good ones may be secured in this way, while the plants are more vigorous, and in any case will often start free from the disease.

INSECT PESTS AND DISEASES.—Red spider and thrips are both very troublesome, but the first does most injury. It appears on the under sides of the leaves as soon as the hot weather sets in, and is difficult to dislodge. If there is any trace of red spider before planting out, the whole plant, except the roots, should be dipped in a pail of soft soapy water, to which a pint or so of tobacco liquid has been added. It will be well to syringe the under sides of the leaves with the mixture if the plants have been planted out before the pest is perceived. Thrips may be destroyed in the same way, and it is well to syringe the plants every day in hot weather.

THE HOLLYHOCK FUNGUS (*Puccinia malvacearum*) is very destructive to the Hollyhock. When once it seizes a collection, probably the best way is to destroy all the plants affected. Those that do not appear to be attacked should be washed with soapy water in which flowers of sulphur has been dissolved. The sulphur will settle at the bottom of the vessel, and must be frequently stirred up when the mixture is being used. Sulphur seems to destroy almost any fungus; and may destroy this in its very earliest stages, but will not when established.

ALYSSUM (*Madwort*). — Rock and alpine plants, the species much resembling

each other. *A. saxatile* (the Rock Madwort or Gold Dust) is one of the most valuable of yellow spring flowers, hardy in all parts of these islands. The colour of its masses of bloom and its vigour have made it one of the best-known plants. It is often grown in half-shady places; but like most rock-plants it should be fully exposed. It is well fitted for the spring garden, and the mixed border, and for association with evergreen Candytufts and Aubrietias. In winter it perishes in heavy rich clays when on the level ground. A native of Southern Russia, it flowers with us in April or May. There is a dwarfer variety,

Alyssum montanum.

distinguished by the name of *A. saxatile compactum*, but it differs very little from the old plant. *A. Gemonense* has the habit of *A. saxatile*, but larger flowers. *A. montanum* is a dwarf plant, spreading into compact tufts, 3 in. high. *A. podolicum* is a small hardy alpine from South Russia. It has in early summer a profusion of small white blossoms and is suited for the rock-garden or the margins of borders. *A. pyrenaicum* is a neat rock-plant with white flowers. *A. spinosum* is a silvery little bush with white flowers. *A. serpyllifolium* is a grey-green leaved form, with yellow flowers. Small plants quickly become Liliputian bushes, 3 in. to 6 in. high; and when fully exposed, are almost as compact as Moss.

Among other kinds sometimes grown are *A. Wiersbecki* and *A. olympicum*, but they are not quite so good as the common kind. The alpine and rock kinds are of easy culture in light or dry soil, as indeed

are all the species. *A. maritimum* is the Sweet Alyssum, a small annual with white flowers, useful as a carpet plant. It grows on the tops of walls in the west country, and in sandy places. In these situations it is perennial, but in gardens is grown as an annual, sowing itself freely. There is a variegated form.

AMARANTHUS (*Prince's Feather*, *Love-lies-bleeding*).—Annual plants, some

Amaranthus (*Prince's Feather*).

of distinct habit and striking colour. The old *Love-lies-bleeding* (*A. caudatus*) with its dark red pendent racemes, is a fine plant when well grown, but *A. speciosus* and some other varieties are finer. The more vigorous species grow from 2 to 5 ft. high. It is best to give them room to spread, otherwise much of their picturesque effect will be lost; and to use them in positions where their peculiar habit may be seen to advantage, as, for example, in large vases and edges of bold beds. Easily raised as any annual, they deserve to be well thinned out and put in rich ground, so that they may attain full size. The foliage of some varieties is very rich in its hues, and planted with *Canna*, *Wigandia*, *Ricinus*,

Solanum, their effect is good. The varieties of *A. tricolor* require a light soil and a warmer place. They do well in gardens by the seaside. Sow the seed in April in a hot bed, pricking out the seedlings in a hot bed, and plant out about the end of May. The cultivated kinds embrace *bicolor*, *tricolor*, *atro-purpureus*. *A. melancholicus ruber*, a useful bedding plant with bright crimson leaves, *A. Henderi*, *A. salicifolius*, and *A. s.* *Princess of Wales* may be used in the summer garden with good effect. *Amaranthus* order. Old and new world.

AMARYLLIS.—Showy bulbous tropical plants few of the species of which are hardy, though the beautiful *Belladonna Lily* (*A. belladonna*) may be grown well in the open air, and is, in fact, almost too free in some soils in Cornwall. It is a noble bulbous plant from the Cape of Good Hope, from 1½ ft. to 3 ft. high, blooming late in summer, the flowers, as large as the white Lily, and of delicate silvery rose in clusters on stout leafless stems, arising from the large pear-shaped bulbs. To grow it in inland and less favoured districts choose a place on the south side of a house or wall, take out the whole of the soil to the depth of 3 ft. and place about 6 in. of broken brick in the bottom. Over this put some half-rotten manure to keep the drainage open, and feed the plant. If the natural soil is not good, add some sandy mellow loam, or if stiff, a few barrow-loads of leaf mould, and one or two of sharp sand mixed with it. Having trod this firm, plant the bulbs in small groups. Each clump should be about 1 foot apart, and if the border is of such a width as to take a double row, the plants in the second should be alternate with those in the first. In planting, place a handful or so of sharp sand round the bulbs to keep them from rotting. If planted in autumn, or at any time during the winter, it will be well to protect them from severe weather by half-rotten leaves, cocoa-nut fibre, or fern. The plants begin to push forth their new leaves early in spring, and upon the freedom with which they send forth these during summer the bloom in the autumn depends. During dry weather give an occasional soaking of water, and with liquid manure once or twice. As soon as the foliage ripens off remove it, and clean the border before the blooms begin to come through the soil. *A. B. blanda* is a variety with larger bulbs, bearing noble umbels of white flowers, turning to pale rose in summer, and there are other varieties.

Amberboa. See CENTAUREA.

AMELANCHIER (*Snowy Mespilus*, *June Berry*).—Pretty hardy shrubs and low trees, or medium sized, associating well with the Almond, Laburnum, the Cherry, Plum, and such things. *A. canadensis* is one of the most precious of our flowering trees, nothing giving better general effect or more distinct, and long before it comes into flower it is pretty with its soft brown-grey masses. It has also the advantage of being perfectly hardy in our country, thriving as well on sands as on stiff soils; and being a Canadian tree, no cold ever touches it. It is more slender in habit than many of our flower-

country it would make the bush more valuable, but whether this prove so or not, there is no prettier thing than a group of this tree, which will grow anywhere we choose to put it, on a rocky bluff or bank, or even fight its way in a copse. It has also the advantage of being raised very easily from seed, and increases rapidly by suckers, so that the grafting nuisance is easily avoided in its case. Other American kinds as yet little grown in our gardens are *Botryapium*, *alnifolia*, *oligocarpa*, *spicata*, and *utahensis*.

AMELLUS.—*A. annuus* is a pretty dwarf hardy annual, with Daisy-like flowers, of a deep purple, but with white.

A group of the Belladonna Lily.

ing trees, and often weakened in the crowded masses of the shrubbery, where everything is so often sacrificed to hungry evergreens. In its own country it varies very much in size, some forms being mere shrubs, whilst others make trees 40ft. and even more in height. In botanic gardens and nursery catalogues we find the names of several other trees of this genus, but there seems to be little distinction among them, and none is quite so good as this, though the one which grows in the Maritime Alps (*A. vulgaris*) should be worth a place. The Americans have selected some forms of the shad bush, which bear better fruit than the common form; if they would bear it in our own

rose, scarlet, and violet varieties, which are named in catalogues *alba*, *rosea*, *kermesina*, and *atro-violacea*. It forms a compact tuft, suitable for groups or masses, if sown in the open in April, flowering in June. It makes a pretty ground or "carpet" plant with taller plants here and there through it. Cape of Good Hope. Compositæ. Syn. *Kaulfussia amelloides*.

AMICIA.—*A. zygozeris* is a quaint plant from Mexico, occasionally used in the sheltered flower garden. Mr. E. H. Woodall praises it: "for those who like a bold and distinct plant in a warm situation in summer, and have means to protect or take it up and pot it in winter. With

me it has stood the cold, rain, and gales far better than the variegated Maize and big Solanums. The flower, though bright, is not large enough to be effective."

AMMOBIUM (*Winged Everlasting*).—*A. alatum* is a handsome Composite from New Holland 1½ to 3 ft. high, bearing white chaffy flowers with yellow discs from May till September. In sandy soil it is perennial, but on heavy and damp soils must be grown as annual or biennial. Seed.

AMORPHA (*Bastard Indigo*).—Hardy shrubs of the Pea order, thriving in ordinary garden soil but requiring a sheltered situation in bleak localities. Increased by layers or cuttings in autumn, or from suckers. *A. canescens* (the Lead Plant) is a native of Missouri. It has clusters of blue flowers and hoary leaves. *A.*

Bastard Indigo.

fruticosa (The False Indigo) comes from California, and there are many forms of it, differing but slightly, all having bluish or dark purple flowers.

Ampelopsis. See VITIS.

ANAGALLIS (*Pimpernel*).—Usually rather pretty and half-hardy annuals of the Primrose family. The best-known is the Italian Pimpernel (*A. Monelli*), with large blossoms, deep blue shaded with rose. There are several varieties—*rubra grandiflora*, *Wilmorea*, bright blue purple, yellow eye; *Phillipsi*, deep blue, rose-coloured centre; *Breweri*, intense blue; *linifolia*, fine blue, very dwarf; Napoleon III., maroon; and *sanguinea*, bright ruby—all flowering from July to September. The Indian Pimpernel (*A. indica*) has small bright blue flowers. It is a hardy annual, but the Italian Pimpernel should be grown as a half-hardy annual. The seed may be sown any time from March till July, the later

sowings to be made in pots and put into a greenhouse or window in autumn. Pimpernels grow well in ordinary garden soil, and are used with good effect in broad masses in borders, or edgings to beds, and make good pot plants. The pretty little bog Pimpernel (*A. tenella*) is a native creeping plant, with slender stems and myriads of tiny pink flowers. It is pretty in suspended pots or pans, and may be grown in the bog or a moist corner in the rock-garden.

ANCHUSA (*Alkanet*).—Stout herbaceous and biennial plants of the Forget-me-Not family; some worth growing, amongst the best being *A. italica*, which is vigorous, 3 to 4 ft. high, with beautiful blue blossoms. *A. hybrida* is similar, about 2 ft. high with flowers of rich violet. *A. capensis* is a pretty plant with large bright blue flowers, rather tender; it should be planted in a sheltered well-drained border. *A. semper-virens* is a British perennial, 1½ to 2 ft. high, with blue flowers, worth a place in the wild garden. Seeds or division.

ANDROMEDA.—Handsome dwarf hardy shrubs of the Heath family, thriving in peaty soil. Various shrubs usually called Andromedas in gardens, belong in reality to several other genera, and there is only one true species of Andromeda known, viz.:—*A. polifolia* (Moorwort), a native of Britain and N. Europe, growing from about 6 to 18 inches high, and bearing purplish-red flowers from May to September. It is best grouped in peat beds or in the bog garden. For allied plants usually known as Andromeda see *Cassandra*, *Cassiope*, *Leucothoe*, *Lyonia*, *Oxydendrum*, *Pieris*, and *Zenobia*.

ANDROSACE.—Alpine plants, of very small stature and great beauty, belonging to the Primrose order. Other families, like Primroses and Harebells, come down to the hill-pastures, the sea-rocks, or the sunny heaths, but these do not. They are more alpine than even the Gentians, which are as handsome in a hill-meadow as on the highest slopes; and as they are, among flowering plants, the most confined to the snowy region, so they are the dwarfiest of this class. Growing at elevations where the snow falls very early in autumn, they flower as soon as it melts. Sometimes, like some other alpine flowers, they frequent high cliffs, vertical, or with portions of the face receding here and there into shallow recesses. Here they must endure intense cold—cold which would destroy all shrub or tree life exposed to it. And here in spring they flower. Their small, often downy, evergreen

leaves retain much more dust and soot than smoother and larger-leaved evergreen alpine plants do, which makes them more difficult of culture near cities than most alpine plants. Androsaces in cultivation enjoy small fissures between rocks or stones, firmly packed with pure sandy peat, or very sandy or gritty loam, not less than 15 in. deep. They should

Androsace sarmentosa.

be so placed that no wet can gather or lie about them, and so planted in between stones that, once well rooted into the deep earth—all the better if mingled with pieces of broken sand-stone—they never suffer from drought. It is easy to arrange rocks and soils so that, once the mass below is thoroughly moistened, ordinary drought has little effect.

A few kinds such as *A. lanuginosa* and *sarmentosa* do well in ordinary conditions of soil; but many of the

Culture. dwarf "mossy" kinds rarely thrive except in northern or hilly districts under conditions more like those of their native haunts. The nature of the rock—whether sand or limestone—is of importance, as failure often results from neglecting this point. As with the mountain Primulas, it is waste of effort to try to grow these plants in any other soil than their native soil. Then again, when out of flower it is easy to forget such tiny plants, so that they may suffer neglect

while making the summer growth. A constant watch is needed for aphids, slugs, and red-spider. Towards autumn syringing them with clear water does good, and a surface-dressing of soil and stone-chips helps before winter, and should be renewed in spring, if need be, when all planting should also be done. When this top-dressing is well done fresh roots are often made from the underside of the prostrate stems, and this is a great gain. The woolly-haired kinds, which often fail from damp in our winters, should be planted in the crevices of upright rocks, or under protecting ledges; where this is not possible it is a great help to cover them from October to March with a tilted glass, to ward off rain and cold dews, while allowing a free play of air. The rocks among which they are planted should be well sunk in the ground with thin layers of good soil and broken stone between them; the roots of the *Androsace* delight in the layer of moist earth just under stones. Most kinds thrive in full sun, the best aspects being south and west. While a few kinds may be raised from runners and cuttings, and some others from division, many sorts can only be grown from seed sown in sandy peat as soon as ripe. Over forty species of *Androsace* are known and others may be found when the mountains of India, Thibet, and China are fully explored. About twenty kinds are found in the Alps, some extending eastward by way of Austria, or southward to the Pyrenees, where four others occur peculiar to that country. A large group belongs to the Himalayas and reaches thence to China; of these about thirty kinds have been described, of which a few have reached our gardens, but the larger number are not in cultivation. They may be divided into two groups; one including such easily grown kinds as *A. lanuginosa* and *sarmentosa*; and a second group forming stemless tufts and found only in rocky clefts. Those of the first group will often thrive in level borders of free soil, and root from cuttings, or division; the mossy kinds are best upon the rocks and are raised solely from seed. The following list gives the best kinds in cultivation and of value for the choicer parts of the rock-garden:—

Androsace Albana.—One of the mossy kinds, forming small rosettes of deeply-toothed oval leaves and dense heads of pale pink flowers from April to July.

A. alpina.—A gem for the rock-garden but not easily grown. Its tiny tongued-shaped leaves are in crowded rosettes, forming cushions of 2 or 3 inches high covered in June with

flowers—one from each rosette—rosy-purple with a yellow centre. It needs peat soil, moisture at the root, and a rather shady spot; its leaves should be kept dry by planting in a wall or between upright stones. Syn. *A. ciliata*.

A. brigantiaea.—A pretty plant thriving only in sandy or granite soils and upon slopes shaded from strong sun. It comes very near *A. carnea*, but with leaves of deeper green, and pure white flowers.

A. carnea.—One of the best kinds, early in flower, free, and easily grown in light soils without lime; being less dense and woolly than many sorts it is not so apt to “damp off” in winter. It does not form rosettes but little spreading shoots covered with narrow pointed leaves of grey-green, and heads of rosy or pink flowers with a yellow eye. Water freely in dry weather, and shelter from the sun in summer.

A. ciliata.—A scarce plant from the Pyrenees, growing in small, dense columns of deep green leaves fringed along the edges, and crowned in April and May by large stemless flowers of bright rose. Granite soils.

A. cylindrica.—Though classed as a species this little plant is very like the last and comes from the same region. It forms mossy tufts of rounded cone-like columns less than an inch high, covered thickly with hairs, with white flowers nestling in the centre during April and May. Pyrenees. Syn. *A. frutescens*.

A. foliosa.—One of the Himalayan kinds, beautiful in flower, and of free growth when well established, making tufts a foot across in one season. The leaves are not crowded into rosettes but are large upon erect or trailing stems, grey with pale hairs, and turning reddish-purple in the autumn. The rosy-red

Androsace Sarmentosa (engraved from a group on rock-garden at Friar Park).

Alps and Pyrenees, 6,000 to 8,000 feet. Seeds, sown as soon as ripe. Syns. *A. Lachenalii*, and *puberula*.

A. carnea var. *eximia*.—A form of the last, hardier, more robust, and with larger flowers. It grows quickly into tufts 3 inches high, and if encouraged by dressings of light and gritty soil the prostrate shoots send roots from the under side.

A. caucasica.—A pretty little plant, new as yet, and hardly known. Narrow leaves in dense rosettes, with heads of bright pink flowers upon very short stalks, during summer. Caucasus.

A. Charpentieri.—One of the choicest of alpine plants, free in flower, and of strong growth in sandy soils. Rosettes of tiny, downy leaves in crowded masses, and rich rosy flowers hardly rising above the leaves in June and July, after other kinds have done flowering. Thrives best in crevices of sandstone or granite rock, facing south-west. Seed. Alps. Syn. *Aretia brevis*.

flowers come upon long stems from June to September, and are large and in clusters sometimes of fifty flowers, lasting for a long time in beauty. In good years seed ripens, and the plant is easily grown from cuttings taken in autumn and rooted in a cold frame, or from offsets struck singly in small pots. It thrives in limestone soil, made light with leaf mould and grit, and mixed with plenty of broken fragments; in full sun, with moisture to the root in summer. Himalaya.

A. glacialis.—In its wild state one of the most beautiful, growing in loose flat tufts or branching stems clothed in downy leaves, and covered during early spring with flowers of pink paling to white. Thrives in clefts of sandstone rock, in full sun. Seeds. Alpine summits (always granite) at 6,000 to 9,000 feet.

A. Hausmanni.—Related to *A. helvetica*, but of looser habit and flowers of soft pink. Summits of the Tyrol, at 6,000 to 8,000 feet.

A. Heerii.—A very rare plant found only upon the Martinsloch in Switzerland, and a supposed cross between *helvetica* and *glacialis*. Tiny saucer-shaped flowers of bright red, and intermediate habit. Syn. *A. bryoides*.

A. helvetica.—A charming plant of the mossy section, growing in neat rounded cushions of grey-green, hairy leaves set in rosettes, and lovely white flowers with a yellow eye. The flowers are so large as often to overlap. Thrives in gritty soil and partial shade, planted between limestone rocks closely set and deeply buried to secure moisture and drainage at the same time. Seeds. Alps and Carpathians.

A. Hookeriana.—A little-known kind from the Himalayas of Sikkim, Lachen, and Donkiala, at a height of 15,000 feet. Though hardy, it is apt to damp off in our winters and should be planted in a mixture of peat and sand among rocks sheltered from wet. It has rosettes of oval, shining green leaves, and in spring deep pink flowers in small clusters.

A. imbricata.—Pretty in leaf and flower, coming very near *A. helvetica* but of denser growth, leaves narrower and silvery white with fine hairs, and white flowers set off by a bright rosy eye. Thrives in granite or sandstone grit in full sun. Seeds. Syn. *A. argentea*.

A. lactea.—A free, strong-growing plant, making rosettes of shining green leaves, and in spring large white flowers with a yellow centre, in broad loose clusters of five or six. Easily grown in light limestone soil, in sun or partial shade. Seeds. Limestone rocks from 3,000 to 4,500 feet, from the Cevennes, through the Alps into Austria. Syn. *A. pauciflora*.

A. lactiflora.—A biennial species from Siberia; raise from seed in autumn, winter in a cool frame, and plant out in spring. The white or pale blue flowers are borne in large loose clusters of pretty effect during summer. Syns. *A. coronopifolia* and *alismoides*.

A. Laggeri.—With clusters of narrow pointed leaves, and flowers of bright pink paling towards the centre, gathered into showy little heads of six or eight. Very hardy, it is one of the earliest alpine flowers to open, starring the green tufts like a miniature Thrift. Sandy soil in partial shade, and no lime. Seeds or cuttings. Pyrenees.

A. lanuginosa.—A lovely and distinct plant with trailing silvery shoots, leaves covered with silky hairs, and flower clusters of soft rose colour. It does best in warm places near the sea, planted in sunny corners of the rock-garden. Where the soil is free and open it thrives as a border plant; where the soil is too heavy, it may be grown on "dry" walls against moist earth banks. It has a long season of flower, even lasting into October, growing best in south and west aspects, in sandy soils (or even chalk). Seed (which ripens only in good years), layers, and cuttings. A good form of this is *Leichtlini* (syn. *oculata*) with larger flowers of deeper colour with a conspicuous eye. From 7,000 to 10,000 feet. Himalaya.

A. macrantha.—A rare kind from Armenia, with rosettes of narrow, horny-tipped leaves.

and clusters of large pure white flowers, borne upon stout stems.

A. maxima.—Unlike others of the group this is a lowland plant, growing in mountain valleys of France, Switzerland, and the Pyrenees. Flowers white, with a yellow throat.

A. obtusifolia.—Robust and easily grown, with large rosettes of spoon-shaped leaves fringed by fine hairs, and short downy stems carrying from one to six white or rosy flowers with a yellow eye. It is nearly 6 inches high, and may be gathered by the handful upon the alpine slopes at midsummer. With us it flowers earlier, planted in peaty soil and in full sun. Alps and Carpathians. Syns. *A. aretioides* and *brevifolia*.

A. pubescens.—A mossy kind with leaves turning red-brown in autumn. It may be known by a small swelling on the very short flower-stem, just below the flower. These are white, rather large, with a faint yellow eye, and come singly just above the little cushion of hoary leaves covered with star-like hairs. It is a lovely little plant, pretty at all seasons, of easy culture in crevices of sandy soil. Alps.

A. pyrenaica.—One of the same mossy group, with tiny grey rosettes in dense tufts, one flower from every centre, white like *helvetica* but less pure, not so well formed, and upon short stems. It is not easy to grow well but does best in deep fissures between upright rocks; it may also be grown on the flat, in peat and sandy loam between buried stones. Central Pyrenees. Syn. *Aretia pyrenaica*.

A. rotundifolia.—A Himalayan plant rarely well grown in gardens, very distinct, with rounded kidney-shaped leaves, deeply cut at the edges, and flowers of lilac or dull purple in crowded heads. Nepaul. Syns. *A. cordifolia*, and *incisa*. A form known as *macrocalyx* is more robust, softly hairy all over, with heads of pale rose flowers and a spreading calyx.

A. sarmentosa.—Leaves silvery with hairs, in dense rosettes, from which spring a few larger spoon-shaped leaves around the base of the flower-stem, and slender runners which spread and root in all directions. This kind spreads fast, when kept from damping by a layer of fine stones under the shoots and a glass shade in winter. It thrives in free limestone soil, firmly wedged between masses of rock in a sunny spot. The runners are easily layered and detached when rooted. There are several named forms, including *grandifolia*, *Watkinsi*, and *primuloides*, but only the last, with pretty pale lilac flowers, appears to be in cultivation. The plant usually known as var. *Chumbyi* is now classed as a cross between *sarmentosa* and *villosa*. It is of stouter habit, rooting quite as freely from runners, less apt to damp, with flowers of deeper colour. Himalaya.

A. sempervivoides.—A rare plant, pretty, easily grown, spreading by runners, and bearing clusters of pink or purplish flowers upon a stout stem in May and June. Its tiny leaves curl in dense cone-like rosettes, at times only half an inch across, but often larger in gardens: the new shoots only take this curled form as

they mature. This is one of the best of the Indian kinds, quite hardy, and growing well upon mounds of granite soil packed with stones. Kashmir and Western Thibet, at 11,000 feet.

A. septentrionalis.—A biennial species and another of the few kinds found at lower levels among the eastern Alps. Small flowers of white or pink, with yellow throat.

A. strigilosa.—Dense rosettes of rigid, spiny leaves, and heads of pretty pink flowers in May. It yields no runners and few offsets, but may be raised from seed and grown in rich peaty soil, well drained and in full sun.

A. villosa.—A plant of wide range, from the Alps and Pyrenees eastward to Kashmir and the Himalayas, where it grows at elevations of 12,000 to 17,000 feet. The western form is dwarf, with neat rosettes of shaggy leaves so thickly set with white or pale pink flowers that for the time the plant lies hidden. The Indian variety is of larger growth and blooms later, its leaves silvery with long white hairs, and loose heads of flowers with a raised ring of darker colour at the centre. Plant in good free soil, with lime rubble and sandstone fragments to keep it well drained. The downy leaves need shields of glass in winter. Syns. *A. capitata* and *penicillata*. Seed and runners.

A. villosa var. *Chamæjasme*.—A beautiful alpine plant known as the Rock Jasmine, inhabiting a vast range through Europe, Asia, North Africa, and the Arctic regions. Though like *villosa* in flower it differs from it in leaf and habit, with a branching rootstock, spreading clusters of fringed leaves, and stout flower stems several inches high bearing three to six flowers. These change from white to yellow, pink, and crimson, opening from May to June, and borne in long succession. It is one of the best and easiest of rock plants to grow in open soil, mixed and surfaced with broken lime rubbish or slate dust, thriving in full sun. It flowers well in pots in a cool house, and should be watered freely in dry weather to keep away red-spider. There are several distinct forms:—*Uniflora*, from the Himalaya, has only one or two flowers upon its short stems; and *coronata*, from a height of 16,000 or 17,000 feet in Western Thibet, differs in its dwarfed growth, and flowers with a dark eye. Seeds.

A. vitaliana.—This is now known as *Douglasia*; but its changes from *Aretia* to *Primula*, *Gregoria*, and other groups have been so many that it is doubtful whether this newest name will last. It is a pretty rock-

plant, like a tiny Furze bush hardly an inch high, with silvery leaves dusted over with white powder, and many flowers borne singly—large for so small a plant—in March or April, of a fine yellow. It is useful with plants of this group, thriving under the same conditions, and distinct in colour. Disliking dry or heavy soils, it does best in full sun, set in buried stones and free sandy loam mixed with pebbles and heath soil. Runners, and seeds. Alps, Pyrenees, and sierras of Spain.

A. wulfeniana.—A scarce plant with densely hairy leaves and deep rosy flowers upon short stems just topping the leaves and completely covering the dense cushion-like mass. Soil, sand and leaf-mould in half-shade; should be

Androsace villosa.

freely top-dressed at intervals. Granite rocks of the Tyrol. Seeds.

ANDRYALA.—Small plants of the Dandelion order; some with woolly leaves. The shrubby *A. mogadorensis* forms snowy masses on a little islet on the Morocco coast, and has not been found elsewhere. It bears flowers as large as a half-crown, of a bright yellow, the disc being bright orange. Little is known of its culture and hardiness. *A. lanata* has woolly silvery leaves, and grows well in any soil not too damp.

ANEMONE (*Windflower*).—A noble family of tuberous alpine meadow and herbaceous plants, of the Buttercup family, to which is due much of the beauty of spring and early summer of northern and temperate countries. In early spring, or what is winter to us in Northern Europe, when the valleys of Southern Europe and sunny sheltered spots all round the great rocky basin of the Mediterranean are

beginning to glow with colour, we see the earliest Windflowers in all their loveliness. Those arid mountains that look so barren have on their sunny sides carpets of Anemones in countless variety. These belong to old favourites in our gardens—the Garland Windflower and the Peacock Anemone. Later on the Star Anemone begins, and troops in thousands over the terraces, meadows, and fields of the same regions. Climbing the mountains in April, the Hepatica nestles in nooks all over the bushy parts of the hills. Farther east, while the common Anemones are aflame along the Riviera valleys and terraces, the blue Greek Anemone is open on the hills of Greece; a little later the blue Apennine Anemone blossoms. Meanwhile our Wood Anemone adorns the woods throughout the northern world, and here and there through the brown Grass on the chalk hills comes the purple of the Pasqueflower. The Grass has grown tall before the graceful Alpine Windflower flowers in all the natural meadows of the Alps; while later on bloom the high alpine Windflowers, which soon flower and fruit, and are ready to sleep for nine months in the snow. These are but few examples of what is done for the northern and temperate world by these Windflowers, so precious for our gardens also.

A. alpina (*Alpine Windflower*).—On nearly every great mountain range in northern climes this is one of the handsomest plants, growing 15 in. to 2 ft. high. It grows more slowly in gardens than most of the other kinds, and should have deep soil. *A. sulphurea* is a fine variety. Many fail with it through transplanting in autumn and winter. Seed is the best way to increase it. Sow this in November in a rather moist peaty bed out-of-doors and allow the seedlings to remain for two years. When growth commences in spring transplant to where they are to flower. Full exposure, good drainage, and moisture in summer are essential.

A. angulosa (*Great Hepatica*).—Larger than the Hepatica, with sky-blue flowers as large as a crown-piece, and five-lobed leaves. In rock-gardens, or near them, it will succeed in spaces between choice dwarf shrubs in beds. Seed and division. Transylvania.

A. apennina (*Apennine Windflower*).—A free blue and hardy kind scattered among the native Anemones in our woods, or making pictures with Daffodils, adds a new charm to our spring. It is readily increased by division, and grows

about 4 in. to 9 in. in height. Besides a white form there are others, not so important, however, as the wild one. Italy.

The Blue Apennine Windflower.

A. blanda (*Blue Winter Windflower*).—A lovely plant from the hills of Greece, of a fine blue, and blooming in winter and early spring. It should be grown in every rock-garden, planted on banks that catch the early sun, whilst it may be naturalised in Grassy places in warm soil. It is distinguished by round and bulb-like roots; increased by division and seed, and varies in size and colour. There are white, rose and pink vars. Greece, Asia Minor.

A. coronaria (*Poppy Anemone*).—One of the most admired flowers of our gardens from earliest times. There are many varieties, single and double. The single sorts may be readily grown from seed sown in the open air in April, and, being varied in fine colour, they deserve to be cultivated, even more than many of the doubles. The planting of the double varieties may be made in autumn or in spring, or at intervals all through the winter, to secure a continuity of flowers; but the best bloom is secured by October planting. The Poppy Anemone thrives in warm deep loam, and the roots of the more select kinds may be taken up when the leaves die down. They are, however, seldom worth this trouble, as many fine varieties may be grown from seed sown in June. Prick out the plants in autumn: they will flower well in the following spring, so that the plant is as easily raised as an annual. Apart from the old florists' or double Anemones and the single ones, there are certain races of French origin of much value—the Anemones de Caen, for example. These are raised

from the same species, but are more vigorous and have larger flowers than the older Dutch kinds. Of the Caen Anemones there are both single and double kinds, and the Chrysanthemum-flowered is another fine double race, whilst one may also note the deep scarlet double form—Chapeau de Cardinal, and the double Nice Anemones. The fine variety of the Poppy Anemones leads to mixed collections being grown. While it is well to plant mixtures now and then, it is better to select and keep true some of the finer forms in any desired colour. A fine scarlet, purple, or violet should be grown by itself and for itself, as in that way the Poppy Anemone will be a greater aid to the garden artist. All kinds thrive in light garden soils of fair quality, and in many districts there is no trouble in their culture; in others this plant never does well and is often killed in winter. By resorting to spring planting we avoid this last. The plan is not worth following out, especially as we have so many really hardy species introduced of recent years. The St. Bridgid Anemones, like those of Caen and Nice, are simply selections from the Poppy Anemone, depending for their value on care in selection, and also on good culture in the warm limestone soil the plants enjoy so well.

The following method will enable any one to raise Anemones from seed in a moist loam. To save time, I sow as soon as the seed is ripe, selecting it from the brightest flowers only. Separate the seed thoroughly. Spread a newspaper on the table, pour over it a quart of sand, dry ashes, or fine earth, and sprinkle the seed over this, rubbing it together till its separation is complete. The seed bed need not be larger than 3 ft. by 9 ft., and choose the sunniest part of the garden. Make the surface fine, tread it down, and give it a good watering. Wait until it is dry enough to scratch with a fine rake; then sow broadcast, covering the seed with a very thin coat of fine earth, about the thickness of a shilling; beat flat with a spade, and give a light sprinkling of water. Never let a ray of sunshine reach the bed; cover it with newspapers, spreading a few Pea sticks or something to retain the covering in its place. Keep the surface of the bed moist. In about twenty days the young plants will begin to appear, and when all seem up, remove the covering; they will need no further care except watering. If the bed once gets thoroughly dry, the plants are apt, after forming small bulbs about the size of Peas, to stop growing, the foliage to die,

and the bulbs to lie dormant for months. If kept, however, well watered through the summer, they will go on growing through the winter, and begin to blossom the following spring. The seedlings may be left to blossom where they are sown or be transplanted in September or October.—J.

What are termed French Anemones are thought an improvement on the Dutch, with large flowers of brilliant and varied colour; the plants vigorous, the climate of Normandy in some parts suiting the plant; but in our country, away from the sea, the Poppy Anemone may perish in cold weather.

Poppy Anemones, double and single, are useful for edgings and for borders either singly or in tufts. They are cultivated alone in beds or in clumps in borders, and answer well for planting under standard Rose Trees or other light and thinly planted shrubs. Cut the flowers when just open.

A. fulgens (*The Scarlet Windflower*).—A native of the south of France, over a limited area, for the most part in vineyards. It withstands severe frosts in the open border, but stagnant moisture injures it. In good well-drained soils it will thrive, but is best in a rich manured loam in a northern aspect and in a shaded situation. Division is the surest way of increasing it, as it is liable to sport if raised from seeds. Roots may be transplanted almost all the year round, though the resting time extends only from June to August, and to insure early and good flowers plant the roots as early as possible in the autumn. A large bed of well-grown plants in bloom is a brilliant sight. The flowers last indoors for a week or more if cut when just coming into bloom and kept in water in a moderately warm room.—H. V.

The Greek form of *A. fulgens* is larger, and very intense in colour. A fine strain was raised by the late Rev. J. G. Nelson, and called by him *A. fulgens major*. The Peacock Anemone (*A. Pavonina*) is a double form of this.

A. Hepatica (*Common Hepatica*).—A beautiful early hardy flower. In sheltered spots on porous soil the foliage will remain through the winter. The Hepatica is a deep rooter—hence it thrives so well upon made banks, and it will do as well as Primroses or Violets in any good garden soil. Where let alone, and not often pulled to pieces, it makes strong tufts. Clumps of the rich-coloured blues and reds when a mass of bloom in March are very beautiful. The best-known kinds are the double red and single blue, both

amongst the hardiest of the section. Then there are the single white ; single red ; double blue, rich in colour ; *Barlowi*, a rich-coloured sport from the single blue ; *splendens*, a single red ; *lilacina*, a pretty mauve kind ; and some others—every variety being worthy of culture.

Anemone japonica alba.

A. japonica (*Japan Anemone*).—A tall autumn-blooming kind, 2 ft. to 4 ft. high, with fine foliage and large rose-coloured flowers. The variety named Honorine Jobert, with pure white flowers, is a beautiful plant ; and all good forms of the plant should be cultivated where cut flowers are required in autumn. By having some on a north border, and some on a warm one, the bloom may be prolonged. The secret of success seems to be to prepare at first a deep bed of rich soil and to leave the plants alone.

The various forms of the Japan Anemone are useful for borders, groups, fringes of shrubbery in rich soil, and here and there in half-shady places by wood walks.

A. nemorosa (*Wood Anemone*).—In spring this native plant adorns our woods, and also those of nearly all Europe and N. Asia, but so abundant in the British Isles that there is no need to plead for its culture. There are double varieties,

and the colour of the flower is occasionally lilac, or reddish, or purplish.

A sky-blue variety, *A. Robinsoniana*, is of easy culture and much beauty, especially if seen when the noon-day sun is on the flowers. It is useful for the rock-garden in wide-spreading tufts ; or for the margins of borders, or as a ground plant beneath shrubs, or for the wild garden or for dotting through the Grass in the pleasure-ground in spots not mown early. Other forms worth growing are *Connubiensis*, the blue wild Welsh form, and a large white form.

A. palmata (*Cyclamen-leaved Anemone*).—A distinct kind, with leathery leaves and large handsome flowers in May and June, glossy yellow, only opening to the sun. A native of N. Africa and other places on the shores of the Mediterranean. This charming flower should be planted in deep turfy peat, or light fibrous loam with leaf-mould, but not placed on the face of rocks, but rather on level spots, where it can root deeply and grow into strong tufts. There is a double variety. This Anemone may be increased by either division or seeds.

A. Pulsatilla (*Pasque-flower*).—There are few sights more pleasant to the lover of spring flowers than the Pasque-flower just showing through the dry Grass of a bleak down on an early spring day. It is smaller in a wild than in a cultivated state, forming in the garden strong healthy tufts, but it is one of the plants more beautiful in a wild state than in a garden. In Normandy with Mr. Burbidge I came upon many plants of it on the grassy

Pasque-flower (Anemone pulsatilla).

hill about Château Gaillard and also in the woods and by the roads near, and we thought we had never seen so fair a

wild flower. There are several varieties, including red, lilac, and white kinds, but they are not common, and there is also a double variety. It prefers well-drained and light but deep soil, and is increased by division or seeds.

A. ranunculoides (*Yellow Wood Anemone*).—Not unlike the Apennine and the Wood Anemone in habit, this is distinct in its yellow flowers in March and April. It is S. European, and less free on common soils than the Apennine A., but is happier on chalky soil.

A. stellata (*Star Windflower*).—The star-like flowers of this, ruby, rosy purple, rosy, or whitish, vary in a charming way, and usually have a large white eye at the base, contrasting with the delicate colouring of the rest of the petals, and the brown violet of the stamens and styles of the flower. It is not so vigorous as the Poppy A., and requires a sheltered warm position, a light, sandy, well-drained soil. Division and seeds. Syn. *A. hortensis*: S. Europe.

A. sylvestris (*Snowdrop Windflower*).—A handsome plant, about 15 in. high, with large white flowers in spring and beautiful buds. Hardy and free on all soils, but fails to bloom on some cool soils. The aspect of the drooping unopened buds suggested its English name—the Snow-drop Anemone. Division.

A. thalictroides (*Thalictrum anemonoides*).

The previously named Anemones are the most beautiful of the family, which, however, contains many other interesting plants, but many of the higher Alpine kinds are grown and increased with difficulty and only in carefully chosen situations. Some again, however distinct as species, are not strikingly so in gardens, and for the flower-gardener the best way is to make good use of the proved species. The lovers of alpine flowers will no doubt look with a longing eye over the following names of the species, while no doubt many unknown species adorn the vast solitudes of Asia and Arctic America and probably other countries too.

Known species.—*A. acanthifolia*, Hab? *acutiloba*, N. America; *æquinoctialis*, Peru; *albana*, N. Asia; *alchemillefolia*, S. Africa; *alpina*, Europe, N. America; *altaica*, Siberia; *angulosa*, E. Europe; *anomala*, N. America; *antucensis*, Chili; *apennina*, S. Europe; *armena*, Asia Minor; *baicalensis*, Asia; *baldensis*, Switzerland; *barbulata*, China; *Bauhini*, Europe; *biflora*, Himalayas; *blanda*, E. Europe; *Bognerhardiana*, Europe; *Bongkana*, Siberia; *cælestina*, China; *cærulea*, Siberia; *caffra*, S. Africa; *capensis*, S. Africa; *cernua*, Japan; *chincensis*, China; *coronaria*, S. Europe; *crassifolia*, Tasmania; *cylindrica*, N. America; *dahurica*, Temp. Asia; *debilis*, Siberia; *decapetala*, N. W. America; *deltoides*, N. W. America; *demissa*, Himalayas; *dichotoma*, N. Asia and N. America; *Drummondii*, California; *elongata*, Himalayas; *cranthoides*, Temp. Asia; *exigua*, China; *Falconeri*,

Himalayas; *Fannini*, Natal; *Fischeriana*, Siberia; *flaccida*, China; *formosa*, Asia Minor; *fulgens*, S. Europe; *Glazioviana*, Brazil; *Gmeliniana*, Siberia; *gracilis*, Japan; *Grayi*, California; *Griffithi*, Himalayas; *Halleri*, Switzerland; *helleborifolia*, S. America; *Hepatica*, Europe, N. America; *hepaticifolia*, Chili; *heterophylla*, N. America; *integrifolia*, Cent. America; *isopyroides*, Sibirica; *Jamesoni*, Ecuador; *Jankæ*, Transylvania; *japonica*, Japan; *lineariloba*, Kamtschatka; *mexicana*, Mexico; *minuta*, Siberia; *montana*, S. E. Europe; *multifida*, N. and S. America; *narcissiflora*, Europe, N. Asia, N. America; *nemorosa*, Europe, N. Asia, N. America; *nikoënsis*, Japan; *obtusiloba*, Himalayas; *ochroleuca*, Switzerland; *octopetala*, Hab? *palmata*, S. Europe; *parviflora*, N. America; *patens*, Europe, N. America; *Pavoniana*, Iberia; *Pittoni*, Europe; *polyanthes*, Himalayas; *pratensis*, N. Europe; *Pulsatilla*, Europe; *Raddeana*, Amur; *ranunculoides*, S. Europe; *reflexa*, Siberia; *Richardsoni*, Arctic America; *rigida*, Chili; *rivularis*, E. Indies; *Rossii*, China; *rupestris*, Himalayas; *rupicola*, Himalayas; *Sellowi*, Brazil; *sibirica*, Siberia; *slavica*, Europe; *speciosa*, Caucasus; *sphenophylla*, Chili; *stolonifera*, Japan; *sumatrana*, Sumatra; *sylvestris*, S. Europe; *tenuifolia*, S. Africa; *tetracpala*, Himalayas; *thalictroides*, N. America; *Thomsoni*, Trop. Africa; *transylvanica*, Europe; *trifolia*, Europe, N. America; *tritermata*, S. America; *trullifolia*, Himalayas; *Tschernaeui*, Temp. Asia; *udensis*, Manchuria; *umbrosa*, Siberia; *vernalis*, Europe; *virginiana*, N. America; *vitifolia*, Himalayas; *Wahlenbergii*, Europe; *Waltcri*, N. America; *Wightiana*, E. Indies; *Wolfgangiana*, Europe.

ANOMATHECA (*Flowering grass*).—

A. cruenta is a pretty little South African bulb of the Iris order, from 6 to 12 in. high, flowers $\frac{1}{2}$ in. across, carmine crimson, three of the lower segments marked with a dark spot; in loose clusters on slender stems and Grass-like leaves. Hardy on warm soils, but in others it should be planted on slopes, in very sandy dry soil or on warm borders; the bulbs planted rather deep. In many soils it increases rapidly. Syn. *Lapeyrousia*.

ANOPTERUS GLANDULOSA.—A vigorous evergreen shrub with dark, shining green leaves, bearing long, erect, terminal racemes of white cup-shaped flowers, resembling the blossoms of *Clethra arborea*, but larger. Said by Mr. Fitzherbert to thrive in Cornwall. Tasmania.

ANTENNARIA (*Cat's-ear*).—Mostly hardy alpine or border flowers. *A. margaritacea* is a North American plant, 2 ft. high, with flowers in clusters, white and chaffy, hence kept in a dry state and dyed in various colours. The pretty but rare *A. triplinervis* from Nepal is closely allied to this plant. The Mountain Cat's-ears, *A. dioica* and *A. alpina*, and such forms as *A. minima*, are neat little plants with whitish foliage, used as carpeting. All are of simple culture in ordinary soil in exposed positions. These are good rock garden plants and the pretty little rosy heads of one form of the Mountain Everlasting may often be seen in the cottage gardens of Warwickshire. *A. tomentosa* has been much used as a dwarf silvery plant in the flower garden.

ANTHEMIS (*Rock Camomile*).—Vigorous perennials and rock plants. Of the kinds in cultivation *A. Aizoon* is a dwarf silvery rock-plant, 2 to 4 in. high, with Daisy-like flowers. *A. Kitaibeli* is pretty in the mixed border, with large, pale, lemon-coloured, Marguerite-like flowers. *A. tinctoria* is similar, and both are excellent for cutting, growing very freely in ordinary soil. The double-flowered form of the Corn Camomile (*A. arvensis*) is sometimes cultivated among annual plants. *A. Biebersteini* forms dense carpets of silvery leaves with large and handsome yellow blossoms one on a stem. *A. Macedonica* is a neat species with

* *Anthemis Macedonica*.

white flowers, excellent as a rock-garden plant. There is also a variety called *A. nobilis*.

ANTHERICUM (*St. Bruno's Lily*).—Bulbous plants of the Lily family, containing a few species hardy in this country. These are the European kinds, among the most beautiful of hardy flowers. *A. Hookeri* (*syn. Chrysobactron*) is a distinct New Zealand plant, 15 to 20 in. high, with bright yellow flowers, in long spikes in early summer. It grows best in moist deep soils. *A. Liliago* (*St. Bernard's Lily*) is about 2 ft. high, with white flowers in early summer. *A. ramosum* has flower stems about 2 ft. high, much branched, and small white flowers. *A. Liliastrum* (*St. Bruno's Lily*) is a graceful alpine meadow plant in deep free sandy soil, in early summer throwing up spikes of snowy-white Lily-like blossoms. In dry soils a covering with rotten manure helps it, and in early spring the plants should be protected from slugs and caterpillars. Division of the roots in autumn, or it may be raised from seed. The major variety of the *St. Bruno's Lily* has much larger flowers (2 in. across) coming up from the root, these opening before the flowers on the spike. It grows

3 ft. high in good soil, and is a fine border plant.

ANTIRRHINUM (*Snapdragon*).—A numerous family of rock plants and perennial herbs, mostly hardy and many of them from mountainous regions, but none so popular in gardens as the handsome Snapdragon (*A. majus*) which like the wallflowers often grows on walls and stony places. There are many species, but they do not take a large place in gardens, among the best being *A. Asarina* and *A. rupestre*. Of the common Snapdragon, the garden varieties are now numerous, and often showy in effect, the best being the pure colours (*i.e.*, not striped).

CULTIVATION.—Snapdragons are easy of cultivation, sandy and free soils suiting them. They are sown: (1) In August in the place where they are to grow, or preferably in seed-beds, in which latter case plant close to a south wall, sheltering from continued frosts with dry leaves or straw, planting out in spring 16 in. to 24 in. apart. (2) In June or July in seed-beds in a well-exposed position, planting out the seedlings in the spring. (3) In seed-beds (March to April) at the foot of a south wall. Transplant when the plants are sufficiently developed, and they may also be transplanted to seed-beds and planted out when the flowers commence to show themselves. By means of successive sowings it is possible to obtain an almost uninterrupted bloom from June until frost comes. Snapdragons are also propagated by cuttings made in the spring or summer, and even during the whole of flowering time. As with a great number of plants, the colour of the stems and leaves of the young plants may to a certain point indicate to us what the colour of the flowers will be. Thus, kinds with green or light-coloured stems and leaves will have in nearly all cases white, or mainly white flowers, or of which the colour is undecided; whilst of the plants which produce flowers of a decided colour the stems and the leaves are of a pronounced green tint, more or less purple or ruddy also.

APONOGETON (*Cape Pond-flower*).—*A. distachyon* is a beautiful and fragrant water-plant from the Cape of Good Hope, hardy in many parts of these islands. About London during the late severe winters there has been no more interesting sight than the profuse bloom of this plant in spring, and in cold districts it is necessary, for the perfect culture of this plant in the open air, to grow it in spring or other water that does not freeze; but

in mild districts this is not needed. It may be flowered in an inverted bell-glass in a room. In Devonshire it is grown to greater perfection than in the home counties. Failures often result from put-

Aponogeton (Cape Pond-flower.)

ting it in too shallow water. There is a variety (*roseus*) with rosy tinted blossoms. *A. spathaceum* is a poor form with flowers tinged with rose. *Naiada-ceæ*.

AQUILEGIA (*Columbine*). — Alpine rock and meadow perennials of the Buttercup order, often beautiful and widely distributed over the northern and mountain regions of Europe, Asia, and America. They are of great variety in colour—white, rose, buff, blue, and purple, and also stripes and intermediate shades, the American kinds having yellow, scarlet, and most delicate shades of blue flowers. The Columbines are frequently taller than most of the plants strictly termed alpine, but are nevertheless true alpine plants, and among the most singularly beautiful of the class. Climbing the sunny hills of the sierras in California, one meets with a large scarlet Columbine, that has almost the vigour of a lily, and in the mountains of Utah, and on many others in the Rocky Mountain region, there is the Rocky Mountain Columbine (*A. cærulea*), with its long and slender spurs and lovely cool tints, and there is no family that has a wider share in adorning the mountains. Although our cottage gardens are alive with Columbines in much beauty of colour in early summer, there is some difficulty in cultivating the rarer alpine kinds. They require to be carefully planted in sandy or gritty though moist ground, and in well-drained ledges in the rock-garden, in half-shady positions or northern exposures. Most rare Columbines, however, fail to form enduring tufts in our

gardens, and they must be raised from seed as frequently as good seed can be got. It is the alpine character of the home of many of the Columbines which

A white Aquilegia.

makes the culture of some of the lovely kinds so uncertain, and which causes them to thrive so well in the north of Scotland while they fail in our ordinary dry garden borders. No plants are more

capricious ; take, for instance, the charming *A. glandulosa*, grown like a weed at Forbes, in Scotland, and so short-lived in most gardens. Nor is this an exception ; it is characteristic of all the mountain kinds. The best soil for them is deep, well-drained, rich alluvial loam. It is probable many of the species are biennial, and that it is necessary to raise them from seed frequently ; and to avoid the results of crossing it is better to get the seed, if we can, from the wild home of the species. The seeds should be sown early in spring, and the young plants pricked out into pans or into an old garden frame as soon as they are fit to handle, removing them early in August to the borders ; select a cloudy day for the work, and give them a little shading for a few days.

A. alpina (*Alpine Columbine*).—A beautiful high mountain plant 1 ft. to 2 ft. high, with showy blue flowers, and there is a lovely variety with a white centre to the flower. In the rock-garden in a rather moist and sheltered, but not shady, spot in deep sandy loam or peat. Seed or division.

A. Bertoloni.—A pretty little alpine, about 1 ft. high, with violet-blue flowers, having short knobby spurs.

A. californica (*Californian Columbine*).—One of the finest of the American species, with one bold woody stem, 3 ft. high, and handsome, bright orange flowers. The seeds should be carefully looked after, as having once blossomed the old plant may perish. This plant thrives best on a deep sandy loam and moist.

A. canadensis (*Canadian Columbine*).—The flowers are smaller than the Western American kinds ; but this is compensated for by the brilliancy of the scarlet colour of the sepals and of the erect spurs, and by the bright yellow of the petals. The true plant is a slender grower, 1 ft. in height. It is a plant for borders, or placing here and there among dwarf shrubs and plants in the rougher parts of the rock-garden.

A. chrysantha (*Golden Columbine*).—This tall and beautiful species endures as a perennial on many soils where the other kinds perish, thriving even on the stiff clay soils north of London, though it is no less free in more happy situations. It comes true from seed, which is most safely raised under glass, and the plant grows 4 ft. in height in good soil.

A. cœrulea (*Rocky Mountain Columbine*).—This is very beautiful, the green-tipped spurs of the flower being as slender

as a thread, and having a tendency to twist round each other. It is hardy, flowering early in summer, from 12 in. to 15 in. high, worthy of the best position on the rock-garden, and in choice mixed borders, where the soil is free and deep. Unlike the Golden Columbine, it is not perennial on many soils, though longer-lived in cool hill-gardens. To get healthy plants that will flower freely, seeds should be sown annually.

A. glandulosa (*Altai Columbine*).—A beautiful plant of tufted habit, flowering in early summer—a fine blue, with tips of petals creamy-white, the spur curved backwards towards the stalk, the sepals dark blue, large, with a long footstalk. It is a native of the Altai Mountains, and one of the most precious flowers for the rock-garden, in deep sandy soil. Seed and division.

A. Skinneri (*Skinner's Columbine*).—A distinct plant, the flowers produced later on slender pedicles, the sepals greenish, the petals small and yellow ; the spurs are 2 in. long and bright orange-red. Though from Guatemala, it comes from mountain districts and is nearly hardy. While the name is often seen, the true plant is rare.

A. viridiflora.—A charming Siberian Columbine, the sage-green of the flower and the delicate tint of the leaf offering a delicate harmony. In the border it may not be noticed, but if a spray or two are put in a glass its beauty is seen. It has a delicate fragrance, and is raised from seed.

A. vulgaris (*Common Columbine*).—There are many forms of this, and double kinds, flowering from May till towards the end of summer. One may often see a variety of the common Columbine nearly as handsome as any of the finest alpine species. Its varieties, and some hybrid forms, may well be used in the wilder and more picturesque parts of large pleasure-grounds, by streams, in copses, or among Foxgloves, Geraniums, or long Grasses. The ground should be well dug if the vegetation is dense, and the seed sown on the spot. Where bare places occur, and seedlings have a chance of coming up without being strangled by other plants, seed may be scattered as soon as ripe.

Known species.—*A. advena*, Hab? *alpina*, Siberia ; *Amaliae*, Thessaly ; *aragonensis*, Spain ; *arbuscensis*, Europe ; *Bertoloni*, Europe ; *Brauni*, Europe ; *brevistyla*, N. America ; *Buergeriana*, Japan ; *californica*, N.-W. America ; *campylocentra*, Europe ; *canadensis*, N. America ; *chrysantha*, N. Mexico ; *cœrulea*, N.W. America ; *dichroa*, Europe ; *dioica*, Europe ; *discolor*, Spain ; *Einseleana*, Europe ; *eximia*, Europe ; *flabellata*, Japan ; *flavescens*, California ; *formosa*, Kamtschatka ; *fragrans*, Himalayas ; *Gacrtneri*,

Europe; *Gebleri*, Europe; *glandulosa*, Siberia; *glauca*, Himalayas; *grata*, Europe; *Haynaldi*, Europe; *Huteri*, Europe; *Jonesi*, N. America; *Kareliniana*, Hab? *Kitaibeli*, Armenia; *lactiflora*, Siberia; *leptoceras*, Siberia; *longispala*, Europe; *longissima*, N. America; *lutea*, Hab? *lutescens*, Europe; *macro-*

Siberian Columbine.

centra, Europe; *mollis*, France; *Moorcroftiana*, Himalayas; *nemoralis*, France; *nevadensis*, Spain; *olympica*, E. Europe; *orthantha*, Europe; *Ottonis*, Greece; *oxysepala*, E. Asia; *parviflora*, Siberia; *pubiflora*, E. Indies; *pycnotricha*, Europe; *pyrenaica*, S. Europe; *ruscinonensis*, France; *Schotti*, Europe; *sibirica*, Siberia; *sinensis*, China; *Skinneri*, Mexico; *stenopetala*, Europe; *sulphurea*, Europe; *Szaboi*, Europe; *viridiflora*, Siberia; *volubilis*, Manchuria; *vulgaris*, Europe.

ARABIS (*Rock Cress*).—A large family of hill-plants, few of which are grown, though some are worth a place. *A. albida* (White Rock Cress) is a popular plant in gardens, and on the barrows of every London flower-hawker in spring. It will grow in any soil, where its sheets of snowy bloom may open in early spring. It is easily increased by seed or cuttings, and is useful for the mixed border, the spring garden, and for naturalising in bare or rocky spots. It is closely allied to the alpine Rock Cress or Bee Flower (*A. alpina*) so widely distributed on the Alps, but is distinct, and by far the best kind. A variegated form is the dwarfest and whitest of the Rock Cresses. *A. blepharophylla* (Rosy Rock Cress) is not unlike the white Arabis,

but the flowers are rosy purple. It varies a good deal, but there is no difficulty in selecting a strain of the deepest rose, its healthy tufts being effective in April. There are variegated forms of the commoner species, the prettiest of them being *A. lucida variegata*, but none have much value. *A. arenosa*, from the south of Europe, is a pretty annual in the spring garden or naturalised on old ruins or dry bare banks. *A. petraea* is a neat sturdy little plant, with pure white flowers; it is a native of some of the higher Scottish mountains, rare, but very pretty when well grown on a moist well-exposed spot on the rock-garden. *A. Stelleri*, a Chinese species, is a much freer flowering plant than *A. blepharophylla*, ripening seed freely, and easily grown in the rock-garden. *Cruciferae*.

ARALIA.—Shrubs, or stout herbaceous plants of the Ivy order, of diverse aspects, few fitted for open air, except *A. canescens* and *A. spinosa*, which thrive in our gardens, and which in size and beauty of leaf are far before many “fine-foliaged plants” carefully grown in hothouses. The Aralias described are now placed under Fatsia, but we retain the older name as better known in gardens. *A. papyrifera* (Chinese Rice-paper Plant), though a native of the hot island of Formosa, is useful for the greenhouse in winter and

Aralia chinensis.

the flower garden in summer. It is handsome in leaf, but is only suited for southern or very warm gardens.

A. chinensis. — A handsome hardy shrub, with very large much-divided spiny leaves, resembling those of the Angelica Tree of North America. In this country it attains the height of from 6 to 12 ft. In a well-drained deep loam it thrives vigorously. May be useful in a flower-garden where tender fine-leaved plants will not thrive.—Syn. *Dimorphanthus mandschuricus*.

A. Sieboldi.—A shrubby species, with fine green leaves, nearly hardy, and a handsome bush on dry soils and near the sea. It may be used in the flower garden or the pleasure-ground, for isolated specimens on the turf, or for association with fine-leaved plants; but it soon turns yellow and unhappy-looking if exposed to much sunshine. It is also hardier in the shade, its foliage browning badly if caught too suddenly by the sun after hard frosts. Syn. *Fatsia Japonica*.

A. spinosa (*Angelica Tree*) is the oldest species in our gardens. Its small white flowers appear in autumn in great panicles. This fine shrub has often been put in exposed places, but is better where its great leaves will not be torn, and in every size may be used in the flower garden or pleasure ground. Cuttings of the roots. N. America.

ARAUCARIA (*Monkey-Puzzle*).—A noble group of Cone-bearing trees, most of which, unfortunately, are too tender for our winters. *A. imbricata* (the Monkey-Puzzle Tree) is a native of Chili, and the only species which does at all well in favourable situations. As a rule it soon presents an unhappy appearance, and is therefore not to be recommended for planting. It was killed by thousands in the nurseries and gardens in the severe winter of 1860, and it is no way worthy of its popularity in the garden, being really a forest tree of a climate very different from ours.

ARBUTUS (*Strawberry Tree*).—Ever-green shrubs of much beauty, both of flower and form of leaf or bush, but coming from warmer countries thrive only on our sea shore or warmer districts and on warm soils. The beautiful *A. Unedo* grows 20 ft. high or more in the coast districts, but inland it is cut down in severe winters. There are varieties of it, one of the best being *A. Croomei*, which has longer and broader leaves than the common kind. The variety *rubra* has almost bright scarlet flowers in autumn. One variety has double flowers, and there are a number of so-called varieties differing only a little in the form of the leaf. S. Europe, and also wild

in the south of Ireland. The other species are not so important as flowering trees, though good evergreens where they will face the climate. *A. Andrachne*, with smooth ruddy-tinged bark, is hardy in the south and coast districts; about London it reaches a height of over 15 ft. It grows wild in Greece, and is a very old tree in gardens. The fine Californian *Arbutus* are not hardy with us. These shrubs

Aralia spinosa. From a photograph sent by Mr. C. L. Mayor, Paignton, Devon.

succeed best in a deep light loam, and will thrive on chalky soils much better than many other evergreen shrubs. In planting them, a warm sheltered position is best. In the south and west of England, and in Ireland, the fruits are freely borne, and a large specimen is very handsome in fruit.

ARCTOSTAPHYLOS (*Bear-berry*).—Mostly trailing alpine evergreens of the Heath order, of which few are in cultivation.

Of this group *A. alpina* is useful for rocky banks, edging bog-beds, or even in bogs. *A. Uva-ursi* (Bear-berry) is a dwarf evergreen mountain shrub, 1 ft. high—often less—sometimes grown with rock-plants.

Arctotis arborescens.

It has small rose flowers in early summer and red berries in autumn. *A. alpina*, the Black Bear-berry, has trailing stems and white or flesh coloured flowers. It is abundant in hilly places in Europe and N. America. Grows in any soil, but prefers a moist border or ledge. Division. *A. nitida* is a Mexican half-hardy evergreen with shining green leaves and white flowers. The dwarf, much branched *A. pungens* is also a native of Mexico; while the shrubby, hardy *A. tomentosa* comes from N.W. America.

ARCTOTIS.—Showy half-hardy composites from the Cape, numbering between forty and fifty species, for the most part little known. The bright colours of many of the species are more intense in the open air than when the plants are cramped in pots in a greenhouse. Dry sunny banks often devoid of plant life might be beautifully clothed with them. Although true sun-loving plants, they may be used as a groundwork in spots where, unmindful of the shade if not too dense, they flower almost as freely as when fully exposed to the sun. They require warm greenhouse treatment in winter.

A. acaulis is a very variable dwarf species. The flowers are large, attractive, and of a deep rich orange. It does not

ripen seed freely, but is easily propagated from side shoots.

A. aspera is a half-shrubby species, with deeply cut and wrinkled leaves and creamy flowers, purplish outside. It may be used in vases and hanging baskets, the pink buds being pretty. Cuttings strike readily in heat.

A. aureola is of shrubby habit, 1 to 2 ft. in height, with handsome orange flowers towards the end of the branches. Cuttings. Syn. *A. grandiflora*.

A. leptorhiza is one of the most showy annuals we grow, with abundance of rich orange flowers, as is also *A. breviscapa*, which likes a sunny position. The seeds may be sown in the open air, the plant being treated as a hardy annual. A sunny spot should be chosen, and the seedlings well thinned.—K.

ARENARIA (*Sandwort*).—A numerous family of rock and mountain plants, of vast distribution over northern and alpine ranges, and in temperate countries. Few kinds are in gardens, and these are dwarf plants, easy to grow.

A. balearica (*Creeping Sandwort*).—A pretty little plant, which coats rocks and stones with verdure, and scatters over the green mantle countless white starry flowers. Plant firmly in any common soil near the stones or rocks it is to cover, and it will soon begin to clothe them. Flowers in spring. Division. I first used it for carpets beneath tea roses at Grave-tye, and also for low rough stone walls, over which it spreads in myriads. Corsica.

A. montana (*Mountain Sandwort*).—A pretty rock-plant, having the habit of a

Mountain Sandwort (*Arenaria montana*).

Cerastium, and fine large white flowers. It is the best of the large Sandworts, and should be in every collection of rock-plants, being hardy and free. France. Seed or division.

A. norwegica is one of the best kinds, forming dense cushions about 6 in. in diameter, and covered with large white flowers throughout the summer. A fine alpine plant. Norway.

A. purpurascens (*Purplish Sandwort*).—An interesting kind with purplish flowers, on a dwarf tufted mass of smooth pointed leaves. It is plentiful over the Pyrenean mountains, hardy, and, like the other kinds, increased by seed or division. It should be associated in the rock-garden with the smallest plants.

There are a great number of other species, but it is not easy to find among them plants of such garden value as those named above.

ARETHUSA.—*A. bulbosa* is a beautiful American hardy Orchid, which grows in wet meadows or bog-land, blossoming in May and June. Each plant bears a bright rose-purple flower that shows well on its bed of Sphagnum, Cranberry, and Sedge. The little bulbs grow in a mossy mat formed by the roots and decaying herbage of plants and moss. In cultivation it requires the same soil, and the leaf must be as well matured as possible. A shady moist spot with a northern exposure is best, and the soil should be a mixture of well-rotted manure and Sphagnum. During winter, protect the bed with some cover, for it is not so hardy in gardens as in its bog home.

ARGEMONE (*Prickly Poppy*).—Handsome Poppy-like plants, said to be perennial, but perishing on moist soils after the first year. As they come from the warmer parts of California and Mexico, and even there grow on dry hill-sides and in warm valleys, their perishing here may be understood. Usually about 2 ft. high, they have large white flowers 4 in. across with a bunch of yellow stamens in the centre. They require a warm loam, and go with the choicest annual flowers. The kinds mostly grown are *A. mexicana*, *A. grandiflora*, and *A. hispida*, which are so much alike in habit as not to need separate description. Seed in a warm frame.

ARISTOTELIA.—*A. macqui* is a hardy Chilean shrub of the Lime Tree family, chiefly esteemed for its handsome evergreen foliage. The pea-like berries are at first dark purple but eventually black. There is a variegated form, but not quite so hardy as the species. Commoner in southern Ireland than in England.

ARISTOLOCHIA (*Dutchman's Pipe*).—Climbing Birthworts of curious form of flower, and effective in foliage. *A. Siphon* is generally used as a wall-plant, but is finer for covering bowers, or for clam-

bering up trees or over stumps. *A. tomentosa* is smaller, distinct in its tone of green, and useful in like ways; both plants are N. American, growing with freedom in ordinary garden soil. The family is a large one, mainly tropical, but some of the forms go into northern countries. Propagated by cuttings.

ARMERIA (*Thrift, Sea Pink*).—Rock and shore plants of the Statice order, of which the best known is the common *A. vulgaris* (Thrift). This native of our shores, and of the tops of the Scottish mountains, is very pretty, with its flowers of soft lilac or white springing from

The Tufted Thrift (*Armeria cæspitosa*).

cushions of grass-like leaves; but the deep rosy form, rarely seen wild, best deserves cultivation. It is useful for the spring garden, for banks or borders in shrubberies, for edgings, and for the rock-garden, and is easily increased by division. As old plants do not bloom so long as young ones, occasional replanting is desirable. In addition to the white variety and the old dark red one, there are *Crimson Gem* and *Laucheana*, the flowers intense pink. *A. cæspitosa* is a rose-coloured kind from the south of Europe, 5,000 to 8,000 ft. above sea-level. Its flower-heads, each from $\frac{3}{4}$ in. to 1 in. in diameter, are borne on slender stems 1 to 2 in. high, from June to September. The leaves are in dense tufts, with a branching woody root-stock. A rock-garden plant, thriving in any well-drained, rather poor, sandy loam; in wet weather it is apt to damp off at the neck in rich soil. Seed. *A. cephalotes* (Great Thrift) is one of the best hardy flowers from South Europe and South Africa, and should be in every good

border and rock-garden among the taller plants. Hardy on free and well-drained soils, it now and then perishes in hard winters, especially on cold soils. It varies a little from seed which is easily raised, but all the forms are worth growing. It is not, however, so readily got from division. This species and its forms have flowers much larger than the common

bright primrose-yellow, with five black spots on the corolla, which gradually fade and finally disappear. It is hardy either on the rock-garden or in a well-drained border, and prefers partial shade. It is a native of the Caucasus and Northern Persia, and though long introduced is still among the rarest of hardy flowers. Young plants bloom long, which adds to

Arum crinitum (Dragon's Mouth).

Thrift. *A. setacea* is an alpine species, with little globose heads of pink flowers so numerous as almost to conceal the plant on flower-stems from 1 to 3 in. high. This and *A. juncea* are found in the S. of France on barren stony mounds and on elevated tablelands.

ARNEBIA (*Prophet-flower*).—A handsome and distinct perennial herb, 1 ft. to 18 in. high. *A. echioides* has flowers of a

their charms. Cuttings. *A. Griffithi* is a tender annual, and though pretty not so valuable as *A. echioides*. BICHARD
1882

ARONIA.—A small group of shrubs allied to *Pyrus*, but distinct in aspect, to my taste very pretty when grouped, but so slender and fragile that mixed in the ordinary way they give little effect, whereas massed they are charming both in flower and in fine colour of leaf in autumn.

Three kinds of easy culture are *nigra*, *arbutifolia*, and *floribunda*.

ARTEMISIA (*Wormwood*). — Herbs and low bushes covering a large part of the surface of northern and arid regions. Though often poor weeds, some have a use in gardens, though rarely for their flowers. *A. anethifolia* is one of the most elegant herbaceous perennials, 5 ft. in height. *A. annua* is a graceful plant with tall stems 5 or 6 ft. high, the foliage fine, and the flowers not showy in elegant panicles. The hue is a fresh and pleasing green, and the plant is a graceful centre of a flower-bed or group. Other kinds, like *A. alpina* and *A. frigida*, belong to an alpine group which is at home in the rock-garden, while there are many taller herbaceous and half-woody plants of a silvery hue, such as *A. Stelleriana*, *A. cana*, *A. maritima*, and some with handsome Fern-like foliage, as *A. tanacetifolia*.

ARUM (*Cuckoo Pint*). — Tuberous rooted herbaceous plants of distinct form, of which some from South Europe are hardy, and of interest in our gardens. They thrive best in warm borders and about the sunny side of garden walls. Some nine or ten kinds are found in South Europe, two coming as far north as our own country. They have, when in bloom, a very offensive odour of carrion.

A. crinitum (*Dragon's Mouth*). — This plant when in flower is very grotesque, from the singular shape of its broad speckled spathe. The leaves are cut into deep segments, and the leaf-stalks, overlapping each other, form a sort of spurious stem 1 ft. or 14 in. high, marbled and spotted with purplish-black. Warm borders, fringes of shrubberies, or beds of the smaller sub-tropical plants suit it best. Division of tubers.

A. Dracunculus (*Dragons, Snake Plant*), from South Europe, attains a height of 2 to 3 ft.; the leaves large; the stalks and stem of a fleshy colour, deeply mottled with black. It loves best a corner to itself in sandy loam at the foot of a south wall. Many would not care for a plant having such an odour. Division.

A. italicum (*Italian Arum*) is larger than our native Arum; the veins blotched with yellow. As the leaves come very early in the season, they are attractive. In the autumn, when they have died away, the clusters of scarlet berries, on foot-stalks 10 in. or 12 in. long, are showy. The true use for it is as a naturalised plant, or in the shrubbery.

Arundinaria. See BAMBUSA.

ARUNDO (*Great Reed*). — Important

Grasses of fine form, sometimes of great height. *A. conspicua* (*New Zealand Reed*) is a Grass of noble form—a companion for the Pampas Grass, especially in the western and southern counties and on light soils. In fine deep loams it reaches a height of nearly 12 ft., but perishes from cold or other causes on many soils. It flowers before the Pampas Grass. It likes plenty of water nearly all the year round, and may be increased by seeds or division. *A. Donax* (*Great Reed*) is the Great Reed of the south of Europe, a noble plant on good soils, in the south of England making canes 10 ft. high, in rich soil, but in our country it has suffered much in recent severe winters. Its variegated variety is of some value for the flower garden, and is nearly hardy in the southern counties. *A. Phragmites* (*Common Reed*) is the native marsh plant, 6 ft. or more high, bearing when in flower a large, handsome, spreading, purplish panicle. It is an excellent cover for water birds. There is a good variegated form which has more claims as a plant for the waterside.

ASARUM (*Asarabacca*). — Curious little plants resembling Cyclamens in their leaves, but of little value except as curiosities, or as wood plants in ordinary garden soil. *A. canadense* is the Canadian Snakeroot, which bears in spring curious brownish-purple flowers, the roots being strongly aromatic, like Ginger. *A. virginicum* is the Heart Snake-root, its leaves thick and leathery, with the upper surface mottled with white. *A. caudatum* is from Oregon, and much like the others in habit, but the divisions of the flower have long tail-like appendages. *A. europæum* is the Asarabacca, the flowers greenish, about $\frac{1}{2}$ in. long, and close to the ground.

ASCLEPIAS (*Milk-weed, Silk-weed*). — A large genus of strong growing herbaceous perennials, few of which are adapted for the flower garden, as they require a good deal of room, and are not attractive. They thrive in a light or peaty soil and may be increased by division. *A. acuminata* has red and white flowers. *A. amœna*, purple; *A. Cornuti* (the common Milk-weed)—also known as *A. syriaca*—grows vigorously to a height of 4 ft., and bears umbels of deep purple fragrant flowers, of which bees seem to be fond. *A. incarnata* (the Swamp Milk-weed) is a good waterside plant with rose-purple flowers. *A. quadrifolia* (Four-leaved Milk-weed) bears fragrant terminal heads of lilac-white flowers early in the summer. *A. purpurascens* is also a waterside plant with purple

flowers. *A. rubra* (the Red Milk-weed) is a distinct tall-growing plant with long bright green foliage, and large umbels of purple-red flowers. *A. tuberosa* (the Butterfly Silk-weed) is the prettiest species, with its clusters of showy bright orange-red flowers in the autumn. Good flowering plants may be obtained from seed in three years, but it is mostly increased by dividing the tubers. This species likes sandy soil and a warm situation. *A. variegata* (Variegated Milk-weed) has dense umbels of handsome white flowers with a reddish centre. The downy stems reach a height of 2 to 4 ft., and are mottled with purple.

ASIMINA (*Virginian Papaw*).—A North American shrub, or low tree of the Custard Apple family. *A. triloba* forms a small tree, with dull purple flowers, about

A climbing Asparagus.

2 m. across. It bears fruits eaten by the inhabitants of the Southern States; hence the name. Sometimes grown against a wall in this country, but hardy as a standard, at least about London.

ASPARAGUS.—Herbaceous plants or climbers of the Lily Order, of fine habit with elegant leaves. The vigorous and tall *A. Broussoneti* is quite hardy in warm sandy soil and so are *A. tenuifolius* and others,

The common Asparagus is as good as any, and a tuft or group of it is graceful in a border of flowers or a bed of fine-leaved plants.

ASPERULA (*Sweet Woodruff*).—*A. odorata*, which belongs to the same family as the Coffee Plant, is abundant in many parts of Britain, and worthy of the garden or shrubbery, especially in districts where it does not occur wild. Its stems and leaves give off a fragrant hay-like odour when dried; and in May the small white flowers, dotted over the tufts of whorled leaves, are pretty. It is sometimes used as an edging to beds in cottage gardens, and it goes prettily with some of the smaller Ivies, in forming edgings about rocky banks and borders. *A. azurea setosa* (*A. orientalis*) is a pretty hardy blue annual, flowering in April and May. Sow seed in the previous autumn. *A. cynanchica* is a rosy-red perennial, and a good bank or rough rock-plant. *A. hexaphylla* is a tall slender white-flowered species.

ASPHODELINE.—Plants nearly allied to the following, but the stems of Asphodelus are leafless, while in Asphodeline the leaves are produced on erect stems. About six kinds are in cultivation, the best-known being *A. lutea*, which grows about 3 ft. high, with yellow flowers in dense clustered spikes. *A. taurica* has white flowers, on stems 1 to 2 ft. high. *A. liburnica* (*A. cretica*) and *A. tenuior* have yellow flowers in loose racemes. *A. damascena* has white blossoms in dense racemes, and *A. brevicaulis* has yellow flowers in loose racemes. These all thrive in any common garden soil, and may be used in bold masses with good effect among other tall plants.

ASPHODELUS (*Asphodel*).—Tuberous plants of the Lily order, with spiked flowers and not of a high order of beauty, thriving in any free garden soil. The best-known is the bold *A. ramosus*, a South European species, familiar in most old herbaceous plant borders, but better fitted for the shrubbery. Other kinds are *A. fistulosus* and *tenuifolius*, with white flowers, the plant growing from 1½ to 3 ft. high. The last-named kind has delicate feathery foliage. *A. creticus*, the Cretan Asphodel, has yellow flowers, and is an easily cultivated border plant.

ASPIDIUM (*Shield or Wood Fern*).—This family now embraces the Polystichum and some species of Lastrea. There are numerous hardy kinds, among them the Male Fern (*A. Filix-mas*) and the Prickly Shield Fern. These thrive

even in small town gardens and places similarly confined if given plenty of water in hot dry weather. Either alone or in groups they have a fine effect, as an undergrowth to trees in the pleasure-ground or in the shadier parts of the garden, and are evergreen. Their varieties are endless, no fewer than a hundred named sorts of *A. aculeatum* and fifty of *A. Filix-mas* being enumerated in trade lists. The smaller and more delicate kinds require some care. *A. aculeatum* succeeds best in rich loam, with sand and leaf-mould, well drained, and so does the Male Fern. The bolder Ferns of this group give fine cool effects in rightly chosen spots in and near the flower-garden.

ASPLENIUM (*Spleenwort*).—The fine dark green colour and free-growing character of most of the Spleenwort Ferns give them distinct value. The best soil for them is a well-drained mixture of peat, sand, and loam, in which the finer kinds of flowering shrubs, such as Kalmias and Andromedas, thrive. *A. Adiantum nigrum* (the black Spleenwort) would be at home amongst hardy Azaleas, as they lose their foliage in winter, and the Spleenwort would then carpet the surface. The shade of Azaleas in the summer, if not planted too thickly, would suit this Spleenwort, which, when wild, fringes copses or is found on hedge-banks, where it gets a little protection from the summer sun. The various smaller species of this genus belong more to the choice fernery than to the flower garden, unless when we are happy in having old walls near or around it, often so congenial a home for the smaller rock-ferns.

ASTER (*Starwort, Michaelmas Daisy*).—Hardy perennial plants of much beauty

Aster Stracheyi.

and variety. There is a quiet beauty about the more select Starworts, which

is charming in the autumn days, and their variety of colour, of form, and of bud and blossom is delightful. For the most part Starworts are regardless of cold or rain. Less showy than the Chrysanthemum, they are more refined in colour and form. Even where not introduced into the flower garden, they should always be grown for cutting; and they are excellent for forming bold groups to cover the bare ground among newly-planted shrubs. Nothing can be more easy to cultivate. The essential point is to get the distinct kinds, of which the following are among the best that flower in early October—*Aster amellus*, *acris*, *cassubicus*, *turbinellus*, *Chapmani*, *versicolor*, *pulchellus*, *cordifolius*, *elegans*, *Reevesi*, *discolor*, *laxus*, *horizontalis*, *ericoides*, *Shorti*, *multiflorus*, *dumosus*, *Curtisi*, *lævis*, *longifolius*, *coccineus*, *sericeus*, *Nova-Anglæ*, *Nova-Belgii*, *puniceus*, and *vimineus*. Every year adds to our autumn-blooming hardy plants, and a choice of Starworts may be made by autumn visits to collections. As yet gardeners seldom look at general effects—at the whole of things. The flowers are so dear to them that the garden, as a picture, is left to chance, and hence there is so much ugliness and formality in gardens, to those at least who regard the robe as more than the buttons. Some years ago Starworts were rarely seen except in bundles in botanic gardens. Since the hardy flower revival, they have become more frequent in collections, but as yet they have no important place in gardens generally, and we may often still see them tied in bundles, though the effective way of grouping is so clear and simply carried out. The bad effect of staking and bundling may be wholly got rid of, if the plants were supported and relieved by the bushes, and their flowers massed above them here and there. Asters, dwarfer than the shrubs among which we place them, are not less valuable, as they help to give light and shade, and to avoid the common way of setting plants to a face as if they were so many bricks. This is not the only way of growing these hardiest of northern flowers, but it is a charming one, and it lights up the garden with a new loveliness of refined colour.

Of recent years many seedling forms have been raised and named, but in no case are these so good as the best of the wild species, such as *amellus*, *acris* and *cordifolius*.

ASTILBE (*Goat's Beard*).—A vigorous group of chiefly tall-branching herbaceous perennials. The robust kinds resemble

the Spiræas of the Aruncus group, but are bolder, and perhaps better suited for the margin of water. There are eight kinds in cultivation, the best known of which are *A. japonica* and *A. rivularis*. Moist places in the wild garden are most suitable for *A. decandra*, *A. rivularis*, *A. rubra*, *A. Lemoinei*, and *A. Thunbergi*, the last being also known as Spiræa. These plants group well, and the handsome foliage makes healthy undergrowth, over which the tall plumes of white or red flowers tower with good effect. Division of the roots, and some by the runners.

A recently introduced kind is the vigorous and handsome *A. Davidii*, with mauve coloured flowers on stems about 6 feet high. It is a fine perennial.

ASTRAGALUS (*Milk Vetch*).—A large family of alpine and perennial leguminous

by the fresh green foliage. *A. adsurgens* is dwarf, with numbers of violet-carmine flowers. *A. vaginatus* succeeds in an exposed position in any ordinary border. The showy deep violet-purple flowers are borne in dense erect clusters for a long time.

ASTRANTIA (*Master-wort*).—These herbs are amongst umbelliferous plants, and consist of not more than four or five true species, all natives of the mountains of Southern Europe. The two most distinct are *A. major* and *A. helleborifolia*. *A. helleborifolia* is from the Caucasus, with the largest flower of any, the colour clear pink; but the habit of the plant is straggling, and the flowers smell unpleasantly of sour milk. A third species is *A. Biebersteini*; in some of its characters it is intermediate between the other two. Its habit is good and com-

Aster elegans (Lilac Starwort).

plants, not many of which are valuable for the garden. The best are rock-plants, but they grow freely on the level ground in borders. *A. monspessulanus* is useful for the front of borders and for the rock garden. The vigorous shoots are prostrate, so that it is seen to greater advantage when its long heads of crimson and rosy flowers droop over rocks. It grows well in any soil. There are several varieties. *A. Onobrychis* (Saintfoin Milk Vetch) is a handsome species from South Europe and Siberia (in some varieties spreading, and in others about 18 in. high), with racemes of purplish-crimson flowers in June. It thrives well on any good loam. *A. dasyglottis* is well suited for the rock-garden. Its numerous showy flower-heads, of a clear bright purple, are set off

pact, and it flowers freely. There are two or three smaller species, the commonest of which is *A. minor*, often brought from the Alps by collectors. The Astrantias have a quaint beauty of their own; they are not showy, nor particular about soil or aspect. They are easily established in woodland walks where the growth of weeds is not too rank.—C. W. D.

ATHYRIUM (*Lady Fern*).—Beautiful hardy Ferns, which *A. Filix-femina* may be taken to represent. They like a compost of loam, leaf-mould, and peat, mixed in about equal proportions, with the addition of some sharp sand. They require abundance of water during their growing period, but not in winter, because all the varieties are deciduous, the ground at

that period being wet enough naturally. Among many fine hardy evergreen and herbaceous plants Lady Ferns might be planted with advantage; they will thrive in a little shade where protected from drying winds. There are many beautiful forms.

Atragene. See CLEMATIS.

AUBRIETIA (*Purple Rock Cress*).—A charming group of rock plants from the mountains of South Europe. There are many varieties in gardens, but probably all may be reduced to some half-dozen species, whilst all are beautiful. The oldest is called *A. purpurea*. Then there is what is called *deltoidea*, and the free-branching

Aubrietias perfectly. They make neat edgings, and may be used as such with good effect. There are one or two variegated varieties. Aubrietias are easy to naturalise in rocky places, and may be easily got from seeds, cuttings, or by division.

AUCUBA.—Evergreen berry-bearing shrubs of the Dogwood order, which brighten gardens in winter. It is one of the best shrubs for planting under trees, as its strong fleshy roots enable it to live where other shrubs would starve. It may be safely removed at midsummer or midwinter, but requires shelter and shade. To get a good crop of berries, plant males about 30 ft. apart among the ordinary forms. Smoke and dust

Purple Rock Cress (Aubrietia).

variety of it known as *Eyrei*, which has large violet-purple flowers. We have also *grandiflora*, with a lax habit, a pretty rock-plant. Then we have *Leichtlini*, *Mooreana*, *Columnæ*, and *Campbelli*; but the names of the species are too numerous in this family, and are often only varieties from different localities. Some, like Dr. Mules, Beauty of Baden and W. Ingram, are of higher value as garden plants.

The Aubrietia is excellent as a wall-plant. We need only sow the seed in any mossy or earthy chinks in autumn or spring, indeed they will sow themselves on walls, and often bloom on the sunny sides in February. Rock-gardens, stony places, and sloping banks suit

seem to have slight effect upon Aucubas, making them valuable for town gardens. The variegated form is more vigorous and rapid in growth than the green or plain-leaved variety, though we have now many fine green forms extremely handsome when in good berry.

AZALEA (*Swamp Honeysuckle*).—These are beautiful upland and bog shrubs from North America, and, if only as a relief from the heaviness of Rhododendrons, their graceful growth is precious. There is nothing in the open garden so charming as old Azalea bushes in flower, with their branches in table-like tiers; but the brilliant tints always seem most effective in the subdued light of a shady wood,

and happily few shrubs flower better in partial shade than Azaleas. They like shelter, even from southerly winds, and peaty soil suits them best, though they grow well in loam.

The hardy Azaleas, called Ghent Azaleas, have sprung chiefly from the wild kinds of North America — *A. nudiflora*, *A. calendulacea*, and *A. viscosa*. These and *A. pontica* have been so hybridised with the wild Azalea of South Europe that we have a race in which the colours of the various species are blended and diversified in a great variety of tints, and they all intercross so freely that it is difficult to single out a variety identical with any of the wild species. Fifty years ago, Latin names were given to every fine variety, but they could soon be numbered by the hundred from Belgian gardens alone. Now very few sorts are named. Every variation of tint, from the most fiery scarlets to delicate pinks, whites, and dark and pale yellows, is to be had in Ghent Azaleas, a very beautiful one being the pure white Mrs. Anthony Waterer. Of late years there has sprung up a new race with double Hose-in-hose flowers, collectively called the Narcissiflora group, the chief sorts of which number about a score—Graf von Meran, one of the first, being still among the best yellows. A Californian species, named *A.*

Flowers of *Azalea mollis*.

occidentalis, is distinct from the deciduous Azaleas, as it flowers after the others are past. It has bunches of fragrant white flowers and broad foliage. *A. mollis*, a dwarf deciduous shrub from Japan and China, has given rise to a variety of kinds, yellow, salmon-red, and orange-scarlet being the prevailing colours. It is hardy, and being dwarf may be grouped

as a foreground to a mass of the tall kinds. The Chinese *A. amana*, with small magenta flowers, common enough in greenhouses, is quite hardy in mild localities and rich in bold masses. The Chinese *A. indica*, the ordinary Azalea of greenhouses, is hardy in many places,

Azalea nudiflorum.

especially the white variety, which, even in mid-Sussex, thrives in the open air. The Ledum-leaved Azalea (*A. ledifolia*) is a hardy evergreen shrub, also from China, with white flowers, large and open, like *A. indica*. It grows from 5 ft. to 6 ft. high, and Loudon states that in Cornwall, on Sir Charles Lemon's estate at Carclew, it was planted in hedges, which flowered magnificently without the slightest protection.

AZARA.—Distinct and graceful Chilian shrubs, nearly hardy in favourable soils. On east or west walls they flower freely; while in the southern counties, at least, they do well in the open. Well-drained loam and the partial shade of taller shrubs suit them. *A. Gillesi* is probably the most handsome, its toothed leaves resembling in colour and texture those of the Holly, with the branches tinged with red. Both in the open air and under glass it blooms in late autumn and winter, the flowers small, and resembling golden catkins. *A. celastrina* has rather smaller leaves, and yellow blossoms. *A. integrifolia* has drooping spikes of fragrant yellow blossoms, which form a dense bush a few feet in height. *A. microphylla* is a graceful evergreen shrub, with many small flowers, succeeded in autumn by small orange-red berries. The best place for it is a sheltered position, not too low. Among other kinds are *A. dentata*, a quick grower; and *A. serrata*, with prettily serrated leaves, and umbels of yellow blossoms.

AZOLLA.—*A. Caroliniana* is a very small and curious water-plant, which floats on water quite free of soil, the tufts of delicate green leaves like tiny emeralds.

During summer it will grow out-of-doors, and then becomes bronzed, and perhaps it is prettier when light green, as it is in the greenhouses or window. Syn. *A. rubra*. *A. pinnata* is a distinct species.

BABIANA (*Baboon-root*).—Charming bulbs of the Iris order, from South Africa, allied to *Sparaxis* and *Tritonia*, but having broader foliage, often hairy and plaited; they grow from 6 to 12 in. high, with spikes of sometimes sweetly scented brilliant flowers ranging in colour from blue to crimson-magenta. The bulbs should be planted from September to January, about 4 in. deep and 2 to 4 in. apart, in light loamy soil thoroughly drained, with a due south aspect. The early plantings make foliage in autumn, and require protection of mats against frost. Those planted later will only require a covering of Fern, which should be removed as the foliage appears. In wet soils surround the bulbs with sand, and raise the beds above the level. Many varieties are in cultivation, but in the open air their growth is only worth attempting in very favoured spots.

BAMBUSA (*Bamboo*).—There are some forty or more varieties of these graceful woody Grasses, which are hardy in all but the coldest parts of our islands, though best in sheltered places. Grace and elegance are the characteristics of the Bamboo, and in no species more conspicuous than in the lovely group of *Phyllostachys*, while some of the *Arundinarias* will, if planted in suitable places, grow into dense thickets of almost tropical aspect. There are few gardens in which some sheltered nook, backed by evergreens, might not be beautified by a feathering group of *Phyllostachys Henonis* or *nigra*; while in the wilderness fine effects may be produced by the grand foliage of *Arundinaria Métafé* or the stately plumes of *A. Simoni*. Background is the great secret of getting the best effect out of plants in which beauty of form is the dominant feature; and above all let the Bamboos be sheltered from our biting easterly and north-easterly winds, as they are more deadly than frost. The softer and moister westerly winds, blow they never so hard, will do but little damage to plants which come from such storm-vexed regions as the coasts of China and the islands of Japan. It is important that every autumn the plants should be well mulched with cow manure, and this again should be covered with dead leaves. To prevent the latter from blowing away

it is expedient to surround the plant or group with wire netting. This has the additional advantage of keeping out rabbits and hares. The mulching protects the roots from frost in the winter, and prevents evaporation in summer. When the plants are thoroughly established these precautions become unnecessary.

The plants should only travel during the period when they are at rest. They will be received therefore during the late autumn or winter. If they have come from abroad, the balls of earth round the roots should be thoroughly soaked; they should then be potted and placed in a cool house for the winter; the leaves syringed with rain-water twice a day, but the roots should not be kept too wet. In this way many species will keep their leaves as green and fresh as if they had never been disturbed; but even those that lose their leaves will early in February begin to show little fat buds that will soon develop into branchlets. Early in May begin to harden off the plants, as you would *Geraniums* for bedding out, and, at the end of May, place them in their permanent homes.

When you take the plants out of the pots be careful not to disturb the roots in any way. You must not attempt to comb them out as you would the roots of trees, for they are as brittle as glass: place them in the earth as they are, and they will soon find their way about. If possible the newly planted Bamboos should be well watered during growth. It must be remembered that Bamboos will not show their true characteristics for several years. But by taking the above precautions much time will be saved, and many disappointments avoided. For transplanting Bamboos (from one part of the same garden to another, not for sending them on a journey), May and June are perhaps the best months, though I have moved them without any ill effects during the whole summer up to the end of September. The worst time is from November to March; for the plants need to have made some roots in their new homes before they can resist our cold winters and biting winds. As regards propagation, very little need be said here, for I doubt whether the propagation of hardy Bamboos, except by division, is likely to become a successful industry in this country.

PROPAGATION BY DIVISION.—The best moment for this operation is, in our climate, the latter end of April or May.

The process is very simple. The plants should be divided into clumps of two or three culms with their rhizome, in order to insure a new growth from the buds on the internodes of the root-stock. If the tufts can be lifted with a ball of earth, so much the better. They should be planted in beds at distances of 2 ft., carefully watered, and protected by a top-dressing of well-rotted cow manure and dead leaves. With the same care they may be planted at once in their permanent homes.

NATIVES OF THE HIMALAYAS.

Arundinaria racemosa.—This grows about 15 feet high in its own country. Stem smooth and round. Internodes about 2 in. apart, leaves 2 to 4 in. in length and narrow, cross veins well defined. After the trying winter of 1895, quite green and fresh at Kew Gardens; found at an elevation of 12,000 ft. in the N.E. Himalayas.

A. aristata.—A pretty variety of moderate size, with purplish stems and tessellated leaves. This latter quality, also the great altitude at which it is found in the North Eastern Himalayas—as high as 11,000 feet above the sea-level—indicates it as a hardy Bamboo.

A. spathiflora.—Another hardy Bamboo with tessellated leaves, from the Himalayas, where it is found at an altitude of 9,000 feet. Most of the specimens which I have seen grown under this name in English gardens are not the true *A. spathiflora*. *A. falcata* and *A. Falconeri*, though fine kinds in their native country, are not quite hardy in ours.

NATIVES OF CHINA AND JAPAN.

A. Fortunei.—Three plants of no relationship to one another are at present the bearers of this name, respectively green, silver variegated, and golden variegated. As there is absolutely no similarity between them, I have re-named two of them *humilis* and *auricoma*, leaving the name *Fortunei* to the silver-striped species which has the prior claim to the title.

A. humilis.—A green species, about 2 ft. to 3 ft. high, with round and green stem, bright evergreen leaves smooth on both sides, $4\frac{1}{2}$ in. long, three-quarters of an inch broad, and tapering to a point. A very pretty plant to form a carpet, or isolated group near rocks. Syn. *Bambusa gracilis*.

A. Fortunei fol. var.—A silvery-variegated dwarf Bamboo about 3 ft. high. Leaves about 5 in. long, by half or at most three-quarters of an inch wide; a bright colour beautifully striated

with white in a young state, but the variegation is apt to fade in the older leaves, which become rather spotty. A strong runner at the roots.

A. auricoma.—A golden variegated dwarf Bamboo, taller than the two preceding sorts. Leaves striped with bright yellow, from 5 in. to 7 in. long, by 1 in. to $1\frac{1}{4}$ in. broad. Not a strong runner, but a beautiful and conspicuous evergreen plant.

Bambusa pumila (? *Arundinaria*).—A very pretty dwarf Bamboo somewhat like *Arundinaria humilis*, but smaller in habit, the leaves are less broad, shorter, and do not taper so gradually to a point. The teeth of the serrated edges are less conspicuous; the lower sheaths are hardly so hairy, and the nodes are less well defined and far less downy. The stem is more slender.

Arundinaria Hindsii.—A distinct and beautiful species. In its first year with me it has grown to a height of 6 ft. 3 in., but will evidently attain a greater stature. The young dark-green stems have a lovely white wax on them like the bloom on a Grape. The leaves are 6 in. long by about five-eighths of an inch across; they are thicker than in most Bamboos. The colour is a beautiful dark green, fairer underneath; the veins are conspicuously and beautifully tessellated.

A. Hindsii var. graminea.—A smaller plant than the above, with leaves 9 in. long by five-eighths of an inch broad, and yellow stems; considered by the authorities at Kew to be another form of the same species. The tessellation of the veins of the leaves is not quite so strongly marked as in the type.

A. japonica.—A fine and valuable plant, generally grown in gardens under the name of *Bambusa Métaké*. The leaves are from 8 in. to 1 ft. in length by about $1\frac{1}{2}$ in., sometimes more, broad. The upper surface is smooth and shining, the lower side paler, rather glaucous and wrinkled; the edges are finely serrated. The creeping root-stock in well-established plants is very active, so that care must be taken to give the plant plenty of room.

A. Simoni.—Of this fine species, at Kew, old-established plants have reached a height of 18 ft. The leaves are from 10 in. to 1 ft. long, slightly hairy, lanceolate, longitudinally ribbed, ending in a long narrow point. So far as experience at present goes, this is the greatest runner of all the hardy Bamboos. Its young shoots will appear at a great distance from the parent plant. It should be planted apart in the wild garden, where it

may wander at pleasure without injury to any neighbour.

Bambusa palmata (? *Arundinaria*).—A beautiful species, about 5 ft. high, conspicuous from the size of its leaves, which are often used by Japanese peasants to wrap up the bit of salt fish or other condiment which they eat with their rice. These are the chief beauty of the plant, each from 1 ft. to 13 in. long and 3 in. to $3\frac{1}{2}$ in. broad, tapering rather suddenly to a very fine point; the colour a vivid green on the upper surface, glaucous on

Bambusa palmata (from a photograph by Lord Annesley).

the lower. Both edges are serrated. The rhizomes are exceedingly active, and travel far.

Arundinaria Veitchi much resembles *Bambusa palmata* in its habit, though on a far humbler scale, the plant being only about 2 ft. high and the leaves smaller and more rounded at the point. The leaves are about 7 in. long by about $2\frac{1}{4}$ in. broad, green above, glaucous below, glabrous and much ribbed. The edges wither in winter, giving the plant a variegated but shabby appearance; but the thick new foliage of spring is very beautiful, and the plant runs fiercely, soon

making a thick carpet and ousting all weeds.

A. metallica.—A species closely resembling *A. Veitchi*, but lacking the ugly withering of the leaf edges in winter. A native of the north of Japan and the island of Yezo, and hardy.

Bambusa tessellata.—A very beautiful species having the largest leaves of any of the hardy Bamboos. The stem is about $2\frac{1}{2}$ ft. high, round, slightly flattened at the top, the colour a purplish-green, much hidden by persistent withered sheaths. The slender new culms spring gracefully from the carpet of arching foliage. Syn., *Bambusa Ragamowski*.

Arundinaria nitida.—A very lovely species from North Western Szêchuan. The culms are purple-black, very slender and round. The leaves are small, lancet-shaped, and tessellated. Quite the hardiest of all our Bamboos.

A. angustifolia.—A lovely little Bamboo, about 9 in. to 1 ft. in height. The stems are round, very slender, and when young of a purplish colour. It is much branched; the leaves are about $4\frac{1}{2}$ in. in length by three-eighths of an inch in width; they are serrated on both sides, and somewhat capriciously striped with silver variegation.

A. marmorea.—A pretty and distinct little Bamboo, for which I have chosen the name *marmorea* on account of the very peculiar appearance of the young stems, which are folded in purple sheaths, delicately marbled with a pinkish silver-grey, through which, near the knots, peep glimmers of the bright emerald-green or dark purple of the stem itself. The leaves, which are bright green, are about $4\frac{1}{2}$ in. long by three-eighths to five-eighths of an inch broad; they are serrated on both edges, and have a marked constriction at about half an inch from the very sharp end. The rhizome is very active, new shoots appearing at some distance from the parent plant.

A. pygmaea.—The best and the smallest of the dwarf Bamboos, invaluable for making a carpet of soft brilliant green. It grows with extraordinary rapidity, the root-stock travelling great distances and at a considerable depth. Stem about 6 in. to 16 in. high; leaves about 4 in. long by half an inch to three-quarters of an inch broad. It grows so thick and close that no weed has a chance against it, but it should have plenty of room.

A. Laydekeri.—Apparently a semi-dwarf Bamboo, not, so far as my experience of it goes, particularly attractive.

though it should have a place in a collection. The stems in the third summer are about 3 ft. high, but will probably grow higher; round, much branched; apparently, therefore, it is an *Arundinaria*. The leaves are about 6 in. long, dark green, but rather shabbily mottled on both surfaces, serrated on one edge and slightly so on the other; leaf-sheaths hairy at top. The branches, which are long in proportion to the length of the stems, from which they stand out rather markedly, give the plant a conspicuous habit.

***Phyllostachys heterocycla*.**—This is called by the Japanese Kiko-chiku, or the "tortoise-shell Bamboo," from the curious arrangement of the alternately and partially suppressed internodes at the base of the stem, which sheathe it in plate armour like the scales on a tortoise's back. At about 2 ft. or 3 ft. from the ground the nodes are regularly defined, as in other Bamboos. The other characteristics of this Bamboo do not differ from those of the *Phyllostachys* of the *mitis* and *aurea* group. The leaves are from 3 in. to 4 in. long and about half an inch wide, very minutely serrated on one edge and almost imperceptibly so on the other, bright green on the upper surface, bluer underneath. The imported stems are about 5 in. round, and the plant has the appearance of growing into a large and important Bamboo.

***P. Marliacea*.**—A rare, handsome species. The only plant of it I possess has in its third year grown to a height of 8 ft., and promises to become very tall and vigorous. The stem is a dark green, shining like enamel; the internodes at the base are very close together, not more than $1\frac{1}{2}$ in. to 2 in. Its habit is very graceful, the culms forming the most elegant arches, beautiful both in form and colour.

***P. fastuosa*.**—This very stately and beautiful plant stands out quite conspicuously among its fellows. The leaves are from 5 in. to 7 in. long by three-quarters of an inch to 1 in. in width, tapering to a sharp point, and markedly constricted at about an inch from the end, which has the appearance of a little tongue. Their colour is bright green on the upper surface and very glaucous underneath. This Bamboo will probably prove to be one of the most valuable of the group. Tall, spreading, gracefully plumed with foliage which for richness and beauty of colour is without a rival, it cannot fail to make a striking feature in the wild garden.

***P. aurea*.**—The distinctive name *aurea* is not very happily chosen, for there is

nothing golden about the plant unless it be the yellow stems, and these are not peculiar to the variety named. At Shrubland Park, *Phyllostachys aurea* is 14 ft. 6 in. high, the canes being $2\frac{3}{4}$ in. round.

***P. mitis*.**—This is the tallest, and in that respect the noblest, of all the Bamboos capable of being cultivated in this country. At Shrubland the culms of plants imported seven years ago are 19 ft. 5 in. high and $4\frac{1}{4}$ in. in circumference. In China and Japan it grows to 60 ft. high. The stems, some of which spring out of the ground like spears, are, when fully developed, beautifully arched. The young shoots, when once they start, are very rapid, growing in this country as much as 6 in. in the twenty-four hours.

***P. sulphurea*.**—A handsome golden-stemmed Bamboo, which in appearance has great affinity with *P. mitis*. It is perfectly hardy and well worth cultivating, but difficult to obtain. At Shrubland it is growing to a height of 13 ft., with a circumference of $2\frac{3}{4}$ in. round the stem.

***P. Quiloi*.**—A very distinct Bamboo, introduced from the north of Japan. To me it appears to have a character altogether its own, and the many botanists and gardeners to whom I have shown it have without exception come round to my opinion. Altogether a notable Bamboo, growing at Shrubland to a height of 18 ft. 6 in., the canes having a circumference of $3\frac{3}{4}$ in. Syn. *Phyllostachys Mazeli*.

***P. viridi-glaucescens*.**—A most elegant and graceful Bamboo, growing to a great height—nearly 18 ft. at Shrubland. The root-stock is very active, the plant being a great runner, while many of the culms come almost horizontally out of the ground, giving the plant a very wide spread. The leaves are generally about 3 in. or 4 in. long and about three-quarters of an inch across. The stem is much zigzagged. This is a perfectly hardy Bamboo, but it should be established in pots before planting out.

***P. violescens*.**—This is sometimes said to be a variety of *P. viridi-glaucescens*, but quite different both in appearance and behaviour. It is somewhat more tender, the leaves being apt to be cut by frost, which gives the plant an ugly appearance in winter, but with the spring the culms are clothed with new foliage, and after all it is only those shoots which come into existence in the late autumn which suffer. The foliage is rather darker and larger than in *P. viridi-glaucescens* and the plant more straggling, the rhizomes running rampantly. But the most distinctive

feature is the deep purple colour of the young stems during their first year. This is lost in the two-year-old stems, which change to a greenish yellow or brown. The plants at Shrubland are 15 ft. high, and the culms $2\frac{3}{4}$ in. in circumference.

P. Henonis.—To my taste this is the loveliest of all our Bamboos, and it is perfectly hardy, bearing up bravely against our coldest weather. Of all the plants that I imported not one has gone amiss, though they were subjected to hardships which proved fatal to a good many of their travelling companions. The slender tall stems are green at first, growing yellower with age, slightly zigzagged. The root-stock runs rather freely, but it is to its habit that this Bamboo owes its surpassing loveliness. The two-year-old culms, borne down by the weight of their own foliage, bend almost to the earth in graceful curves, forming a pretty groundwork from which the stems of the year spring up, arching and waving their feathery fronds, the delicate green leaves seeming to float in the air.

P. nigra.—This is perhaps the best known, and from its black stems the most easily recognised of the hardy Bamboos. Varieties of this said to be more free than the species are *P. nigro-punctata* and *P. Boryana*. With me the plant has been a little capricious and difficult to establish, but once it has taken hold of the ground no Bamboo seems hardier. The stems are of an olive-green colour during their first year of growth, changing to shining black the following year. They are slightly zigzagged. The leaves, which are from 3 in. to $4\frac{1}{2}$ in. long by three-quarters of an inch broad, are green on the upper surface and glaucous underneath.

P. Boryana.—One of the handsomest and most vigorous of the hardy Bamboos, very graceful in its habit. Like *P. nigra*, the stems are green during their first year, but change colour the second year to a dull brown splashed with large deep purple or black blotches.

P. Castillonis.—A most lovely plant. The foliage is larger than it is in most of the Bamboos, some of the leaves being as much as between 8 in. and 9 in. long by nearly 2 in. broad. When they first appear they are striped with bright orange-yellow, which in time fades to a creamy white. As the sheaths of the branchlets are of a very pretty pink, the plant has a tricoloured effect, which is most pleasing; the branches come in twos and threes. Twenty-four degrees of frost January, 1894, did them no harm.

P. ruscifolia.—A pretty little Bamboo, described by Munro as *P. kumasaca*, though the Japanese name is *bungozasa*. The stems are about 18 in. high, purplish green in colour, with brown sheaths, much zigzagged and very slender, distinctly channelled from the pressure of the branches, which spring in twos and threes, sometimes in fours, from the nodes. The leaves are from 2 in. to 4 in. in length, and an inch, more or less, in width; ovate; soft hairs very conspicuous on the lower surface, but none on the upper surface or on the insertion of the leaves, which are serrated on both edges.

Arundinaria anceps.—A very beautiful Bamboo discovered by Mr. Jordan, superintendent of Regent's Park, in the stock of a dead nursery gardener, whose books being destroyed or lost, it was impossible to trace its origin. It is probably a Chinese species. The culms are brown when ripe; the leaf-sheaths are hairy, and the petiole of the leaf is yellow.

A. nobilis.—A grand Bamboo, probably of Chinese origin, growing to a height of 24 ft. at Menabilly, in Cornwall. It is quite hardy, only losing its leaves in early summer when the new ones are ready to appear. The tall stems are yellowish in colour with very dark purplish nodes, of which the lower rim is broadly marked with grey.

Bambusa disticha.—A pretty little dwarf Bamboo. Stem about 2 ft. high, round, very slightly zigzagged; branches and leaves distichous; leaves hairy, especially at the base, and serrated at the edges, about $1\frac{1}{2}$ in. long by three-quarters of an inch broad, tapering to a point; leaf-sheaths hairy; rhizome inclined to run. A very distinct little plant, most useful for a choice corner in a rock garden. A. B. F.-M.

BACCHARIS.—Mainly South American shrubs belonging to the Groundsel order, one, at least, taking its place among our evergreen shrubs, viz. *halimifolia*. Other kinds are *patagonia*, *pilularis*, and *salicina*. The cultivated kind is a free-growing, rather dwarf evergreen, easy of culture in ordinary soil, and hardy in the southern and home counties.

BANKSIA.—Handsome Australian plants, shrubs, and trees, at one time much grown under glass, some of them brilliant in flower. A few kinds are found to thrive in the open air in Devon and Dorset. The kinds so far proved to live in the south of England, at Tresco and Abbotsbury, are *grandis*, *serrata*, and *quercifolia*. They should be given warm soil and the most favourable position.

BAPTISIA (*False Indigo*).—A vigorous Lupine-like group of perennials from North America, forming strong tufts 3 to 5 ft. high, with sea-green leaves; the flowers, mostly of a delicate blue, in long spikes. *B. australis*, *exaltata*, and *alba* are the best-known kinds, and should be placed in the mixed border in any garden soil, but their value is not high.

BARBAREA.—Mountain and marsh cruciferous herbs of the Old World, few of much garden value, only two varieties being worth growing. The finest is the double yellow Rocket (*B. vulgaris fl.-pl.*), which is a beautiful and curious plant. It is about 18 in. high, flowers bright yellow, from June till late summer, and often till autumn. It succeeds in almost any soil, preferring a rich light loam. Division.

Barkhausia. See CREPIS.

Bartonia aurea. See MENTZELIA.

BEGONIA (*Elephant's Ear*).—A large tropical and sub-tropical family of plants, many of them of much value in our hot-houses, and, of recent years, in our open gardens. The Tuberous Begonia is the most familiar to flower gardeners, and now plays a large part in summer bedding. Grouped together in beds a fine effect is produced, and the colours vary from the darkest scarlets and crimsons to the various shades of rose and pink; also white and blush-coloured kinds.

The cultivation of the Begonia is not difficult. Seedlings raised in March will make good plants for planting early in June. One can just prick them off into pans; from these, when large enough, they are put in shallow boxes, and not disturbed again until planted out, unless getting overcrowded. The beds should be well prepared for them, if the soil is heavy, using plenty of well-decomposed leaf-mould, and failing this old Mushroom manure. During the first year those of inferior quality should be discarded when lifted, marking the finest for another year. For the second and after seasons' display start the tubers in a gentle heat in boxes in March, transferring them to a cold frame or pit in May. A north frame is best, as the plants make very free growth, and get a good size for planting out the first week in June. The beds should be surfaced with either a dwarf kind of plant or with Cocoa-nut fibre. When, however, they are planted thickly together, use the fibre, which will soon be covered by the foliage. Begonias planted in dry positions should always be kept moist at the root. Damping the beds overhead as the sun leaves them in the after part of the day when the weather is

dry and warm will greatly refresh them. When lifted, the tuberous varieties require careful attention so as to prevent the decaying stems from imparting any ill effects to the tubers. Remove these stems as soon as they can be twisted out without any trouble. Some growers expose the tubers in a light, dry, and airy house until the stems are quite dried up. Later on the bulbs when quite at rest should be kept in a cool place, neither too dry nor too moist, but where frost cannot reach them, being stored in either Cocoa-nut fibre or silver sand in shallow boxes until again required for starting. It is better to have single than double flowers for bedding out, and there is no want of good colours.

A class getting more popular each year is that called the shrubby set, these being known as forms of *B. semper-florens*. They are neat and shrubby in growth, with an abundance of rather small leaves, varying in shade. Conspicuous is Vernon's variety, the leaves deep crimson to light green, and pinky blossoms. There are many varieties, and as easily and similarly raised as the tuberous kinds. The plants are, when in beauty, a mass of bloom, the small flowers almost hiding the leaves. But many of the kinds are very dull in colour, and get shabby towards the end of summer. There are many uses for them in gardens—as distinct groups, or as a groundwork to beds filled with taller plants.

Bellevallia. See HYACINTHUS.

BELLIS (*Daisy*).—*B. perennis*, Daisies raised from our Wild Daisy, are among the most popular of garden flowers, although not used so much as formerly. They need only simple culture, increase rapidly, and in the spring garden are of great service in large clumps or masses. Though we have numerous kinds, growers have adhered most closely to the old flat-petalled white and the old quilled red, both of which are grown by millions as market plants. Besides these are the flat-petalled Pink Beauty, a charming pink of the quilled class; a deep rich red or crimson quilled kind, called Rob Roy; White Globe, with large white quilled petals; and many others. The yellow-blotched or Aucuba-leaved kinds have originated by sporting, and one named *aucubafolia* is a pretty kind, but rather tender, though it will do well in winter on a free porous soil, and in summer in a cool shady border, if transplanted there. The giant or crown-flowered Daisies almost form a distinct section, and, though vigorous, are much less free of bloom than the better-known

kinds. These have large and usually mottled red flowers upon long stalks, and are best suited for mixed borders. A very old favourite is the Hen-and-Chickens Daisy. It differs in no respect of habit or foliage from the double kinds, except that when the flowers are at their best they send out small ones from the axils of the scales—hence the name.

Propagation is simple, and may be done in spring and autumn. Well-dug soil suits well. Pull the plants to pieces, dibbling them in six inches apart, or a little closer. Where the soil is good the Daisy increases so rapidly that it may be transplanted twice in the year.

BELLIUM.—Plants belonging to the same order as the Daisy (Compositæ), of which some three or four forms are in cultivation. Although from the south of Europe, they are hardy on the rock-garden, but are apt to exhaust themselves in flowering. *B. bellidioides*, *B. crassifolium*, and *B. minutum* are much alike and are easily grown in light soil. *B. rotundifolium cœrulescens* (Blue Daisy) is a native of Morocco, and a pretty rock-plant. Division or by seed.

BERBERIDOPSIS (Coral Barberry).—*B. corallina* is a beautiful evergreen climbing shrub from Chili, hardy enough for open walls in the southern counties. It has large spiny leaves very much like some Barberries, the flowers bright coral-red, hanging in clusters on slender stalks, and borne for several weeks in summer. It is charming for a wall, preferring partial shade, such as that of a wall facing east or west, and does best in peaty or sandy soil. Seed or layers.

BERBERIS (Barberry).—A valuable group of hardy shrubs, among the most beautiful of which is Darwin's Barberry (*B. Darwini*). *B. stenophylla* is a hybrid between *B. Darwini* and the small *B. empetrifolia*. *B. dulcis* is a pretty Barberry, whose slender shoots are hung with tiny yellow flowers. The common Barberry (*B. vulgaris*) is brilliant when in fruit in autumn, and it has several varieties, some of which differ considerably in habit of growth and colour of the berries. A beautiful shrub-group could be formed of the fruiting Barberries alone, using *B. vulgaris*, *B. aristata* (which has berries covered with white powder, like Plums), and the small-growing *B. Thunbergi*, also remarkable for its scarlet berries, which remain on the bush throughout the autumn. *B. Wallichiana* has handsome flowers and foliage, and is worthy of cultivation in the best collections.

The Mahonias are now merged in

the genus *Berberis*. As flowering shrubs they are of much value, as is shown by the beauty of flower and fruit of the common evergreen Barberry, *B. aquifolium*, and its varieties. *M. fascicularis*, though not hardy everywhere, is fine when in bloom, its stems being wreathed with golden clusters for some weeks, while *M. hybrida* is scarcely less ornamental and certainly hardier. *M. repens*, *M. glumacea* and *M. trifoliata* are all good dwarf Evergreens. In mild districts there is not a finer flowering shrub in spring than *M. nepalensis*, with large clusters of yellow

Berberis nepalensis.

bloom and massive foliage. *M. japonica* is a good evergreen in sheltered places, and a fine flowering shrub. Most of the evergreen kinds thrive best in leafy or peaty soils, the ordinary hardy kinds in any garden soil.

Berkheya. See *Stobæa*.

BETA (Chilian Beet).—*B. cicla variegata* is a variety of common Beet, the leaves being more than 3 ft. long, vivid in colour, their midribs varying from dark waxy orange to vivid crimson. The plant should be sown in a gently heated frame, and afterwards planted out in rich ground. It varies much from seed, and

the most striking individuals should be selected before the plants are put out. Used sparingly, its effect is often perhaps more telling than if in quantity, but it is a mistake to use this or any such vegetables in the flower-garden. Other varieties of the common Beet are used in

the tall and graceful Birches of more temperate lands take a bushy form, and there are also arctic and northern species which are small and give us little effect or interest except for botanic gardens. The Birches, generally, are easy to grow, and should be raised from seed, in which way

Weeping Birch.

the flower-garden for the sake of their dark colours, but no artistic flower-gardening is possible where such vegetables out of place are used.

BETULA (*Birch*).—Trees of cold and arctic regions, often forming vast forests. Sometimes, in the extreme north, even

they come very easily, excepting what are called the garden or nursery varieties. These are grafted, and might be propagated by layers, if anybody would take the trouble, and in this way might be longer lived and useful in some ways. Owing to the beauty of our native species

in all sorts of positions north and south, we have not lost so much by neglecting the American species, and it would be difficult to expect, however, any of them to show anything finer in effect than such woods as we see in northern and central Europe, of Birch alone, the silvery stems rising out of heath or ferns. Among the greater, or tree, Birches after our own (including its varieties or allies, *verrucosa* and *pubescens*) are the Canoe Birch (*B. papyrifera*) or Paper Birch, a forest tree of Northern America, which is hardy in Britain; the River Birch (*B. nigra*), also a tall tree of Northern America; the Cherry or Sweet Birch (*B. lenta*), which is sometimes 80 ft. high and also of northern distribution (Canada, Newfoundland); the Yellow Birch (*B. lutea*), sometimes 100 ft. high; the Western Birch (*B. occidentalis*), a medium-sized tree of Western America and British Columbia, and the White Birch (*B. populifolia*), also a slender tree of Canada and the Northern States with tremulous leaves like some of the Aspens. Among the dwarf or shrubby kinds are *B. nana*, *pumila*, *humilis* and *fruticosa*; but the Birches of any real value for our home landscapes are the tree kinds. From a garden point of view, perhaps the most important trees of the genus are the varieties of our common Birch and its allies, such as the weeping and cut-leaved forms, also those with purple leaves, and the nettle-leaved Birch. *B. maximowiczii* is a distinct and fine Japanese kind which grows very high and with a trunk 2 to 3 ft. in diameter, the bark orange-coloured, the leaves very large. *B. ermani* is also a common kind in Japan.

An incident in my own planting of Birches may be worth recording here. Having got a collection from America, I planted them by some ponds where I thought they might have a better chance, as they often grow well near water in their native country. I lost a good many of them, not knowing the cause until I happened to pull up some of the dead young trees, when I found the main roots were all barked round by the common water-rat, working below the line of the snow during a hard winter.

As regards the positions of Birches in a pleasure-ground, there is not a more graceful lawn tree than the cut-leaved and weeping kinds, the more so where trees of light shade are desired.

The American tree kinds might take their places in the mixed woodlands of a country place, or by streams or pools. W. R.

Bignonia. See **TECOMA**.

BILLIARDIERA LONGIFLORA (*Purple Apple-Berry*).—An elegant climbing plant, hardy in the southern counties. Its narrow oblong leaves show its purple blue berries to advantage as they dangle in profusion in autumn. The flowers are of a greenish white colour and are not so showy as are the berries. The Tasmanian apple-berry is a charming shrub for a low wall, or it may be grown in pots plunged outside and trained on old bamboo stems, so as to be taken indoors when the fruits are coloured. It is readily increased either by cuttings or layers, or by seeds sown as soon as the berries shrivel on the stems. *B. cymosa* is also in cultivation. Australia.

Blechnum. See **LOMARIA**.

BLETIA.—*B. hyacintha* is a beautiful Chinese Orchid, having ribbed leaves, and slender flower-stems 1 ft. or more high, bearing about half a dozen showy flowers of a deep rosy pink. It is hardy, and thrives in sheltered and shaded situations in peat borders in winter. In cold districts it would be well to cover the roots. It is very interesting for the bog garden or a bed of hardy Orchids.

Blitum. See **CHENOPODIUM**.

BLUMENBACHIA.—*B. coronata* is an interesting annual flower, showy, the foliage elegant, and the growth dwarf, the structure of the flowers singular. Its culture is that of a hardy annual, but it is better sown in spring than in autumn. It flowers from July to September in warm light soils. The other species in cultivation are *B. insignis* and *B. multifida*. South America. (Loasa order.)

BOCCONIA (*Plume Poppy*).—*B. coronata* is a handsome and vigorous perennial of the Poppy order, growing in erect tufts 5 to over 8 ft. high, with numerous flowers in very large panicles, not showy, but the inflorescence, when the plant is well grown, has a fine effect. It is best in the shrubbery in ordinary garden soil, and is excellent in bold groups, the leaves, too, being fine in form. Division. China. Syn. *B. japonica*. *B. frutescens*.—A vigorous Mexican shrub, $3\frac{1}{2}$ to nearly 6 ft. high, with few and very brittle branches, large, seagreen, handsome leaves, and greenish flowers. Very effective on Grass plats, in groups or as isolated specimens. It requires a somewhat warmer climate than ours, but may be placed out from June to the end of September. It is difficult to propagate by cuttings, easier from seed.

Boltonia. See **Aster**.

BOMAREA.—Curious and handsome plants of the Amaryllis order allied to *Alstroemeria*, requiring greenhouse tem-

perature so far as now known. Mr. Archer Hind, of Newton Abbot, has *B. edulis* out-of-doors, and it has flowered well after surviving a temperature of 25° below freezing. If any of the other species should prove hardy in the southern counties, their fine bold twining habit and handsome flowers would be a gain. Best in free sandy or peaty soil.

BONGARDIA.—*B. rauwolfi* is a plant of the Barberry order, though remarkably

The Plume Poppy (*Bocconia cordata*).

unlike one, as it has a Cyclamen-like root-stem, from the apex of which spring the flower stems 6 in. high, bearing roundish golden blossoms from $\frac{3}{4}$ to 1 in. across, which droop gracefully from slender stalks. Though now rare, this beautiful plant was among our earliest garden plants. Found from the Greek Archipelago to Afghanistan, and hardy on dry soils. Seed. Syn. *Leontice*.

BORAGO (*The Cretan Borage*).—*B. orientalis* is a vigorous perennial, bearing pale-blue flowers early in spring, having

very large leaves through the summer. Easily naturalised in any rough place, but not worth a place in the garden proper, being coarse and taking up much space. The common Borage is very pretty, naturalised in dry places or banks, where it might often be welcome for use as well as beauty. There is a white variety. *B. laxiflora* is pretty with suspended blue flowers; it grows very freely on sandy soils.

Borkhausia. See CREPIS.

BORONIA.—These are usually treated as greenhouse plants, but succeed in the open in the south-west according to Mr. Fitzherbert. At Tregothnan, at the end of March, two bushes of *B. megastigma*, planted in front of a wall, the larger of which was about 3 feet in height, were coming into profuse bloom, and already scented the air with the first of their brown-yellow drooping cups. *B. heterophylla*, with its purple-red flowers, was also expanding blooms, and *B. Drummondii*, *B. elatior*, and *B. polygalæfolia* were also growing in the same garden. Australia.

Botryanthus. See MUSCARI.

BOUSSINGAULTIA (*Madeira Vine*).

—*B. baselloides* is a luxuriant trailing plant of the Spinach order with shoots 16 to 20 ft. long, flowering late in autumn, the flowers small, white, fragrant, and becoming black as they fade. The fine green leaves are shining, fleshy, and slightly wavy; stems twining, tinged with red, growing with extraordinary rapidity, and bearing many tubercles. Suited only for dry banks and chalk-pits, associated with climbing and trailing plants. Increased by tubercles of the stem; these break with the least shock, but the smallest fragment will vegetate. South America.

BRACHYCOME (*Swan River Daisy*).

—*B. iberidifolia* is a pretty Australian annual of simple culture, about 8 to 12 in. high, the flowers about 1 in. across, in loose terminal clusters, and bright blue, with a paler centre. There are other sorts, with flowers of various shades of blue and purple, and one of pure white. Sow in cool house in September as soon as ready, prick off four or five in a 4-in. pot, keep in cold pits during winter, and guard against damp. Pot on again in March singly into 4-in. pots, and finally at end of April plant out into open borders; or sow on slight hotbed in March, prick out into pits for transplanting into open in May; or sow in open in April and May. *B. Sinclairi* is a pretty little kind with tiny Daisy-like heads which sometimes sows itself in sandy soil.

BRACHYGLOTTIS REPANDA.—A New Zealand shrub, with fine foliage deeply-toothed ; of a deep green, mottled with dark purple on the upper side and silvery-white beneath. As many of the leaves on a shrub invariably display their undersides the sharp contrast between the white and the deep green is striking. The leaves are nearly a foot in length and 8 in. in breadth. In the small state they are ivory-white on both sides. The flowers are said to be minute and inconspicuous, but the shrub is not apparently a free bloomer, as a specimen that has grown at Kingswear, S. Devon, for six years, and is now 5 ft. 6 in. in height, has shown no sign of blossom up to the present. It appears to be quite hardy in the south-west. Syn. *Senecio Fosteri*.

BRASSICA.—Some forms of the Cabbage, particularly the variegated Kails, are used in the flower garden for winter effect, where people are ignorant of what a flower-garden means—in winter even a beautiful thing to those who know how to make it so. So we will forego descriptions of how to grow Kail for the flower-garden. The odour of such things about a house after a hard frost should be enough of itself to condemn them. And as for beauty, a corner of a labourer's garden with a few Snowdrops and Hepaticas is worth all the displays of the floral kail-yard ever seen.

BRAVOA (*Scarlet Twinflower*).—*B. geminiflora* is a pretty Mexican bulbous plant of the Amaryllis order. From 1 to 2 ft. high, the flower-stems stout and erect, bearing on the upper part numerous pairs of nodding tubular flowers of a rich scarlet outside, but inclined to yellow within. It succeeds well in warm sheltered situations in borders of light and well-drained soil, but requires some protection over the bulbs in winter. It flowers in autumn, and remains a long time in bloom.

BREVOORTIA (*Crimson Satinflower*).—*B. coccinea* is a beautiful bulbous flower, of the Lily order, also known as *B. Ida-Mai*. It is one of the prettiest Californian plants. The flowers grow on stems, $1\frac{1}{2}$ to 2 ft. high, and are tubular and of a deep crimson-red, the lips a vivid green. It succeeds best in friable loam. Plant in October, and the roots may remain undisturbed for several years. Not less than three plants should be grouped together, and a dozen will produce a still better effect; an Osier rod in their midst will support the fragile stems. Offsets and seed.

BRIZA (*Quaking Grass*).—A graceful family of Grasses, American and Euro-

pean. *B. maxima* is one of the handsomest, growing 12 to 18 in. high ; may be sown in the open in March in any garden soil, is quite hardy and graceful while growing, and useful for decoration either green or dried. *B. media* (Common Quaking Grass) is smaller, 9 to 15 in. high. Borders. Seed.

BRODIAEA (*Brodie's Lily or Californian Hyacinth*).—A charming family of North American liliaceous plants.

B. congesta has the stems long and wiry, the flowers in a dense umbel ; purplish blue in colour, and very lasting. *B. alba* is a pretty white-flowered variety. *B. capitata* much resembles this kind.

B. grandiflora.—This is an old and pretty plant, about 5 in. high, with deep purplish-blue flowers in a loose umbel in July. At the time of flowering the foliage is often withered, and to hide the nakedness of the stems it is sometimes best planted among other low-growing plants.

B. Howelli.—This pretty species has flowers in a fine umbel, bell-shaped and milky white. A beautiful variety of it (*lilacina*) has delicate bluish flowers, retaining its fine deep-green foliage at the time of flowering, and throwing up sturdy stems about 2 ft. high, crowned by large flat umbels of well-shaped flowers.

B. laxa is a very old garden plant, of which there are several varieties, not only varying in colour, but in the size of the flowers and the umbels.

B. minor, probably a variety of the foregoing, is very pretty ; the scape is not more than an inch high, about fifteen flowers in the umbel ; the colour purplish blue, with a lighter centre.

B. peduncularis is a pretty white-flowered species, with large umbel of porcelain-white blossoms.

These bulbs may be planted from October until December, and in mild localities will pass the winter in the open unprotected. In Holland, where the winters are often very severe, they are covered with reeds or straw at the approach of the cold season. This covering will keep the cold off, the soil open, and ward off the effects of a treacherous winter sun.—C. G. V. T.

BROMUS (*Brome Grass*).—At least one of this large genus of Grasses is very graceful and worthy of culture—that is *B. briziformis*, a hardy biennial about 2 ft. high, with large graceful and drooping heads. It is more valuable for cutting and drying than any of the Quaking Grasses. It may be grown as an annual sown out-of-doors in spring, and autumnal-sown plants would be best in warm soils.

BROWALLIA.—Annual plants of the Nightshade Order, chiefly Peruvian. *B. elata* has usually been regarded only as a beautiful pot-plant, but it does well in the open air, either in a bed by itself or in large patches with other things. It supplies a shade of colour difficult to obtain, and is useful to cut from. Sow the seed in March, prick off the young plants when large enough to handle, grow them on till they are strong, and plant out in May. There is a white variety equally useful. *B. Roezli* is a dense compact bush, 16 to 20 in. high, with shining green leaves. The flowers are of a delicate azure blue, or are white with a yellow tube, and are unusually large for the genus. They come in uninterrupted succession from spring till autumn. Rocky Mountains.

Brugmansia. See DATURA.

BRUCKENTHALIA SPICULÆFOLIA.—A pretty little heath-like plant with pale purple flowers under 1 ft. high. It is a plant for the rock-garden in free peaty soils. S.E. Europe.

BRYANTHUS.—A rare and interesting group of northern and Arctic heath-like plants, few of which are in cultivation. *B. erectus* is a dwarf evergreen Ericaceous bush, from 8 in. to 1 ft. high, bearing pretty pinkish flowers. Said to be a hybrid. In fine peat, it grows well, and is best on the rock-garden or among dwarf alpine shrubs. Among the known kinds are *Breweri*, *glanduliflorus*, *gmélini*, all peat and rock-garden plants. Sometimes our own beautiful *Menziesia cærulea* is included under this name.

BUDDLEIA (*Orange Ball Tree*).—*B. globosa* is a favourite shrub from Chili, often seen in the southern coast gardens, where it is hardier, and in Ireland; the flowers, balls of bright yellow, are showy in early summer. It is of rapid growth, and if badly cut down during a severe winter generally grows again in the following summer. *B. Colvillei* is a tender Himalayan kind, with bunches of pale rose-coloured flowers. It is a shrub for mild districts only. Other species less satisfactory for open-air culture are *B. crispa*, *B. Lindleyana*. *B. albiflora* is from Central China, with flowers in long spikes. The name, however, is a mistake, as the flowers are mauve (not white). It is a handsome plant, and promises to be hardy and free. *B. variabilis*, is a native of the mountains of China. It is a large shrub, 8 to 10 or more feet high, variable in foliage, and with flowers densely crowded in globose heads peduncled in the axils of the uppermost leaves, and which vary in colour

from pink to pale lilac, with an orange throat. Some forms of this are very free and beautiful shrubs.

BULBOCODIUM (*Spring Meadow Saffron*).—*B. vernum* is a pretty Liliaceous bulb from 4 to 6 in. high, and one of the earliest of flowers, sending up large rosy purple flower-buds, distinct in colour. The tubular flowers are nearly 4 in. long, and are usually prettiest in the bud state. Associated with very early flowering plants like the Snowflake, Snowdrop, and Greek Anemone, it is welcome in the rock-garden or in warm sunny borders. Easily increased by dividing the bulbs in July or August, and replanting them from 4 in. to 6 in. apart. One other species, *B. trigynum*, is sometimes met with in cultivation. Alps of Europe.

BUPHTHALMUM.—*B. speciosum* is a bold free and showy perennial, hardy, and

Buphthalmum speciosum.

growing in any soil, with large heart-shaped leaves in great tufts, and, in summer and autumn, handsome heads of showy yellow flowers with dark centres. An excellent plant for shrubberies and covering the ground here and there in bold masses, as it grows so close that it keeps the weeds down and in such ways also gives a better effect than in small tufts in the mixed border. Central Europe. Division. Syn. *Telekia speciosa*.

BUTOMUS (*Flowering Rush*).—*B. umbellatus* is a handsome native water-plant, often very fine in a rich muddy soil and hardy and free to flower. Common by some river banks, and growing with water-side seeds in garden ponds and lakes, flowering in summer rose-red in bold umbels. Division.

BUXUS (*Box*).—This beautiful bush or low tree grows wild on some of our southern chalk hills, and is much cultivated in gardens as an edging and also in shrubberies. The beauty of its habit is seldom seen in gardens, owing to its being grown under other trees or to its being too much crowded, but seen wild its habit is most graceful, and it might be well to secure the same beauty of habit by planting in groups upon exposed knolls. Almost all the species and varieties have variegated forms, which, though pretty, are not so good as the natural forms. *B. sempervirens* (the Common Box) from its close bushy habit is one of the most useful Evergreens for garden hedges. It may be pruned or clipped into any shape; and when topiary gardening was in fashion, it shared with the Yew in the formation of designs and figures of men and animals. While there are few soils in which it will not thrive, it prefers such as are light, with a warm gravelly subsoil. Among the typical species is *Japonica*, a form of the common Box, but hardier. The Minorca Box (*B. balearica*) is a native of Balearic and other islands in the Mediterranean, as well as Italy and Turkey, where it forms a fine tree of from 60 to 80 ft. in height. The leaves are larger than those of the common Box, and when exposed to the sun are of a lighter green, but it only succeeds well in warm well-sheltered situations with a dry soil and a warm subsoil. Other species are *Harlandi*, *microphylla* and *Wallidiana*, few of these so precious as the common Box. The variegated forms of Box are never so good in effect as the green kinds.

CACTUS.—Various plants belonging to the Cactus Order of plants have proved hardy in England. *Opuntia*, *Echinocereus*, *Mammillaria* and *Echinopsis* are among the hardiest. Pretty effects are shown by some Cacti in the open air in Southern England, the plants blooming freely when fully exposed in the sun on a warm rock-garden, though the loss of the sun of their native plains is against their being very happy in Britain.

When the foliage of a plant is perennial, as in Cacti, it is well to place it so that it may be safe from injuries, apart from

climate, and the best places are, as a rule, on well-drained ledges in the rock-garden. Plants of this family should be planted in the rock-garden in open airy situations, free from dripping water, and where the drainage is thorough.

CAESALPINIA JAPONICA.—A graceful and distinct summer-leaving shrub, but it is one of a genus usually tropical, and is hardy in the country around London. It has hard prickles, leaves a foot long and very graceful, and handsome yellow flowers in racemes. It does best in good free soil, and is excellent for dry banks. Seeds. R.

Calampelis. See ECCREMOCARPUS.

CALANDRINIA. (*Rock Purslane*).—Dwarf annual or perennial plants of the Purslane Order. Few very effective for gardens; some are brilliant border or rock plants, thriving in warm soils. *C. discolor* is a beautiful S. American plant, from 1 to 1½ ft. high, with fleshy leaves, pale green above and purple beneath, and bright-rose flowers in a long raceme, 1½ in. across. *C. grandiflora* is a handsome annual with showy blossoms. It thrives in a warm and good loam, and blooms throughout the autumn. *C. oppositifolia* is a distinct plant, and is well marked by its larger, very thick, succulent leaves and delicate white flowers. *C. speciosa* has flowers from ½ to 1 in. across, purple-crimson; on sunny mornings they open fully, closing early in the afternoon. *C. umbellata* is a distinct and pretty plant, the flower dazzling magenta-crimson. It does well in sandy peat or in other light earth, and is perennial on dry soils and in chinks in a well-drained rock-garden, readily raised from seed sown in pots or in the open air in fine sandy soil. It may also be treated as an annual sown in frames very early in spring. Chili.

There are other kinds, such as *C. Lindleyana*, *C. procumbens*, *C. compressa*, and *C. micrantha*, but not so good as the above.

CALCEOLARIA (*Slipper Flower*).—Handsome herbs or low shrubs of the Foxglove Order, mostly from South America, many of high garden value, but few are hardy. In the London district they are used much less than they were some years ago, as many of the varieties die from disease, or are short-lived as regards bloom, but the handsome *C. amplexicaulis*, with its bold habit and lemon-yellow flowers, is always a favourite.

PROPAGATION.—The best time for pro-

pagating the shrubby varieties is the end of September and October, in a cold wooden or turf frame on a dry bottom ; fill it to within 6 in. of the top with sandy loam, and over that spread some clean silver sand. Then select stubby firm side shoots, pick out any flower-spikes that are visible, remove one or two of the base leaves, cut horizontally below a joint with a sharp knife, and dibble them thickly, regularly and firmly into the frames, giving a sprinkling of water through a fine rose to settle the soil and to prevent their

they should be transplanted farther apart than previously, into other frames filled with rich open soil, where they will become fit for planting out by the middle of May.

SPRING PROPAGATION.—Spring cuttings are mostly rooted in hotbeds, in boxes, or in pans, and often as many damp off as survive to become plants ; nevertheless, where the stock is deficient, this mode must be resorted to. It is best to strike them after the middle of March in pure sand in a hotbed or propagating pit

Calandrinia oppositifolia.

flagging. Keep the frames close and shaded for a day or two, but afterwards remove the shading, and only use it during the succeeding month to counteract the effects of bright sunshine.

WINTERING.—These frames require no further care beyond protection from frost, by covering the sashes, and banking up the sides, if of wood, with soil. Wooden boxes, seed-pans, or pots might also be used for striking Calceolarias in ; and in them the plants might be wintered in any pit, greenhouse, or conservatory. Whether propagated in frames or boxes,

where there is no stagnant moisture, and, when well rooted, to pot them, or put them in boxes in light sandy soil, still keeping them in warm quarters for a few days. After that, gradually shift them into places in which there is less heat. Powdered charcoal or wood ashes strewed on the soil among the cuttings prevents damp, and the watering-pot should be used judiciously.

Species of Calceolaria.—Apart from the varieties, a number of species are of some merit for the flower garden, and some are neglected and unknown. The greater

number inhabit mountain valleys, and ascend to an elevation of from 13,000 to 14,000 ft. in South America, where they enjoy a temperate climate.

C. alba.—A lovely sub-shrubby species from Chili growing 3 to 4 ft. high, with clusters of snowy white flowers.

C. amplexicaulis.—A fine kind with soft green leaves clasping the stem and many lemon-yellow flowers. Owing to its tall habit it groups well with various plants, and it is handsome in the flower garden in autumn. Ecuador.

C. hyssopifolia.—One of the best of the dwarf kinds, bearing loose clusters of lemon-yellow blossoms from early summer till autumn, the foliage resembling that of Hyssop. Ecuador.

C. Kellyana.—A curious hardy hybrid, with short downy stems, 6 to 9 in. high, flowers about an inch across, yellow with numerous small brown dots top of the stems. Its foliage resembles a Mimulus, creeping along the ground, and it is a very interesting dwarf rock-garden plant.

C. Pavonii.—A noble kind, from 2 to 4 ft. high, with large light-green, much-wrinkled foliage, bearing large, pale-yellow, slipper-shaped blossoms. It is a fine object against a warm south wall, but at the approach of winter it should either be lifted or protected. Peru.

C. violacea.—A distinct kind, with small helmet-shaped flowers, rich purple and spotted; succeeds well on warm borders or the rock-garden, and, if slightly protected, withstands mild winters in the south. Chili.

Calendula officinalis (*Pot Marigold*).—A hardy biennial; one of the best for autumn and winter flowering. The petals were formerly used to flavour dishes in old English cookery, hence its name. For late blooming, seed should be sown in July. The plants sow themselves freely, and may be sown in the open ground either in spring or autumn. There are now pretty varieties, single and double.

CALLA (*Bog Arum*).—*C. palustris* is a small hardy trailing Arum, with white spathes. Flowering in summer, and increasing rapidly by its running stems. For moist spongy spots near the rock-garden, or by the side of a rill, it is one of the best plants, but its beauty is best seen when it is allowed to ramble over rich muddy soil. N. America and N. Europe.

Callichroa. See LAYIA.

Calliopsis. See COREOPSIS.

Calliprora. See BRODIAEA.

CALLIRHOË (*Poppy Mallow*).—Handsome North American plants, of

the Mallow order, of which some half-dozen kinds are known in our gardens. They are hardy herbaceous perennials, and succeed well in the open border in rich light soil.

C. alcæoides is an erect herbaceous perennial, with the habit of a *Malva*, the flowers from 1 inch to 1½ inches in diameter. Kentucky and Tennessee.

C. digitata.—A distinct glaucous perennial herb, 2 or 3 ft. high, with red dish-purple flowers in summer; it is not so showy as the other kinds.

C. involucrata.—A dwarf perennial, with large violet-crimson flowers 2 in. in diameter. It is excellent for the rock-garden, bearing a continuous crop of showy blossoms from early summer till late in autumn. It has the best effect when allowed to fall over the ledge of a rock. California.

C. macrorhiza alba is a pure white form of a kind with purplish-carmine flowers, and erect stems, from 1½ to 2½ ft. high, with a raceme of flowers. There are several shades of colour in the species, from rosy-purple to pale rose; sown early they will bloom the first year. N. America.

C. Papaver has a trailing habit, and flowers incessantly from early summer until late autumn. The flowers are a bright purple-red, as large and somewhat resembling those of our common field Poppy.

C. pedata.—A perennial, with trailing stems bearing handsome crimson flowers, 2 in. in diameter; sown early the plants bloom the first season, and flower until late in autumn, and in dry soils the roots survive our average winters. The varieties *nana* and *compacta* are pretty dwarf varieties.

CALLISTEMON SALIGNUS. --

There are two forms of this Bottle-brush shrub, one bearing pale yellow flowers and the other crimson. Others are *C. lanceolatus*, carmine, and *C. speciosus*. These grow well as bushes, some of the first sometimes 10 feet and as much in diameter. These plants thrive in Devon and Cornwall, and in the milder seashore districts. Australia.

CALLISTEPHUS (*China Aster*).--

Among the many annuals now in cultivation China Asters (*C. chinensis*) are among the best, and when well grown and cared for they do as much to adorn a garden during summer and autumn as any annual plant. To see them in their beauty, however, they must be grown in masses, and well cultivated—not at any stage left to haphazard or poor culture. It will also

be found that they are more satisfactory on good open soils than on heavy ones.

VARIETIES.—China Asters may be classed according to height, habit, character of flower. Tall Asters comprise the fine Pæony-flowered, the tall Chrysanthemum, the Emperor, the tall Victoria, the Quilled, and a few others. Kinds of medium height are the dwarf forms of the Victoria, the fine Cocardeau, the Rose, and the Porcupine. The dwarf forms comprise the short Chrysanthemum, the dwarf pyramidal, and specially the dwarf bouquet, which is one of the most beautiful for pot culture. The best bedding kinds are the medium-growing Victoria, the Rose, and the dwarf Chrysanthemum, as these vary from 9 to 12 in. in height, and form good bunches of bloom on each plant, and fine masses of colour collectively. The dwarf bouquet kinds, whilst specially good for pot culture, are valuable as edgings to beds of taller kinds. For pot culture for exhibition the best are the medium-growing Victorias, as these, if of a good strain, possess quality, and handsome even heads of bloom.

CULTURE.—Mr. J. Betteridge, a very successful grower of asters, writes:—"For several years I always sowed the seed in bottom-heat; now I sow it, between 26th March and 26th April, in a cold frame, under glass, in drills 6 in. apart, and not too thick in the drills. A few days suffice to bring the plants above the soil, when air must be given, or they will be weak. When large enough, prick them out into another cold frame, slightly shaded, where they will soon root, and after they are strong enough to handle plant them out in well-manured soil, and be careful not to break the tender fibres of the roots. Let the rows be 1 ft. apart, and plant the strongest plants 1 ft. from each other, in showery weather, and they will soon root. If the weather be hot give them a little water till rooted: afterwards keep them clear of weeds. About the first week in August top-dress with manure from an old hotbed, giving a good soaking all over in dry weather.

"**SOIL.**—China Asters like a deep rich soil, and, should dry weather set in, it is only in such soil that really fine flowers can be obtained. Planted in the ordinary way, they are weeds in comparison with those that are well nourished. Confined to the top shallow crust of earth, they soon starve. The best way to manage them is to dig and cast off the top spit to one side, handy to be returned to its place again, and then to trench and break up the soil below, working in plenty of short

manure. In very light soils a few barrow-loads of clay, chopped fine and mixed well in, will help. The thing to aim at is to keep the soil cool and moist; then, if the weather be favourable, the plants will take care of themselves.

Calluna. See ERICA VULGARIS.

CALOCHORTUS (*Mariposa Lily*).—A lovely family of bulbous plants from Western North America, belonging to the Lily Order. Forming one of the most charming groups of hardy bulbous plants, the colours being so varied and delicate. Excepting the Mexican species, which are, fortunately, few, Calochorti are hardy; but my experience is that unless on very warm soils their culture is precarious in our country, and no wonder, considering they come from one of the most genial and sunny of climates.

They are so singularly beautiful, however, that many will attempt their cultivation, and the advice of Mr. Carl Purdy, who has studied the wild species in their native wilds, and cultivated them, is the best we can have.

THE CULTURE OF CALOCHORTI.—Calochorti are natives of a vast region in North America, stretching from far east of the Rocky Mountains to the Pacific Ocean, and from Northern Mexico to British America. From the sea-coast and islands they grow from 6000 feet to 9000 feet altitude on the peaks. Some are natives of the intensely hot deserts of Southern California and Arizona, and some grow in the moist meadows of Oregon in a climate differing but little from that of England. In Montana and other States of the inland region the species indigenous there have to bear as low a temperature as 40° below zero. In the soils in which they naturally grow there is as much diversity. Clay, sand, loam and rocky *débris* are respectively the chosen homes of certain species, and several choose the blackest and stickiest of clays. One is found in salt meadows and many in grassy meadows.

I have at different times tried nearly every known species in many soils and situations. The winter climate of Ukiah is quite wet, with the thermometer often at 20° to 24°, and sometimes as low as 15° above zero. Often the Calochorti leaves are frozen till they crackle, but I have never known any injury to result. In spring there is abundant rain until their flowering time, while our summer is perfectly dry. Perfect drainage is the first essential to success for all sorts. I have gradually come to the use of three mixtures. Along our river banks there is a winter

deposit of sandy silt. This is excellent Calochortus soil, but not so good as the next. I find the best results follow from the use of about one half half-rotten spent tan bark with one half sandy or clay loam. The tan bark rots slowly and gives a loose, well-drained soil, which will not pack. This suits all Calochorti and gives a splendid bloom and firm, well-ripened bulbs. For English growers many substitutes will occur. I know of but one disease to which Calochorti are subject. This is a mildew, the "Lily leaf ash." It attacks them in the spring, just before the flowering stalk appears. It attacks the leaf tissue, and in a week entirely destroys the leaf and injures the bulb. In their susceptibility to the attacks of the fungus Calochorti vary greatly. All of the species having a single glossy radical leaf are free from its attacks. This includes all of the Star Tulips and the *C. nitidus* group. While all of the desert species, such as *C. splendens*, *C. Kennedyi*, *C. Palmeri*, *C. Gunnisoni*, *C. Nuttalli*, *C. macrocarpus*, and *C. flexuosus* are subject to it to such an extent as to make their successful culture very near hopeless unless some cure can be found for this mildew.

While the amateur may prefer to try all sorts and get his experience for himself, I believe that many growers will appreciate a list of the best growers among the Calochorti. For such I would recommend the following:—

In the globular-flowered Star Tulips, *C. albus*, white, *C. pulchellus*, yellow, and *C. amœnus*, rose-coloured, are all thrifty and beautiful. Among the open-cupped Star Tulips, *C. Benthami*, in yellow, and *C. Maweanus* var. *major* are the best. There is, however, a race of giant Star Tulips, sturdy plants 9 in. to 16 in. high, with large flowers of the same delicate style as *Maweanus*, which, although rare now, will soon quite displace the smaller ones. These are *C. apiculatus*, straw-coloured, *C. Greeni*, blue, and *C. Howelli*, yellow. *C. lilacinus*, a lavender-coloured sort, is a splendid grower and very desirable. In the next section, *C. nitidus* is a fine hardy and very beautiful plant, combining the attributes of Star Tulip and Mariposa. In the *C. Weedi* set, *C. Plummeræ* is best. Of the true Butterfly Tulips, *C. Vesta* is by far the best grower. It is a sort which has great vitality, can be propagated very rapidly by offsets (three or four a year), and grows well in any well-drained soil. *C. venustus* var. *purpurescens* is almost as good a grower, and the two are by all

odds the easiest Calochorti to grow. *C. venustus* var. *citrinus* in lemon is very thrifty. That grand plant *C. clavatus* is a fine grower.

I have found that by very late planting I can bring sorts to flower which planted early invariably succumb. I had the same experience a year ago. It would seem that when planted early they reach a standstill period in late winter and cannot resist disease, while planted late they are in full growth at the critical period.

Clearly if so much care is needed in their own lovely climate, in ours it will require all our care to secure them perfect drainage, porous soil and warmth, though no doubt some of naturally warm soils may suit them.

Calochortus flavus.

***C. albus*.**—This is a charming species and more easily grown than most. This may be planted in the open border without much fear of failure, unless the soil be very stiff. It increases rapidly by offsets and seeds, which ripen and produce good flowering bulbs in three years. These require rich soil during the first two years, after which they may be planted in the general collection.

C. apiculatus is a tall stout-stemmed species 9 to 18 in. high, with large straw-coloured flowers. The variety *minor* has creamy flowers with a fringe of yellow hairs in the centre.

C. Benthami.—A pretty dwarf species from 4 in. to 8 in. high, the leaves long and narrow ; the flowers, of a rich citron-yellow, often deep brown at the base, and densely covered with yellow hairs, are erect, from three to six in an umbel, and produced in June and July. California.

C. clavatus has strong much-branched flower stems, bearing very large widely expanded blossoms of golden-yellow.

C. cœruleus.—A dwarf species, rarely exceeding 6 in. in height, with umbels of three to five large flowers of a bright lilac, dotted and lined with dark blue, the gland at the base being covered with a pretty fringed scale. California.

C. elegans.—A fine dwarf species, variable, bearing in June three to five drooping flowers, white or greenish-white with a purplish base, bearded, but not ciliate. The gland is covered by a fringed scale. The narrow leaf is longer than the flower-stem, smooth, and nerved.

C. flavus.—It represents a form in which the flowers are upright, and the petals have an outward curve instead of an inward curve. It is, perhaps, not quite so hardy as most kinds, but it will be found to do well at the base of a south wall. It is also known as *C. pallidus* and *C. luteus*. Mexico.

C. Greeni.—A fine bold species, growing a foot or more in height, and blooming in early June, three to five large, clear, lilac flowers, barred below with yellow and purple, and often loosely covered with long hairs. The leaves are broad, glaucous green, and pointed. California.

C. Gunnisoni has larger flowers of a bright lilac, yellowish-green below the middle, where they are banded and lined with purple. A native of the Rocky Mountains from Wyoming to New Mexico, flowering with us in July.

C. Howelli is a strong growing species with long glossy leaves and large creamy white flowers.

C. Kennedyi.—This is the most brilliant of the Mariposa Lilies known to us, and the flowers are dazzling scarlet in colour. It has proved perfectly hardy, and grows about 18 in. high. California.

C. lilacinus.—This is of very distinct habit, and has curious, hairy flowers, which are borne from four to ten on a stem, from 6 in. to 8 in. high, and they are pale lilac in colour. California.

C. longibarbatus.—A curious species from Oregon and Washington Territory. It grows about a foot in height, the stem bearing one to three pale purple-lilac flowers each 1 to 1½ in. in diameter, with

a dark purple stripe across the base of each petal, and a long beard just above it. Flowers in July.

C. luteus.—A handsome and variable species, from 1 ft. to 2 ft. in height ; the flowers vary from one to six to a stem, the colour varying from yellow to deep, rich orange, and lined with brownish-yellow below the middle. In the variety *citrinus* the whole flower is rich lemon-yellow, with a central circular brown or purple blotch ; and in the variety *oculatus* it varies from white and lilac to yellow, with a dark-brown spot.

Calochortus fuscus.

C. Lyoni.—One of the earliest Mariposa Lilies, with numerous large blossoms varying from pure white to rose with a large black spot at the base of each petal.

C. macrocarpus.—A tall handsome species, found on the undulating barren grounds around the great falls of the Columbia River. It grows from 1½ ft. to 2 ft. in height, the flowers, 3 in. to 4 in. in diameter, purplish-lilac, somewhat paler at the base and with greenish mid-vein.

C. madrensis.—A pretty little species with bright orange-yellow flowers in

August and September, and a tuft of deep-orange hairs at the base of each segment. It rarely exceeds a span in height, the stems bearing several flowers in a loose head. Mexico.

C. Maweanus is a low plant, from 5 in. to 9 in. in height, and bearing from four to six bell-shaped flowers in July, each $1\frac{1}{2}$ in. to 2 in. in diameter. The petals are white, tinged with bright purple at the base, and densely clothed with purple hairs. California.

C. nitidus is a lovely strong growing species with five to ten large white flowers in an umbel, each petal having a large indigo blotch in the centre, and covered with long hairs.

C. Nuttalli has large white flowers with a blackish-purple blotch at the base of the broader segments, the narrow segments being green striped with red. The rare variety *Leichtlini* has white flowers also, but is more beautifully marked.

C. Plummeræ throws up a broad leaf about 2 ft. long, and a strong branching spike with numerous soft lilac flowers of a satiny lustre and about 4 in. across, the base of each petal being clothed with golden hairs.

C. pulchellus.—A hardy plant, the bulbs, left in the open border, flower regularly. It grows about a foot high, much-branched, each branch terminating in an umbel of three to four fragrant, bright orange-yellow pendulous flowers.

C. splendens.—A pretty species, the flowers of a pale lilac, with a dark blotch at the base of each of the petals. California.

C. Tolmiei.—This very scarce Star Tulip is a vigorous grower, with tubular flowers covered with bluish hairs.

C. venustus.—One of the prettiest of the Mariposa Lilies, from 1 ft. to 2 ft. high, the flowers very large, white or pale lilac, with a prominent red blotch at the top of each petal, the centre brownish-yellow, the base brown. California from Alameda County southwards.

C. Weedi.—A handsome and remarkable species in having the bulbs fibrous-coated. The stem grows about a foot in height, one to three flowered, large, deep yellow, dotted and frequently margined with purple.

CALOPHACA.—Pretty Pea-flowered rock shrublets, *C. Wolgarica*, a native of S. Russia and *C. Grandiflora*, Central Asia. Plants for the rocks, banks, and free soil, and as far as I have seen them of good effect. They are allied to *Cara-gana*.

CALOPOGON.—*C. pulchellus* is a beautiful hardy Orchid suitable for boggy ground, the flowers pink, 1 in. in diameter, in clusters of two to six upon a stem, beautifully bearded with white, yellow, and purple hairs. Plant in the rock-garden, bog, or in an open spot in the hardy fernery in moist peaty soil, as it is a native of wet spots at the edges of Pine woods in the Moss in Cranberry swamps, and in wet Grassy marshes, and occasionally seen on solid ground, in low, wet, woody situations in N. America.

CALTHA (*Marsh Marigold*).—The Marsh Marigold (*C. palustris*), that in early spring “shines like fire in swamps and hollows gray,” and is one of our good plants, though it is so frequent in a wild state that there is little need to give it a place in country gardens. Its double varieties, however, are good in a moist rich border, or by the water-side. There is a double variety of the smaller creeping *C. radicans*, about half the size of the common plant. There are double-flowered forms, bearing beautiful golden rosettes. There are also *C. leptosepala*, a Californian kind, and *C. purpurascens*, distinct and handsome, about 1 ft. high, with purplish stems, and bright-orange flowers, the outside of the petals flushed with a purplish tinge. The various forms of the Marsh Marigold are handsome in their fine yellow blossoms, and in groups or bold masses are effective; they are easily grown in wet soil, and increased freely by division or seeds.

CALYCANTHUS (*Allspice Tree*).—North American shrubs with flowers of pleasant fragrance. *C. occidentalis* is from 6 to 8 ft. high, with large maroon-crimson flowers of fine fragrance, and is worthy of cultivation. *C. floridus* is smaller and not so dense, with purplish-red flowers, strongly scented. The names in catalogues, such as *C. glaucus*, *lævigatus*, *oblongifolius*, *macrophyllus*, represent forms or varieties of either the eastern or the western species. The two described are hardy, the Carolina species

Calycanthus lævigatus.

having been grown since 1757, while the Californian has been cultivated over fifty years. They flourish best when somewhat shaded by other trees and where

the ground is damp. The Winter-Sweet, *Chimonanthus*, is sometimes included among these shrubs in lists.

CALYPSO.—*C. borealis* is a pretty little hardy Orchid, with rosy-purple sepals and petals, and a white lip, heavily blotched with cinnamon brown, from the cold regions of N. America. It succeeds in half-shady spots on the margin of the rock-garden or bog, or in a select spot among choice shrubs in light, moist vegetable soil, covered with Cocoa fibre to keep the surface open.

Calystegia. See CONVOLVULUS.

CAMASSIA (*Quamash*).—North American plants of the Lily Order, hardy, handsome, and of easy culture.

C. esculenta (*Quamash*) is a native of meadows and marshes in N. W. America from 1 to 3 ft. high, its stalks bearing a loose raceme of from ten to twenty flowers about 2 in. across, the colour from deep to pale blue. There is also a pure white, and various other forms thriving in moist situations in a deep light soil. A bold group in flower has a fine effect in July, and it is excellent in the cut state, as the buds of the spike open in the house.

C. Cusicki from the Blue Mountains of Oregon, and it was described in *Garden and Forest* as the most vigorous species yet found with large broad leaves, a stout flower-stem growing 3 ft. high, and flowers of a pale delicate blue, large and spreading.

C. Fraseri (*Eastern Quamash*).—A native of the States east of the Mississippi, its flowers are rather smaller than those of the western species; about 1½ ft. high, the scape bearing a raceme of ten to thirty pale-blue flowers, each about 1 in. across. It is later in flowering than other Camassias, thriving in a light rich soil.

C. Leichtlini (*White Camassia*).—This often grows on sandy ridge-tops, and is found in dry spots in ravines; its bulbs are generally deep in some stiff soil. The flower-spike is large, bearing creamy white flowers, the stem 3 to 4 ft. high. It is vigorous, but not so handsome as the above. British Columbia. Propagated by dividing the bulbs or by seeds.

CAMELLIA.—Handsome shrubs of the Tea Order, mostly grown under glass in our country, but in the Isle of Wight and the southern coasts of England and Ireland it is often laden with as many flowers as in Madeira. Most people who have Camellias in the open air find that they flower well five out of every six years, and that the plants are hardier than many shrubs that make their new

growth early in the year. Their greatest enemy is fierce winds, which beat them about. In planting them out for the first time it is well to plant first some of the commoner kinds, and in sheltered spots; then, when these thrive, to continue with more valuable ones. The best aspect for Camellias is a south or south-west one, sheltered by a bank or wall, but in some districts they thrive on north walls. Planting from pots may take place at any period, but about July is the best time, as the wood is then well ripened. Duke of Devonshire, Halfida, Chandleri, Florida, imbricata, elegans, Alberti, Double White, Donckelaari, Countess of Orkney, Mathotiana, and Lady Hume's Blush are good varieties for outdoor culture. The late Robert Marnock, the landscape gardener, wrote as follows to *The Garden* about Camellias out-of-doors: "Permit me to remind those who, like myself, have an affection for the great beauty of the Camellia, when in vigorous health in the open air, that although it is true that the plant will bear a greater degree of cold than the Common Laurel, and other ever-green shrubs which by common consent have long been regarded as hardy, yet the main stems and stouter branches of the Camellia are, nevertheless, liable to injury from severe frost. Now, all that is necessary to protect the plant at this weak point is to closely wrap the stem with straw or hay bands; and if a little Fern or other loose material be laid over the roots, so much the better. The portions of the stems near the ground are the most liable to suffer, while the leaves and branches, if not exposed to fierce gales, will bear much frost, provided the stems are protected."

In Cornwall, the Camellia grows in a most beautiful way at Tregothnan, Menabilly and many other places, flowering even better than I have seen it in warmer countries. It is also grown out of doors in the home counties. Is even more hardy than the common laurel, and it will grow on the north side of walls.

C. Reticulata.—This is hardy, but rarely flowers satisfactorily in the open, except in the south-west, where it is grown both against walls and as a bush plant. It is by far the finest of the Camellias, bearing lovely pink semi-double flowers 6 inches in diameter, with bright yellow spreading stamens.

At Scorrier House, Tremough, and Pengreep, among the varieties that do best are *Mathotiana*, the largest, *anemonæflora*, very profuse flowering,

Countess of Orkney, Donkelaari, which comes very early, and the old *japonica*. *C. reticulata* is the handsomest of the Camellias, but needs a warm and sheltered place.

CAMPANULA (*Hairbell, Bellflower*).—A large, beautiful, and precious group for the flower garden. The alpine kinds are charming for rock-gardens, and not as a rule difficult to cultivate. A group of kinds somewhat larger than the high alpiners adorn rocks and old walls on the mountains, and may be used for these in our gardens. Some are pretty window-

Alpine Hairbell in rock garden.

plants, thriving in dry rooms ; numbers are good border and edging plants of easy culture ; the tall and straggling kinds admirable for the wild garden, or rough woody places or hedgerows, but these tall species must not be used much in the flower garden or mixed borders, as their time of bloom is short and they are very apt to overrun rarer plants. Some of the annual kinds, if well grown, are showy. The Canterbury Bell is one of the finest of biennials, the tall chimney Campanula a very handsome and precious plant.

C. Allioni, an alpine kind forming a

network of succulent roots, with stemless rosettes of leaves an inch long, from which arise stalkless erect flowers. It thrives in exposed positions in the rock-garden in a moist, free, and sandy loam, dislikes limestone. Division. Alps.

C. alpina (*Alpine Hairbell*).—Covered with stiff down, giving it a slightly gray appearance, 5 to 10 in. high ; flowers of fine dark blue, scattered along the stems, margins of mixed border, and the rock-garden. Division or seeds. Carpathians.

C. Barrelieri has prostrate one-flowered stems, rounded heart-shaped leaves and blue large flowers. On rocks by the seaside about Naples ; a good trailing rock-plant, thriving also in windows.

C. cæspitosa (*Tufted Hairbell*).—A charming little plant, its roots ramble very much, and it soon forms large patches in any garden soil. Excellent for edgings and rocks, the angles of steps in rock-gardens, and where flagstones are used to form paths it is one of the plants that run about among the stones with pretty effect. The white kind is as free and useful as the purple one.

C. carpatica (*Carpathian Hairbell*).—A dwarf plant of free-flowering habit, the light-blue flowers large and cup-shaped, borne on foot-stalks 12 to 15 in. high in July and August in succession. There are pale and white forms of this plant and the hybrid forms, none of them better than the wild plant.

C. cenisia (*Mont Cenis Hairbell*).—A high alpine plant growing among *Saxifraga biflora* on the sides of glaciers, making little show above ground but vigorous below, and compact rosettes of light-green leaves, with blue flowers. It should have a sandy or gritty and moist soil on the rock-garden among the smallest plants. Division.

C. fragilis (*Brittle Hairbell*).—The young branches are coated with soft down ; the flowering branches prostrate, 12 or 15 in. long ; the flowers 1 in. or more in diameter, delicate blue. A variety *C. hirsuta* is covered with stiff down, and looks almost woolly. Division, cuttings, and seeds.

C. garganica (*Gargano Hairbell*).—A compact plant, the flowers in branching racemes, pale blue, towards the centre shading off to white in summer, thriving in a rock garden or a border ; but, owing to its pendent flowers, a good place for it is on a rocky edge, over which its masses of flowers may hang. Division or by cuttings taken in early spring.

C. glomerata (*Clustered Bellflower*).—

A handsome plant about 2' ft. high, the stem terminated by dense clusters of pretty intense purple flowers. The pure-white form is somewhat rare, and there are

Campanula carpatica.

various forms and allies. Some of the taller herbaceous kinds are rampant growers, and flower too short a time to be worth a place in a select flower-garden.

C. grandiflora. See PLATYCODON.

C. isophylla (*Ligurian Hairbell*).—A very pretty Italian species; the leaves are round or heart-shaped, the flowers a pale but very bright blue, and with whitish centre. A charming ornament for the rock-garden, in sunny positions in well-drained, rather dry fissures, in sandy loam. The variety *alba* is a beautiful form with white flowers. Seed and cuttings.

C. macrantha.—The stems of this handsome plant rise to a height of 5 ft., terminated by clusters of large deep-blue flowers almost as large as Canterbury Bells, but less contracted at the mouth of the tube. It is a free vigorous perennial, best fitted for naturalisation in woody places.

C. macrostyla (*Candelabra Bellflower*).—A singular plant, having large flowers, with blue netted veins on a white ground which gets purple at the edges, and with a huge stigma. It is wholly distinct from any of the Campanulas in our gardens, and well deserves culture. It is readily recognised by its candelabra habit of growth, and is a fine annual of easy culture. Asia Minor.

C. Medium (*Canterbury Bell*).—A familiar old plant having many varieties of various colours bearing single flowers, doubles, in which two, three, and even four

bells seem to be compressed into the outer one; and duplex flowers, in which one bell grows in the other, the two combined resembling a cup standing in a saucer. There are many colours, such as white, lavender, mauve, several shades of purple, pink, rose, salmon, and blue. The habit of the plants as a rule is compact, when in bloom, ranging from 18 to 24 in. in height, and forming perfect pyramids of flowers. The *Calycanthemum* section usually exhibits a taller and a looser growth, and should be planted in borders behind the double and single kinds.

March or April is the best time to sow seed in a warm spot in the open ground, but it is much safer to sow some also in shallow pans or boxes placed in a frame or on a shelf in the greenhouse. When the seedlings are large enough to handle, prick them out into some shady spot, and keep them watered until well rooted. From that time they may be safely left to take care of themselves until September, when they should be transplanted into their permanent places in the flower borders, where they will get well established before the winter and develop blooming crowns for the next year.

C. persicifolia (*Peach-leaved Bellflower*).—A beautiful kind, with cup-shaped flowers 2 in. across, in July and August. Besides the double blue and white forms there is an interesting variety named *coronata*, in which the corolla is doubled. Other varieties are worth a

Campanula hirsuta.

place among perennials. Plants occasionally divided and grown in rich soil give fine crops of flowers. There are many varieties single and double white and

blue or purple among them, and worth a place—*Daisy Hill mœrheimi*, *Alba grandiflora maxima*, *Pallida grandiflora*.

C. Portenschlagiana (*Wall Hairbell*).—A dense tufted-evergreen kind, with small

Campanula pyramidalis.

bright-green leaves, so dense as to obscure the foot-stalks, 1 in. or more in length, by which they are supported. The flowers pale blue in August or September. It spreads slowly by underground stems, and succeeds in crevices of the rock-garden. Dalmatia.

C. pulla (*Austrian Hairbell*).—One of the most beautiful of the Alpine Hairbells, a native of the Austrian Alps, on high mountain pastures; in the rock-garden it should have a shelf of soil in which peat and sand have been mixed. After blooming the foliage disappears and the plant goes to rest. An excellent rock-garden plant. Division.

C. pusilla.—Smaller than *C. cæspitosa*, rarely exceeding 4 in. in height, the shining green leaves heart-shaped and toothed, the flowers pale blue, in racemes, in June and July. Very gritty moist loam in the rock-garden is best for it. Switzerland.

C. pyramidalis (*Steeple Bellflower*).—

A vigorous plant, with thick and fleshy flower-stems, rising to a height of 4 to 6 ft.; the flowers, close to the stem, giving the inflorescence a steeple-like form. The flowers are blue or white; coming in succession, over a considerable time, in July, August, and September. Though not quite a biennial, it is better in general cultivation to treat it as such, as from seedling plants, well grown on during the first year, the finest stems arise. A border flower of the highest merit in favourable soils; occasional batches of seed should be sown to keep up a supply. It is often grown in pots for the house both in England and France.

C. Raineri (*Rainer's Bellflower*).—A dwarf, sturdy plant, 3 to 6 in. high, each shoot bearing a large dark-blue flower. It thrives best in sunny positions in loam freely intermingled with pieces of stone, and well watered in dry weather, and is a gem for the rock-garden. Alps of N. Italy.

C. rotundifolia (*English Hairbell*).—In this pretty wild plant we have a true type of the Hairbell. There is a white variety, generally dwarfer, and there are several forms all beautiful, and of easy culture in any soil. These are all excellent border flowers, and also for the rougher parts of the rock-garden, and

Campanula turbinata var.

growing wild in Grass on rough slopes or places not mown till autumn.

C. turbinata (*Turban Bellflower*) is a dwarf plant with grayish-green leaves, the flowers borne singly on stems about 6 in. long, deep blue, and 1½ in. across; a

charming plant for border or rock culture. Transylvania.

CAMPTOSORUS (*Walking Leaf*).—*C. rhizophyllus* is a curious N. American Fern, remarkable for its narrow fronds, which taper into slender prolongations, and take root at the tips like runners, giving rise to young plants. Thrives in gritty loamy soil in a somewhat shaded position in the rock-garden or hardy fernery.

CANNA (*Indian Shot*). — Handsome tropical plants of the Ginger Order with fine foliage. The tendency of most half-hardy flower-garden plants is to flatness, and the grace of the Cannas makes them valuable, though our country in many parts is too cool for their fair development; in the warmer south and in sheltered gardens they may be grown with profit. Another good quality is their power of withstanding the storms of autumn. Sheltered situations, places near warm walls, and sheltered dells are the best places for them. As to culture and propagation, nothing can be more simple; they may be stored in winter under shelves in the houses, in the root-room—in fact, anywhere, if covered up to protect them from frost, in spring pulling the roots in pieces and potting them separately. Afterwards it is usual to bring them on in heat, and finally to harden them off previous to planting out in the middle of May. The soil should be deep, rich, and light. Cannas, protected by a coating of litter, have been left out in Battersea Park through severe winters, and attained a height of nearly 12 ft.; but this was on raised beds in a very warm and sheltered place. Wherever they are grown as isolated tufts, in small groups, or in small beds, it will be best not to take them up oftener than every second or third year, if the ground be warm and well drained.

LARGE-FLOWERED CANNAS.—This is a race of Cannas for which we are mainly indebted to M. Crozy, of Lyons, France, who crossed the Iris-flowered Canna with the older kind. Here, however, they are more valuable for the greenhouse than the open air. The plants as a rule are dwarfer than the old type of Canna, the newer French varieties ranging between 1½ ft. to 4 ft. in height, the leaves of many shades of colour.

In commencing the cultivation of these

Canna iridiflora Ehemanni.

Cannas, by far the best time to get them is during the winter (say soon after Christmas), when the rhizomes, then in a dormant and well-ripened state, can be sent by post. The list of varieties is now a considerable one, so that a careful selection is absolutely necessary, otherwise some of them will be found to greatly resemble each other. A few of the finer ones are Paul Bert, Louise Chretien, Geoffrey Saint-Hilaire, Capricieux, Revol Massot, Lutea splendens, Ulrich Brunner, François Crozy, Antonin Crozy, Admiral Courbet, Félix Crousse,

Francisque Morel, and Antoine Chantin, and there are many others.

CANNABIS SATIVA (*Hemp Plant*).—A vigorous annual being largely cultivated for its fibre. In our country it is 4 to 10 ft. high, but in Italy sometimes 20 ft. high. In plants growing singly, the stem is much branched, but in masses is

Cannabis sativa (Hemp Plant).

generally simple. It is useful where the tender sub-tropical plants cannot be easily grown, well-grown plants looking graceful. It should be sown in the open ground early in April: to get larger plants it is best to raise it in frames. It loves a warm sandy loam, and is one of the

few plants that thrive in small London gardens.

CARAGANA (*Siberian Pea-tree*).—A curious group of wiry bushes of the Pea order which, as seen in gardens generally, are not pretty, but as the name occurs so often, and the wretched appearance they usually present may be in part owing to their being grafted, I give them a place. They are mostly rock or desert shrubs of arid regions in Central Asia, and the species are *C. arborescens* and its varieties, *C. aurantiaca* which is the prettiest, and would, perhaps, be a graceful rock shrub, *C. chamlagu*, *C.*

Caragana Chamlagu.

jubata, *C. microphylla*, *C. pygmæa*, and *C. spinosa*. If we could get these curious shrubs on their own roots the best place for them would be the rock garden or dry banks.

CARBENIA (*Blessed Thistle*).—*C. benedicta* is a handsome biennial, having bold, deep-green leaves, blotched and marbled with silvery white. It is useful for associating with plants of fine foliage. It grows freely in a thin shrubbery, or on banks of rubbish. S. Europe. Syn. *Cnicus benedictus*.

CARDAMINE (*Cuckoo-flower or Lady's Smock*).—Plants of the Wallflower Order, few of which are cultivated, the best being the native Cuckoo-flower in its double form. This will grow well almost anywhere, although, like the wild plant, that colours the meadows with its soft-hued flowers, it delights in swampy ground. The single kind is too common to need cultivation; the double kind is a pretty subject for the spring garden and for borders. Division. *C. trifolia* is a pretty species, with white flowers, from Switzerland; 9 to 12 in. high; a border or rough rock-plant. *C. latifolia*, *C. asarifolia*, and *C. rotundifolia* are pretty dwarf plants when in flower, but not popular in gardens.

The Toothworts (syn. *Dentaria*), now included in this genus, are interesting spring-flowering plants. They grow best in a sandy or peaty soils. Their flowers are welcome in early spring, and remain

Carpenteria californica in a Sussex garden.

some time in beauty, and they are easily increased from the small tuber-like roots. Some, like *C. bulbifera* (Coral Root), bear bulblets on the stem, and from these the plant may be increased. *C. digitata*, a handsome dwarf kind, about 12 in. high, flowers in April; rich purple, in flat racemes at the top of the stem. *C. maxima* is the largest of the species, being 2 ft. high, with many pale-purple flowers, a native of N. America. *C. pinnata* is a stout kind, pinnate leaves; from 14 to 20 in. high, flowering from April to June, with large pale-purple, lilac, or white, in a cluster.

CAREX (*Sedge*).—Grass-like herbs of northern and temperate countries, few having a place in the garden.

C. paniculata is a very large Sedge, like a dwarf Tree Fern, with strong thick stems and masses of drooping leaves, forming dense tufts, 1 to 3 ft. high, flowers in a large and spreading panicle. It is very effective in wet places. The finer specimens are of great age, and are found in the bogs where the plant is wild.

C. pendula.—A graceful British sedge, with evergreen foliage, numerous flowering stems 3 to 6 ft. high, the leaves 2 ft. or more in length. When in flower the graceful spikes, from 4 to 7 in. long, are pretty, and the plant is useful for shady or moist spots. Common in Britain in evergreen patches in marshy woods.

C. fraseri and *C. scaposa* are pretty evergreen sedges for shady spots.

CARPENTERIA CALIFORNICA.—

A lovely hardy shrub for walls in southern districts, 6 to 10 ft. high, with long narrow pale-green leaves, and clusters of large white fragrant flowers. The first account of it in England was from Mr. Saul, of Washington, who sent specimens of it to *The Garden* in 1880. It is nearly related to the Mock Oranges, which it resembles, but is handsomer: thrives in light warm soil, and increased from suckers, cuttings, or seeds. In cool districts will require the protection of a greenhouse.

CARPINUS (*Hornbeam*).—*C. betulus* is a native tree, especially of the south, sometimes attaining a height of 70 feet, frequent in some woodlands, and in Epping

Hornbeam.

Forest. There are several varieties of this tree, such as the fern-leaved, cut-leaved and purple kinds, and also the never-failing variegated kind. The common kind is often used as a fence plant, and also, in many continental gardens, to form green walls and hedges. It is one of the best of all woods to burn, and if we ever go back to the best of all ways of firing for a dwelling-house in the country, a wood fire, it should not be forgotten. It is easily lighted, burns cheerfully and equably, and gives a good heat. Other species are *C. caroliniana*, *cordata*, *japonica*, *orientalis* and *Turczaninowii*.

CARYA (*Hickory*).—A very interesting and distinct group of forest trees, little planted in England in our own day, but so valuable in their own country for their wood, and some for bearing delicious fruit, that they deserve a place in our choice plantations. Mostly trees of North Eastern America and usually hardy, they are sometimes well over 100 ft. high; in their own country inhabiting moist woods and swampy grounds, and therefore likely to be useful in ours in soil not thought good enough for many trees. Among them are:—*C. olivæformis* *Pecán*, a tree which sometimes attains to a height of over 150 feet with a trunk diameter of 6 ft., and which bears a delicious nut. It has rather a southern distribution, and therefore would be best, no doubt, in good warm soils in our country. *C. amara* (the bitter nut), a tree of about 100 feet in

Carya aquatica.

moist woods, from Canada downwards, ascending high on the mountains. *C. aquatica* (*Water Hickory*), a swamp tree sometimes nearly 100 ft. high in wet woods and swamps from Virginia south and westwards. *C. alba* (*Shell-bark Hickory*) also often over 100 feet high; a native of Canada and of the Western and Southern States. *C. sulcata* (*King-nut*), a tall forest tree over 100 feet high in the New England States and westward. *C. tomentosa* (*Fragrant Hickory*) growing nearly 100 feet high and inhabiting the cold regions of the West and New England. *C. microcarpa* (*Small-fruited Hickory*). A tall tree of nearly 90 ft. high. New England and westwards. *C. porcina* (*Pig-nut Hickory*).—A very tall tree of over 100 ft. bearing very bitter seeds, also a tree of cold northern regions. They are trees of fine growth with walnut-like leaves and the wood of some kinds in its own country is most valuable.

CARYOPTERIS.—*C. mastacanthus* is a small shrub with grayish foliage, distinct in habit, and with purple flowers, not quite hardy, perhaps, in all soils, but pretty on warm banks and in warm gar-

dens. There is a white variety. It would group well with the dwarfer shrubs, and in cool districts and on cool soils it will grow against warm walls. On good soils it would come in well with borders of grayish plants such as Lavenders, Carnations, and the like.

CASSIOPE (*Himalayan Heather*).—Tiny alpine bushes, thriving in peaty soil well drained, as they are

Cassiope fastigiata.

all impatient of stagnant moisture about their roots, whilst absolute shade from the midday sun is also necessary. The best plan is to raise small banks of peat, and plant them on the top, taking care that they do not want for water both at the roots and overhead. They are in-

creased by division, rooting freely when pegged down. *C. fastigiata* is one of the most fragile and beautiful of alpine woody plants; it may be grown without much trouble with the more common *C. tetragona*. Both are pretty for the rock or bog garden.

CASTANEA (*Sweet Chestnut*).—A noble tree, native of eastern and southern Europe. There are fine old trees in many of our country seats in all parts of the south of

Castanea pumila.

the country, though excepting in the warmer counties, such as Devonshire, the fruit is not as good as on the continent of Europe. The Chestnut thrives best in airy and warm situations, and upon stony or free soils, not caring much for chalk or heavy soils. It is easily raised from seed planted directly where it is wanted to grow. There are on the Continent, where the tree is much more grown than here, a good many varieties grown for the value of their fruits. Variegated varieties as usual are useless. There are a few other species such as *C. crenata* (Japan), *dentata* (N. America), and the dwarf *C. pumila* of the Southern states of N. America, but these are of slight value compared to that of *C. Vesca*, the beauty of old trees of which is very great, as seen at Shrubland, Tortworth, Cowdray, and many other places.

CATALPA.— Handsome flowering trees of the Bignonia order, one of them forming a beautiful tree even in London gardens.

C. bignonioides (*Indian Bean*).— A handsome tree, hardy in southern Britain and the kind which flowers so well in London. There is no more precious lawn tree for good shade and flowering at a season when all the early

trees are out of flower. It is best propagated by seed and is not difficult about soil. This tree has a number of synonyms, the best known being *C. syringifolia*. N. America.

C. speciosa (*Catawba Tree*).—A forest tree in America, westwards, and is little known in our country yet, though promising to be a forest tree; reaches 120 ft. high in its own country. It deserves a very good position among the best flowering trees for lawn or for a grove. Syn. *C. cordifolia*.

C. Bungei and *C. Kämpferi* are two other kinds known in gardens, both inferior in size to the foregoing trees, and less attractive unless where collections are desired.

CATANANCHE (*Blue Cupidone*).—*C. cærulea* is an old border plant, about 2 ft. high, flowering in summer; fine blue, and growing freely in borders and margins of shrubberies. There is a white variety as common as the blue and a bicolor one. It is easily grown in any soil, and quickly raised from seed. S. Europe.

CEANOTHUS (*Mountain Sweet*).— Beautiful shrubs of the Buckthorn Family. Some hardy enough on light soils in sunny places to endure our climate, even as bush plants, though the majority form good wall plants. In all the kinds the flowers are small, but abundant. As wall shrubs it is best to prune them in April; and as all the sorts flower on the shoots of the current year's growth, from one to three eyes of the preceding year's wood should be left, reserving, or at most only topping, such shoots as are required for filling up the open spaces on the wall. Most of the introduced kinds are of free growth in warm soil, and they flower most freely in sunny exposures. As they are for the most part natives of a charming climate—that of the Pacific slope of N. America—no one should attempt their culture except in warm soil. The following are distinct and pretty:—

Ceanothus azureus.

C. AMERICANUS (*New Jersey Tea*).—Though one of the hardiest, this thrives best against a wall, and in a dry porous soil; the flowers, in succession from about the middle of June till August, white. E. America.

C. AZUREUS.—From the temperate regions of Mexico, where it grows as a straggling bush about 10 ft. high. It is one of our prettiest wall shrubs, flowering abundantly in dry sunny situations, the flowers bright blue, from June till September. *C. pallidus* is a handsome variety, with pale-blue flowers. The result of crossing with this species may be seen in such lovely shrubs as *C. Gloire des Versailles*, *Arnoldii*, *Lucie Simon*, *Theodore Froebel*, *Bertinii*, *President Reveil*, *Lucie Moser*, and others, all of which have flowers in large plummy

foot-stalks from the sides of the young shoots. Like the other kinds, it loves the protection of a wall, on which it blooms in summer.

C. RIGIDUS is a sub-evergreen, or in sheltered places an evergreen, rarely exceeding 6 ft. in height, the branches stiff and wiry; the flowers, in clusters on the sides of the young shoots, are deep purple, in April and May.

C. VEITCHIANUS is one of the best kinds, the flowers of a rich deep blue, in dense clusters at the ends of leafy branches.—G.

Catalpa bignonioides.

clusters, some white, others rose, but mostly of some shade of blue.

C. DENTATUS is an elegant little evergreen shrub, rarely higher than about 3 ft. The flowers, which appear in May or June, are deep blue, and continue the greater part of the season.

C. DIVARICATUS grows as a dense broad evergreen bush of about 10 ft. high. It is a free-growing handsome wall plant, flowering from May to autumn, the flowers a bright blue.

C. PAPILLOSUS is a pretty species from the mountains of California, where it is a densely branched straggling bush 6 to 10 ft. high. The panicles of pale-blue flowers are borne on long

C. VERRUCOSUS forms a thickly branched evergreen bush about 6 ft. high. As a wall plant it is of free growth, and has a good effect, the flowers coming in May and during the summer months, borne in corymbs along the whole length of the young branches, often so profusely as to hide the foliage.

CEDRELA.—*C. sinensis* is somewhat similar to the "Tree of Heaven" (*Ailanthus glandulosa*), but this Chinese tree is much more uncommon in gardens. In some places, however, it might be a more suitable tree, for whilst it has much the same character of foliage and habit, it is not so rampant a grower. The largest

trees I have seen are about 30 ft. high. The tree is chiefly noteworthy for the large pinnate leaves it bears. It has small yellowish flowers arranged in great numbers in pendent clusters said to be agree-

Catananche coerulea.

ably scented. It promises to be a graceful lawn tree, but has not been long enough in the country yet to speak with certainty of its hardiness, although we see it flourishing in unlikely places.—W. J. B.

CEDRONELLA (*Balm of Gilead*) is a distinct half-bushy herb of the Sage order, *C. triphylla* having leaves with a pungent but grateful odour, in our country $2\frac{1}{2}$ to 4 ft. high, varying much according to soil, and not quite hardy, but living out-of-doors most winters if in dry free soil and planted against walls. A few plants against a wall are worth having where curious plants are cared for, though the flowers are not showy. Easily raised from seed.

CEDRUS (*Cedar*).—Noble trees of the mountains of Asia Minor and India, some hardy, and often planted on lawns and within sight of the flowers. The India Cedar (*Deodar*) is really a tender tree, and though it may seem to promise well in sea-shore and favoured districts, planters should not forget that it is to the Cedars of the northern mountains they must look—the Lebanon and Atlas Cedars, which have been proved so hardy, and so well fitted for our country. No finer things can be within view of the flower garden, but they should never be planted near the house, or their great branches will darken it, and in small flower gardens they are sure to be in the way.

In books and catalogues a form called *C. Atlantica* is considered distinct enough to merit a separate name, but having seen the trees on their native mountains, I think the Atlas Cedar is the same species as the Lebanon Cedar (*C. Lebani*). There are varieties of each in catalogues, rarely so valuable as the wild tree, except the glaucous or silvery forms, which are worth planting. The *Deodar* (*C. Deodari*) is distinct from the N. African Cedars, and differs so also in its tenderness and unfitness for our country generally.

The Cedars though hardy in our country are nevertheless the victims of storm and snow to an often painful but partly needless extent owing to the nearly universal “specimen” way of planting these trees. The pinetum is not only a mistake from an artistic point of view, with its stuck-about trees, but it also is so in the exposure of the trees to all the storms and accidents of weather, including heavy snowfalls. Naturally, pines often grow together and shelter each other, and where this is so, great falls of snow do not harm them to the same degree. The lower boughs fall off in due time, as is their nature, the tree often showing a bare, mast-like stem beneath its crown of leaves. Clearly, when we isolate any tree in the open, and induce a tree which naturally grows upright in a great mountain forest to throw its limbs out in all directions, we expose it to an unfair test; hence the Cedars of which we in England are so proud are often swept down in numbers by heavy gales and snowfalls. The idea that every choice tree in our pleasure grounds should be set out by itself like an electric lamp-post is deeply impressed in the gardening mind, and we have to pay dearly for it. Even where the Cedars are grouped great storms may

Cedar of Lebanon.

do harm, but nothing like what happens to the isolated trees. Think of the weight that a Cedar of Lebanon, with its great spreading arms, would have to carry in a snowstorm, and how much more able to

bear it are the Cedars planted in woods and allowed to grow mast-like shafts!

The cure for much of this loss and waste of valuable trees lies in planting in more natural ways and in grouping and keeping the trees together.

With regard to soil and situation, each planter seeks the best possible development for his Cedars, and so selects the best soil and position he has, and, probably, digs a big hole for each tree and

enough, though never so well developed as when growing where a little soil collects. That soil is always of a poor, rocky, or pervious nature. Surely this points out that in pleasure grounds and country seats, instead of taking the very best soil, we should plant on rocky or sandy places where the tree will, though growing at first slowly, eventually get a safer and harder growth than it ever would on rich deep soil. This would not preclude us

from putting a group in the pleasure grounds for the sake of shade, but holding the trees together. Also, it would be well to plant it in the ordinary woodland, in which the trees would be drawn up with a tall stem, very effective near drives or in woods. The difficulty of dealing with the Cedar is increased by its being made a kind of fetish in our nurseries, always being offered in the "specimen" state, so that nowadays it is not easy to get a nice healthy stock of young plants of it, and those offered are generally highly priced as if they were some rare novelty instead of a tree known for some centuries. The seed of the tree is plentiful in Asia Minor and North Africa, and it really ought to be grown in forest nurseries and offered among the other forest trees. The

Cedrela sinensis.

puts many loads of earth in. The result of this is not good, in more ways than one, first in creating a too rapid growth in the young tree, and soft unresisting wood in the old, and, secondly, any proof that the natural soil and other conditions of the place suit the tree is withheld from us by the deep preparation of soil made, entirely altering the natural conditions. Any one who has seen the trees in their native countries will know that the Cedar usually inhabits high mountains, often on bare, shaly slopes, in which they are happy

tree being as easy to raise as that of any other conifer, people should not buy the tree in the "specimen" state but in the smaller state, a much safer and better way, especially where we group and hold our trees together and where they can shade the ground. This plan by no means precludes us from sufficient thinning in good time, so as to secure great trees, always, however, holding to the principle of letting the trees shade the ground and shelter each other. All young plantations of Cedars should be securely

wired for seven years, as rabbits destroy them more than any other tree of the pine tribe.—W. R.

CELASTRUS (*Staff Vine*). — *C. scandens* is a shrubby climber from North America, flourishing in any ordinary garden soil, and valuable for its rapid twining growth, which is excellent for trailing over trellis-work and arbours, or on a bank, or to run over other shrubs and trees to a height of 12 or 15 ft. The flowers are inconspicuous, and the fruits orange-red, like those of the Spindle Tree, to which order it belongs.

CELOSIA (*Cocks-comb*).—Indian annuals of the Amaranth family, generally too tender for the open air, though we have occasionally seen them used with effect in bold groups. For this purpose they should be sown in pans in March, and kept near the glass to prevent the seedlings being drawn, and as soon as they are large enough to handle they should be pricked off into small pots and grown on fast in gentle heat until the crowns are formed. Planted out in June in rich soil, and liberally watered, they continue in good condition for a long time.

CELSIA (*Cretan Mullein*).—*C. cretica* is a pretty plant, allied to the mulleins, with rich yellow flowers and polished buds; may be treated as an annual. Well grown in good soil, it is distinct and effective. Candia, N. Africa.

CELTIS (*Nettle tree*).—Trees of the Elm order, natives of temperate countries, much mentioned in books, and introduced to Britain many years, but which have never made much way with us, and are less attractive to planters than other trees of the same order. Among a crowd of synonyms, the following are the names:—*C. australis*, *caucasica*, *glabrata*, *japonica*, *mississippiensis*, *occidentalis*, and *Tournefortii*. Some of the kinds are tropical, and not hardy in our country.

CENTAUREA (*Knapweed*).—Perennial or annual herbs inhabiting Southern and Middle Europe, some being good garden plants, most of them hardy. Some of the southern species require the greenhouse in winter, but, making free growth out-of-doors in summer, are freely used for their silvery foliage.

C. argentea has elegant silvery Fern-like leaves, and when planted out or plunged in pots has a good effect; for bedding it must be plunged and partly starved to bring out its whiteness.

C. babylonica.—A distinct perennial, tall and with silvery leaves, hardy, and when in good ground its strong shoots

with yellow flowers reach a height of 10 or 12 ft. The bloom, which continues from July to September, is less attractive than the leaves, but the plant is at all times picturesque. A free sandy loam suits it best. Seed. Levant.

C. Clementei.—A silver-gray-leaved

Celsia cretica (Cretan Mullein).

plant of fine form. Small plants from seed are useful for edging bold beds, and when too large for that purpose they may be transferred to borders, or planted out singly on Grass. The blossoms are best picked off, as they detract from the beauty of the plant.

C. Cyanus (*Blue Cornflower*).—A

beautiful native annual of easy culture, often sowing itself. The young plants stand our hardest winters, and flower better grown thus than if sown in spring. It is best sown in September, either where it is to flower, or in beds to be transplanted. Self-sown plants too may be transplanted, or allowed to remain where they come up, as they are often the finest plants. The many garden varieties range through white, rose, sky-blue, striped, to dark purple, the delicate tints of which are most attractive. They are favourites in the flower market, but by far the most beautiful is the true wild kind. There are also a number of double kinds.

C. dealbata.—A hardy perennial, with graceful and somewhat silvery leaves, 15 to 18 in. high, flowering in summer; rose-coloured. Borders. Division. Caucasus.

C. gymnocarpa.—A half-shrubby plant from the south of Europe, nearly 2 ft. high, with hard, branching, bushy stems, and elegantly cut leaves, covered with short whitish-satiny down. Useful as it is for edging or bedding, it is when grown in fine single specimens that its beauty is most seen.

C. macrocephala (*Great Golden Knapweed*).—A strong plant from 4 to 5 ft. high, with a great golden head of bloom. In the back part of a herbaceous border, or where herbaceous plants must compete with the roots of trees and shrubs, this robust plant deserves a place. Armenia.

C. montana (*Mountain Knapweed*).—A handsome border plant, 1 to 2½ ft. high, with slightly cottony leaves, and flowers resembling those of the Cornflower. There is a white and a red variety, all thriving in borders, margins of shrubberies, or the wild garden in any soil. This kind is somewhat coarse in borders, and scarcely worth a place therein, but when cut, its flowers are pretty, and larger than those of the Blue Cornflower. Division.

C. moschata (*Sweet Sultan*).—A fragrant annual, of which there are two shades—delicate purple and creamy white, the first giving the finest flowers; but both are valuable. Aphides are very partial to the young seedlings, and unless the pests are quickly cleared off the plants soon dwindle away. The first essential is a calcareous soil, and any soil deficient in lime should have lime rubble worked into it. The best time to sow is about the middle of April, in an open and sunny place, sowing the seed where the plants are to remain, as they do not move well. Syn., *Amberboa moschata*.—J. R.

C. ragusina.—A showy silvery-leaved plant, tender, but of rapid growth out-of-doors in summer, and valued for the summer-garden. When taking cuttings, they should not be cut away, but pulled off with a "heel" so as to have a firm base; small firm shoots should be preferred; in taking them the knife should be used very little, and each cutting put singly into a small 2½-in. pot filled with a mixture of loam and leaf-mould. A cold frame from which frost can be excluded is their best winter quarters; the leaves should be kept dry, as they are rather liable to damp during the short days. They also winter well in an airy vinery or greenhouse. Old plants are sometimes lifted and kept over the winter; where very large plants are required this is a sure means of

Mountain Knapweed.

obtaining them; but for ordinary use autumn-struck cuttings are the best.—J. M.

C. suaveolens (*Yellow Sweet Sultan*).—A pretty citron-yellow hardy annual and favourite border flower, thriving best in light dry soil. Sow in beds in April, raising one batch in frames, and sowing another in the open air in light rich earth where it is to remain. Syn., *Amberboa odorata*.

CENTAURIDIUM.—A showy half-hardy annual from Texas, *C. Drummondii* being from 2½ to 3 ft. high, and flowering from July to September. It should be sown in a frame on slight heat in April, and planted out in May. It has large citron-

yellow flowers, much resembling those of *Centaurea*.

CENTRANTHUS.—*C. macrosiphon*, a hardy Spanish annual of the Valerian order with pretty rose-coloured flowers, is useful for the rock-garden or flower border. It may be sown in September and pricked off into pots for winter for transplanting in spring, or again in the open ground in March and April, the seedlings being thinned out about 1 ft. apart. There are several varieties—white, red, and two-coloured, and a dwarf form.

C. ruber (*Red Valerian*).—A handsome hardy border plant from the Mediterranean, and an old inhabitant of gardens, often also naturalised. There are two or three varieties—white, purple, and red or crimson. It has stout stems, woody at the base, and bold clusters of flowers, blooming in June and through the summer. It is often naturalised on walls, ruins, and on rocky or stony banks. Seeds, division, and cuttings.

CERASTIUM (*Mouse-ear Chickweed*).—Dwarf herbaceous or alpine plants of the Pink order, containing few garden plants of value, and these mostly used as edgings, among the best being *Biebersteini*, *tomentosum*, and *grandiflorum*, all hardy plants of easy culture, and increase in ordinary soil.

Cerasus. See PRUNUS CERASUS.

CERCIDYPHYLLUM.—A very beautiful tree, so far hardy in Britain, and always pretty for its graceful and distinct leaves. It is a forest tree abundant in certain parts of Japan on the slopes of hills and mountains, reaching a height of between 80 and 100 feet, and forming a stately and beautiful tree. We read that it cannot be grafted, which is a blessing, as the natural way of producing it is much better. It is likely to make a beautiful lawn tree, though the flowers are not conspicuous.

CERCIS (*Judas Tree*).—Flowering trees of much beauty of bloom and form of tree. Of the three different kinds of Judas Tree in gardens, the most beautiful is *C. Siliquastrum* from South Europe, which for nearly 300 years has been a favourite in English gardens. It is from 15 ft. to 30 ft. in height, and thrives in a light deep loam soil. There are several varieties, differing chiefly in the colour of the flowers. It is of slow growth, and though young specimens flower profusely, only very old ones show the picturesque growth of the tree. Other kinds are *C. Chinensis*, and the better known *canadensis*, or Red Bud, a handsome tree of the American forests. These trees I have found to perish in heavy clay soils.

CERINTHE (*Honeywort*).—Annual or biennial herbs of the Borage family. *C. aspera* bears many yellow flowers, the tube of which is black at the base. In *C. minor* the flower-stems arch over, so that at the apex of the stem the delicate yellow tube-shaped bloom is hidden by the pale-green leaves. *C. retorta* is a beautiful kind, the floral leaves of a purple tint, and from among them peep the yellow purple-tipped flowers. They are half-hardy annuals, and should be sown in early spring on warm borders or in frames, and afterwards planted out in good soil. S. Europe.

CETERACH (*Stone Fern*).—This is now placed with the Aspleniums, but is known so well under the above name that we retain it. *C. officinarum* is a distinct and beautiful little native Fern, admirably suited for rock or alpine gardens, as it thrives best when planted between the chinks of rocks or of stone walls. The chinks and crevices should be filled with a mixture of sandy peat and pounded limestone.

CHÆNOSTOMA.—A small group of the Figwort family, natives of the Cape. They are naturally perennial, but in the open air must be treated as half-hardy annuals. *C. fastigiatum* is the prettiest. It grows 6 to 9 in. high, forming a dense compact tuft, with many small pinkish, and sometimes white, flowers. The seeds should be sown in warm frames in spring or in August, when the seedlings require to be wintered in a pit, and flowers are borne from June to November. Other species in cultivation are *C. cordatum*, *C. hispidum*, *C. linifolium*, and *C. polyanthum*.

CHAMÆBATIA (*Tarweed*).—*C. foliolosa* is a little shrubby plant of the Rose family, remarkable for the Fern-like beauty of its leaves; the flowers white and something like those of a Bramble. It grows about 1 ft. high, forming a dense spreading tuft, and covering the ground in California, its native country. I have seen it growing in mountain districts often covered with snow, and believe it to be worth trial in our rock-gardens.—W. R.

CHAMÆPEUCE (*Fish-bone Thistle*).—Spiny-leaved plants allied to the Thistle. *C. diacantha* has foliage of shining green, marking with silvery lines, and the spines are ivory white. *C. Casabonæ* has deep-green white-veined leaves with brown spines. Both kinds grow in compact rosette-like masses about 9 in. high, till the second year, when the flower-stems grow 2 to 3 ft. high. They require light well-drained soil and a warm position,

and should seldom be watered. Seed sown in February will give good plants by May; but the best are those sown in a border in the open ground in September, potted up carefully, and kept in the greenhouse during winter. Syn. *Cnicus*.

CHAMÆROPS.—Handsome palms, hardy, and giving distinct effects in the garden.

hardy. A plant in the garden at Osborne has stood out for many winters, also at Kew, protected in winter. On the waterside of the high mound in the Botanic Gardens, Regent's Park, it is in even better health than at Kew, though it has had no protection; and severe frosts have not hurt it. If small plants are procured, grow them on freely for a year or two in the greenhouse

Chamærops Fortunei in a Surrey garden..

C. Fortunei (*The Chusan Palm*).—A valuable Palm, often confounded with *C. excelsa*. It is stouter and has a more profuse matted network of fibres round the bases of the leaves; the segments of the leaves are much broader, and the leaf-stalks shorter and stouter, being from 1 to 2 ft. long, and quite unarmed. It grows 12 ft. or more high, and has a spreading head of fan-like leaves, and is

and then turn them out in April, spreading the roots a little and giving them a deep loamy soil. Plant in a sheltered place, so that the leaves may not be injured by winds when they get large. A gentle hollow, or among shrubs on the sides of some sheltered glade, is the best place. *C. humilis* is also hardy—at least on sandy soil.

CHEIRANTHUS (*Wallflower*).— Beautiful plants [made familiar by the

favourite Wallflower (*C. Cheiri*), the only kind much grown in gardens. It is a native of Southern Europe, but naturalised on old walls, in quarries, and on sea-cliffs. It loves a wall better than any garden; it grows coarsely in garden soil, but forms a dwarf enduring bush on an old wall if planted in mortar, and grows even on walls quite new. No variety is unworthy of cultivation; and the choice old garden kinds—the double yellow, double purple, double orange, dark, &c.—are worthy of a place among the finest border plants.

The double perennials are the yellow, dark crimson, red, and dwarf yellow. The yellow is most common, and a beautiful clear-coloured kind it is, a great favourite with cottagers, who propagate it by putting in slips about the time the plants are in flower. It can be propagated freely by means of slips put in under hand-lights in sharp sandy soil, and the plants will flower the next spring. The old dark crimson is now almost extinct; in colour the flowers are almost black, and very striking; the dwarf yellow has flowers of a dull, almost buff tint; the Raby Castle variety is valuable and sturdy.

INCREASE AND CULTURE. — Many persons sow seed too late—in June and July, instead of April and May. If dry weather follows close on the sowing, or after the plants have grown 2 or 3 in., they receive a check, and, instead of being dwarf, vigorous, and bushy, they are thin and poor. The winter will sometimes injure the Wallflower severely, especially when very severe frost follows close on heavy rains, and the stronger and better rooted the plants are, the more likely are they to stand the weather. The plants used for filling beds should have been once transplanted at least, because the moving induces them to throw out fibry roots near the surface, and they can be lifted with soil adhering to them. When the Wallflower is allowed to grow where it is sown, a strong tap-root is formed, which strikes deep into the soil, and but few surface roots are put forth. In transplanting from the seed-beds, it is well to pinch off the tap-root, and thereby induce fibry roots.

In London market-gardens, where the Wallflower is well cultivated, seed is sown in the open ground early in February; the young plants are put out into their permanent quarters in May, and by Christmas, if the winter be mild, they bloom, and are so large that they could not be covered by a bushel basket. Some market-growers sow seed late in summer, allow the young plants to remain in the

seed-bed all the winter, plant out in March, and, if the season be favourable, reap a good crop of flowers all through the next winter.

Save seeds from plants with the best branching habit and the darkest blossoms. When the plants are in flower, place a stake by each one possessing those qualities, so as to mark it. Allow the plants to remain undisturbed until the seed is ripe; they may then be pulled up, roots and all, and housed in a dry place until a convenient season for threshing out the seed. Cuttings of the double kinds may be put in as soon as they can be got after the plants go out of bloom. Put them in firm sandy soil under a hand-light, and, when struck, plant them out. Cuttings put in in August, September, or October strike freely without any protection, in a shady border, or in pots or boxes of sandy soil.

Good coloured forms of the wallflower are now offered by seedsmen: in yellow and pale as well as dark and purple colours.

Besides the Wallflower there are several perennial species of doubtful hardiness, such as *C. arbuscula* and *mutabilis*, natives of the Canary Islands, which therefore, though pretty pot plants, cannot be recommended for general open-air culture. Besides these there are various hybrids, such as *Marshalli*, the finest of the hybrid kinds, from 9 in. to 1 ft. high, with many bright orange-scented blossoms, and is a brilliant border plant, and good for groups in spring.

All these perennials prefer dry soil during winter, or a place on rough stone walls. Propagation is by cuttings, and top dressing with fine soil often induces the summer wood to root freely, and by autumn a good stock can be had.

CHELONE (*Turtle-head*). — North American plants nearly allied to Pentstemon, the species in cultivation are handsome border plants, flowering in late summer and in autumn. *C. Lyoni* grows from 2 to 3 ft. high, forms a dense mass of stems, with deep-green foliage, from July to September bearing dense clusters of showy pink blossoms. *C. obliqua* is taller and more slender, but the colour of the typical form is a richer pink, and there is a white-flowered variety. Both are of easy culture, thriving in open borders of good deep soil, and increased by seeds, cuttings, or division of the roots. These plants, though bearing pretty flowers, and free in growth, are not of high garden value.

CHENOPODIUM (*Goosefoot*). — Annuals or biennials, few of much garden

value, except *C. Atriplicis*, a vigorous Chinese annual, with erect reddish stem, slightly branched, over 3 ft. in height, and with its young shoots and leaves covered with a rosy-violet powder, pretty in foliage, in any soil. *C. scoparium* (Belvedere) is a curious and graceful annual plant, like a miniature Cypress in form, and worth a place among curious annual plants. *C. Blitum capitatum* (Strawberry-blite) is a hardy annual, growing from 1½ to 2 ft. high, the flowers small, followed by high-coloured fruit calyxes resembling small Strawberries. Sow in April in the open air.

CHIMAPHILA (*Pipsissewa*).—Small shrubby plants of the Heather order, natives of the dry woods of N. America. *C. maculata* (Spotted Wintergreen) has small leathery leaves variegated with white, 3 to 6 in. high, and is pretty for a half-shady and mossy, but not wet, place in the rock-garden, with such plants as the dwarf Andromeda and the Pyrola, and succeeds best in very sandy leaf-soil. *C. umbellata*, with glossy unspotted leaves and somewhat larger reddish flowers, is also suited for like positions.

CHIMONANTHUS (*Winter-Sweet*).—*C. fragrans* is a lovely shrub, which in our country enjoys a wall, flowering in December and January; beautiful, and of delicious fragrance; the flowers coming upon young wood after the leaves have fallen, brownish-yellow, marked with purple inside; and precious for gathering for the house. The best variety is *grandiflora*, its flowers being longer and more open, but the shrub varies a little from seed, in which way it is often raised in nurseries. This shrub does best on a wall with a southern or western aspect. A few shoots with blooms upon them placed in a room last a long time, and diffuse their pleasant fragrance, and little harm need be done by cutting these twigs, as in the ordinary course they would be pruned away after their flowers have faded. In fact we may in cutting with some care the precious shoots for the house prune the bush. Layers and seed. Japan.

CHIONANTHUS (*Fringe Tree*).—A beautiful small hardy tree of the Olive family well grown in this country, in sandy loam or warm soil; it is a dense bush about 12 ft. high, but in its native country it is a tree. In early summer it bears long clusters of white flowers, with petals long and narrow like a fringe. N. America. A newer species is the Chinese *C. retusus*, which is not so

pretty, though its flowers are white and fringed.

Chionanthus virginica.

CHIONODOXA (*Snow Glory*).—Beautiful early spring-flowering bulbs, forming a precious addition to our garden flora. Their hardiness, beauty, and the rapidity with which they increase in ordinary soils make them valuable. They may be grown from seed or from imported bulbs; in this case the bulbs are usually gathered before they are fully ripe, and do not regain their vigour until after two or three seasons, but cultivated bulbs are now plentiful and free from this objection. In light, fertile soil seedlings flower in their second year, and well-established plants sow themselves freely in most gardens and soon form strong colonies. Wherever the soil suits, the bulbs should be planted in broad masses and left to spread at will, as they grow more vigorously and flower earlier when undisturbed. They may be freely used in Grass, the stout, erect stems showing finely in this way. Used in broad masses their blue colour gives good effect from February to the time of their full beauty a month later. It is well to arrange successive groups in sunny and cool parts of the same garden.

C. cretica (*Cretan Snow Glory*).—A native of the mountains of Crete, with white or pale blue flowers borne sparingly upon long slender stems. Not free enough in flower for garden effect.

C. luciliæ.—Opening from early in February, with starry flowers an inch or more across and in many shades, from pale to deep blue, shading to a white centre. It is a stout grower, rising about 6 inches, and bearing sometimes a score of flowers upon one spike, though eight to fifteen are the usual number. It is found in three or four well-marked forms: *alba*, a white kind with large flowers, found wild with the blue form but scarce in gardens, its seedlings rarely coming pure, though prolific in pale shades.

Rosea is a scarce variety bearing pink flowers; *pallida* has flowers of a very light blue; and *Boissieri* shows bright, deep colour.

C. Alleni (*Allen's Snow Glory*).—Though said to come from Mt. Taurus, this is considered to be a form of the next kind. Its flowers are, however, rather earlier in opening, numerous, of large size, and nearer blue in colour than in the usual form of *gigantea*.

C. gigantea (*Iridescent Snow Glory*).—A very handsome plant of robust habit, with broader leaves and taller spikes than in any other kind. The colour of the flowers is soft violet or porcelain blue with a small white centre, coming

C. Tmolusi (*late Snow Glory*).—A dwarf variety of strong growth and latest of any in bloom. Its large flowers are of rich blue, with a large white eye faintly outlined in purplish-blue, and with a touch of deeper colour on the tips of the petals. This kind is said to need a damper situation than its fellows, and certainly its growth is more vigorous in a moist spot.

C. nana (*dwarf Snow Glory*).—A dwarf kind from Crete, rarely more than 4 inches high. Its flowers are small but attractive, and carried in dense spikes of white or pale bluish lilac.

CHOISYA TERNATA (*Mexican Orange-flower*).—A handsome shrub, in

Chionodoxa Sardensis.

some weeks later than the early kinds. A white form of this plant is now to be had, and a variety *albo-rosea*, with flowers delicately tinged with rose, but nothing can surpass in lovely and changing colour the wild form.

C. Sardensis (*Sardis Snow Glory*).—A beautiful plant with flowers of rich deep blue, free from the pale shading of other kinds, the white eye being sharply defined. It flowers during February and March according to aspect, the effect of its flowers and bronzy foliage being very good. Several varieties are grown: *alba*, a white form, and *alba-major*, with larger flowers borne in fine spikes; *oculata*, in which a deeper ring surrounds the white disk; while in some cases the flower comes of a uniform deep blue. Mountain of Asia Minor.

the south and west often thrives with the shelter of a wall and a southern or western aspect, and in high ground, at least, as a bush. It is fast-growing, the flowers a lovely contrast to the deep rich green foliage, best in free warm soils.

CHRYSANTHEMUM. — Perennial and annual plants, some of which are of great value for the garden.

C. arcticum.—A good plant for the rock-garden about a foot high, flowering all the summer, white tinged with lilac or rose.

C. carinatum (*Tricolor Chrysanthemum*).—A showy annual from N. Africa, which varies much in cultivation, and is valuable if only for its yield of flowers for cutting. There are double white and yellow forms; and the showy ones known as *C. Burridgeanum*. Dunnett's varieties

of the same plant are also good. They are propagated from seeds sown in April in open beds or borders where the plants are to flower; or they may be sown earlier in pans or boxes of light rich earth in a pit or frame, from which they can be transplanted after all danger from frost is over. Plant singly in rich soil in an open and sunny position.

C. coronarium (*Crown Daisy*).—A handsome annual 2 to 3 ft. high in its wild form in S. Europe and N. Africa, and, in cultivation, breaking into a number of forms, few of them so pretty as the single wild flower, pale yellow or buff, treated as a half-hardy annual, and sown in good ground in April.

C. frutescens (*Paris Daisy*, *Marguerite*).—A half-hardy bushy plant from the Canary Isles; the foliage glaucous; the flowers large, pure white, with a yellow centre, and appearing from

Paris Daisy (*C. frutescens*).

June until cut down by frost. Several forms or allies are also valuable, such as the yellow *Etoile d'Or* and *Comtesse de Chambord*. These are of easy culture and propagation, for the outdoor garden, treated as half-hardy plants and put out in May.

C. indicum.—The parent of the numerous varieties of the hybrid Chrysanthemum. Although in our country, generally, open air culture will often be impracticable, the outdoor kinds are so pretty that it is worth while trying to secure the best kinds where the climate allows of their growth out-of-doors.

The following varieties are good: Lady

Fitzwygram, Mdme. C. Desgrange, G. Wermig, Comtesse Fouchier de Careil, La Vierge, Gustave Grunerwald, Roi des Précocés, Ryecroft Glory, Vicomtesse d'Avene, Maria, Mrs. Gifford, Montague, Mdme. Eulalie Morel, Florrie Parsons, Strathmeath, Arthur Crepey, Carrie Denny, Mdle. Rénée Cohn, October Yellow.

In many well-kept gardens there are open spaces on the walls, and the question is often asked, What can be done to hide them? The answer is, train Chrysanthemums upon them; if well nailed in they take up but little room, and afford a pleasing background to the other occupants of the borders. Strong cuttings or suckers, or, what is better still, the old roots or stools that flowered in pots the previous season, planted at the foot of the wall 3 ft. apart early in March, in soil similar to that just recommended, will make remarkably rapid growth, and, if kept neatly nailed in and all the side-shoots removed as they appear, will soon cover a wall of ordinary height. Should it be desirable to protect the blossoms from wind and weather it can be effectually done by nailing a 12-in. board on the top of the wall, so as to form a coping. This, supported by a few poles in front, is all that is required, and, if practicable, a canvas covering fastened in front when the nights are cold will generally prove sufficient protection; with these simple precautions the duration of the flowers will be greatly prolonged. The varieties named below are best for wall culture. Many early-flowering Japanese and reflexed kinds are included, as they are more suitable than the incurved section, the natural form of the petals being less likely to hold water from night dews and rains.

White.—Eynsford White, Lady Selborne, Mdle. Lacroix, Elaine, Fair Maid of Guernsey, Mrs. Forsyth, Felicity, Avalanche. **Yellow and Orange**.—G. Glenney, Jardin des Plantes, Sunflower, Buttercup, Mrs. Horril, President Hyde, Phœbus. **Blush and Rose**.—Bouquet Fait, Princess of Teck, Venus, Maiden's Blush, Peach Christine, Christine, Etoile de Lyon, Annie Clibran, Vivian Morel. **Crimson**.—E. Molyneux, Cullingfordi, W. Holmes, King of Crimson, M. Mousillac, M. Henri Jacotot, and Progne. **Red and Brown**.—Triomphe du Nord, Gloire du Rocher, Val d'Andorre, Félix Cassagneau, Wm. Robinson, Julie Lagravère, and Source d'Or. **Purple and Amaranth**.—Dr. Sharpe, M. Bernard, Alberic Lunden, and Mrs. Nisbet.

Pompons.—These are useful for wall covering ; they grow compact and flower freely. The following is a good selection :

Yellow.—Golden Circle, St. Michael, Primrose League, William Westlake, Nelly Dainford. *Red and Brown*.—Black

Chrysanthemum Mdme. Desgrange, grown in the open air.

White.—Sœur Mélanie, Mdle. Marthe, La Pureté, White Perfection, Snowdrop.

Douglas, Prince of Orange, Tiber, Vulcan, Victorine, Prince Victor, James Forsyth,

Fremy, Eleonore. *Purple.* — President, Comte de Morny, and Pygmalion.

Single-flowered Varieties are very useful for covering walls. The best are—*White.*—White Perfection, The Virgin, Exquisite. *Yellow.*—Yellow Jane, Golden

WHITE KINDS, 2nd WEEK IN SEPTEMBER.—La Parisienne, Roi des Blancs, Espérance, Champ de Neige, White Pet, Mytchett White, Parisiana, Gustave Grunnerwald, Charlie, Crauford White Victor Mew, Mabel Goacher.

Chrysanthemum "Cottage Pink."

Star, Prince of Yellows, Canariense, and Charming. *Blush and Pink.*—Florence, Mary Anderson, America, and Crushed Strawberry. *Red.*—Lady Churchill, Souv. de Londres, Scarlet Gem, David Windsor, and Effie.

EARLY FLOWERING KINDS.—Mme. Desgrange (yellow), Mrs. J. R. Pitcher.

PINK AND MAUVE KINDS.—Light Pink Parisiana, Belle de Septembre, Pearlie, Blush Beauty, Mrs. Pitcher, Primrose (pale yellow), Mme. Marie Masse, Ralph Curtis, Mme. C. Perrier, Edith Syrat, Mytchett Pink. }

YELLOW KINDS.—Carrie, The Champion, Maggie, Leonard Peto, Craigmillar

Miss B. Miller, Horace Martin, Etienne Devillat (pale reddish-copper and buff colour).

RED AND ORANGE KINDS.—Goacher's Crimson, Cactus, Crimson, Gladys Irene

Chicory.

Harkness, Gertie, Mrs. A. Willis, Rosie, Orange, Pollie, Mme. Zephir Lionnet, Vivid.

POMPONS.—Anastasia (light purple), Blushing Bride (rose lilac), Flora (golden), Golden Fleece (golden), L'Ami Conderchet (primrose), Little Bob (crimson), Mignon, Mr. Selby, Mrs. E. Stacey (yellow), Orange Pet.

C. latifolium is the largest of the Ox-eye Daisies, with fleshy, coarsely serrated, broad leaves. The seeds have large flower-heads, 3 in. to 4 in. across; a strong growing species requiring plenty of room. Division and seeds. A number of varieties of this and the following species have been raised which have value as border plants and for cutting.

C. maximum.—The leaves of *C. maximum* are bluntly serrated, stems more or less branched, each carrying a single white flower, leafless towards the flower-heads, the involucre flattish, composed of numerous narrow bracts. This vigorous plant has broken into a number of varieties of recent years, some with thread-like petals, others with larger

flowers, and some again with waved petals; most of them are worth growing, but being very vigorous should not be planted near to delicate or fragile plants. Maritime Alps.

C. Zawadskii, of tufted habit, bears numerous rose-tinted flowers all through the summer months.—D.K.

C. segetum (*Corn Marigold*).—A showy yellow native plant, as worthy of cultivation as many an exotic, and in certain cases worth growing for cutting. Treat as a hardy annual, preferring autumn sowing, though it may be sown in spring also.

Chrysobactron Hookeri. See ANTHE-
ICUM.

Chrysurus. See LAMARCKIA.

CICHORIUM (*Chicory*).—A pretty native plant, from 2 to 5 ft. high, *C. Intybus*, bearing in summer and autumn handsome blue flowers. It is worth introducing as a wild plant into localities where it is not common. It is a rampant grower, and will take care of itself even in arable crops, but it dislikes heavy and cold soils. The seed may be sown on rubbish heaps and in stony places, old quarries, and by roadsides.

Cimicifuga racemosa (Black Snakeroot).

CIMICIFUGA (*Bugbane*).—Plants of the Crowfoot Order, nearly allied to the

Baneberry. They are tall herbaceous plants ; one at least is handsome—*C. racemosa* (Black Snakeroot), 3 to 8 ft. high, with feathery racemes of white blossoms 1 to 3 ft. long, which, being slender, droop gracefully ; but the plants generally are not of much garden value. They are of easy culture in rich soil, and may be used as groups in the wild garden. The flowers have an offensive odour. Division. N. America and Asia.

Cineraria maritima. See SENECIO.

Cissus. See VITIS.

CISTUS (*Rock Rose*).—The Rock Roses are amongst the most beautiful of flowering shrubs, but in our country it is only on the lightest and warmest soils and on walls that they may be trusted to survive our winters. Most of the species have been at one time or another in cultivation in this country, but their value is greatly lessened by the recurring severe winters which kill unprotected plants of so many of the kinds. All the species are Old World plants, most of them being natives of South-western Europe ; some extend to North Africa and Asia Minor, and one to the Canary Islands. Many of them vary in colour, and hybridise freely. In spite of the fugacious character of the flowers, their bright colours and the profusion in which a succession is kept up for a considerable time give the Cistus a high place among garden shrubs. They prefer a dry sandy soil, and, although some grow freely enough in almost any garden soil, they are much more likely to suffer during winter in rich ground. The positions best for them are sunny banks on warm sandy soil, and something may be done by protection and frequently raising and propagating the plant. There are many natural hybrids, some confusion of names, and many more names than distinct plants, this, and the fact that these sun-loving bushes from the south are tender over a large area of our islands makes us limit the species named here to the more distinct and hardier kinds.

C. albidus (*White Rock Rose*).—The name of this is derived from the whitish tomentum which clothes the leaves and young shoots. It forms a compact bush 2 to 4 feet high ; the rose-coloured flowers are about 2 inches across, and the style is longer than the tuft of yellow stamens. S. Europe.

C. Bourgaeus is a native of the Pine woods of Southern Spain and Portugal, where it flowers in the month of April, grows a foot in height, and has prostrate branches, covered with narrow dark-green

leaves. The white flowers are about an inch across, and it is a good plant for a sunny spot in the rock-garden.

C. crispus.—This forms a compact bush, 1 to 2 feet high, with tortuous branches, the rose-coloured flowers nearly 1 inches across. There are some hybrids between this species and *C. albidus* which are nearer the seed-bearing parent than they are to *C. albidus*.

C. Cyprius.—This is a handsome bush like the Gum Cistus, but the flowers appear several together instead of solitary. It is nearly hardy at least in the south, has a glutinous exudation, and the flowers are large with a dark spot at the base. It is said to be a native of Cyprus, but this is doubtful.

C. florentinus (*Florence Rock Rose*).—A handsome bush, flowering freely and of easy culture, and I find it hardy and enduring on soils where other kinds perish. It is evergreen and charming on the tops of dry walls and banks ; and for the bold rock-garden one could not desire

Cistus florentinus.

a prettier bush ; 2 to 3 feet high, bearing myriads of white flowers throughout the summer.

C. formosus (*Beautiful Rock Rose*).—A much-branched, bushy shrub, with leaves greenish when old, but whitish when young, and large bright yellow flowers with a deep purple-brown blotch near the base of each petal. The plant thrives well in any warm soil, but is apt to succumb in severe winters. It is, however, such a beautiful plant, that it is well worth the trouble of putting in a pot of cuttings each autumn in a cold frame, planting these out in the open the following spring. If raised from seeds, some variation in the colour results. I find it does well on the top of "dry" walls.

C. glaucus.—A much-branched bush,

1 to 2 feet in height, with red-brown bark ; the upper surface of the leaves is dull green, glossy, and glabrous, the lower strongly veined and clothed with a hoary down. The flowers are large, white with a yellow blotch at the base of each petal, and the very short style is much exceeded by the stamens. S. Europe.

C. hirsutus (*Hairy Rock Rose*).—A shrub 1 to 3 feet high ; the young shoots and flower-stalks are hairy, as are the leaves on both surfaces ; the flowers whitish, and the style is shorter than the stamens. S.-W. Europe.

C. ladaniferus (*Gum Cistus*).—One of the best ; the leaves, smooth and glossy

as in some of the other kinds. S.-W. Europe.

C. lusitanicus.—A pretty kind of garden origin, which makes a shapely bush of spreading habit and slender wiry stems, covered during summer with large white flowers marked with a deep crimson spot at the base of each petal. Narrow, bright green foliage, which is slightly viscous.

C. Monspeliensis (*Montpelier Rock Rose*).—Widely distributed in the Mediterranean region ; is very variable in size of its leaves and also in stature of plant ; in some spots it hardly grows more than 6 inches in height ; in others to 6 feet. The flowers are white, about an inch in

Cistus formosus.

above, clothed with a dense white wool beneath. The large flowers are white, in some forms with a large dark vinous-red blotch towards the base of each petal ; in others without blotch. It also varies in the size of the leaves, the extreme forms having narrow, almost linear leaves. This seeds and naturalises itself freely on dry banks in a wood of mine.

C. laurifolius (*Bush Rock Rose*).—The hardiest kind ; in some southern gardens plants exist, which have withstood many winters. The flowers are white with a small citron-yellow blotch at the base of each petal. It requires no protection, and may be raised from seeds, which ripen in abundance, and also by cuttings, which, however do not strike so freely

diameter, each petal bearing a yellow blotch at the base.

C. populifolius (*Poplar-leaved Rock Rose*) is a robust kind, with large rugose, stalked, Poplar-like leaves and medium-sized white flowers, tinged with yellow at the base of the petals. Varieties of *C. salvifolius* are often misnamed *C. populifolius* in nurseries and gardens. Amongst the numerous forms of this species may be mentioned *C. narbonensis*, with shorter flower-stalks, smaller leaves—altogether a smaller plant than the type—and *C. latifolius*, another with broader leaves. S. Europe.

C. recognitus.—A pretty and low-growing shrub, with almost prostrate branches, and later to bloom than most

kinds. Its white flowers are only of medium size, but shapely, and prettily spotted with crimson towards the centre.

C. salvifolius (*Sage-leaved Rock Rose*).—A variable kind, and of slender habit, with Sage-like leaves, and long-stalked, white, yellow-blotched flowers. In a wild state it is found all along the Mediter-

haps, any other *Cistus*, and form a dense, brush-like tuft, overtopped by the long style.

C. villosus, a Mediterranean kind, a variable and erect bush with firm-textured leaves. The flowers of all the forms are rose-coloured, with long styles. *C. undulatus* is a variety with wavy-margined

Cistus ladaniferus.

anean, and a number of slightly varying forms have received distinctive names, but do not appear to have been introduced to gardens.

C. vaginatus is the largest of the red-flowered kinds; robust, with large-stalked, hairy leaves, and large, deep rose-coloured yellow-centred flowers. The stamens are more numerous in this than in, per-

leaves, *C. incanus* represents what may be regarded as the common typical form. *C. creticus* is another with deeper rose-red flowers than those already mentioned.

CLADIUM.—*C. Mariscus* is a vigorous native fen plant, 2 to 6 ft. high, in flower crowned with dense, close chestnut-coloured panicles, sometimes 3 ft. in

length, the leaves glaucous, rigid, and often 4 ft. long. It is a water plant for association with the taller sedges, Bulrush and bolder water-side plants.

CLADRASTIS, the Yellow-wood of N. America. *C. tinctoria* is a pretty lawn tree of medium size and symmetrical growth, but not a good flowering tree. Its leaves, in autumn, turn to a rich yellow, and remain bright for weeks until cut off by frosts. The white pea-shaped flowers are borne in loose clusters. Syn. *Virgilia lutea*. *C. amurensis* is a shrub introduced a few years ago from the Amoor Valley. Its leaves resemble those of the Yellow-wood, but are of thicker texture, not so large, and of a duller green. In late summer it produces a plentiful crop of flowers, even when only a few feet high. The spikes are dense, the blossoms white, inclined to yellow, and endure a long time. Small bushes flower freely. It is hardy in sandy loams.

CLARKIA.—These Californian plants of the Evening Primrose and Fuchsia Order are among the prettiest of hardy annuals, robust, of easy culture, and flower for a long time. There are two species from which the numerous varieties now in cultivation have been obtained. *C. elegans* grows 2 ft. high, erect, much branched, and bears long leafy racemes of flowers with undivided petals, varying from purple to pale red or a salmon colour. The principal varieties of this species have double flowers, and two—Purple King (deep purple) and Salmon Queen (salmon-pink)—have flowers produced freely on strong branching plants, and are very effective border flowers. The other species, *C. pulchella*, varies in height from about 1 ft. in the Tom Thumb sorts to 2 ft. It has magenta flowers normally, but there is every variation between deep purple and pure white, and there are also several double-flowered forms. Many varieties are mentioned in seed lists, most of which are distinct from each other, and well worth growing where annuals are much grown.

CULTURE.—Their growth is much affected by the nature of the soil. Like all other hardy annuals, they may be sown either in autumn or spring, and by sowing in the beginning of September the seedlings gain strength before the winter, and flower well in early spring, but these autumn sowings are liable to accident, and should only be tried on warm soils. The first spring sowing should take place in the middle of March, when the plants would

flower in July. Until about the middle of June other sowings may be made for flowering later. The best soil is ordinary garden mould, not too rich or dry.—G.

CLAYTONIA.—A small group of the Purslane Order, of which three species are pretty garden plants. *C. caroliniana* is a spreading dwarf species bearing in spring loose racemes of pretty rose flowers, and *C. virginica* (Spring Beauty) is a slender erect plant, with pink blossoms. Both are suitable for warm spots in the rock-garden in loamy soil, but *C. sibirica*, also a dwarf species with pink flowers, requires a damp peaty soil.

CLEMATIS (*Virgin's Bower*).—Beautiful climbing shrubs and herbs from northern and temperate regions and of the highest value for gardens. Among hardy climbers there is no other group of plants that equals the Clematis in variety and in beauty.

The Clematis vary in habit from herbaceous plants little more than 1 ft. high to woody climbers with stems 50 ft. or more in length. Most of the climbing species support themselves by means of the leaf-stalks, which curl round twigs or other slender objects near. The Clematis flower possesses no true petals, but in their place a coloured calyx consisting of usually four, but sometimes as many as eight sepals.

The Clematis like an open loamy soil, which should always be fairly rich, and in the case of the largest-flowered kinds even very rich in vegetable humus and fertilising material. All of them appear to succeed best in a chalky soil, and in gardens naturally devoid of chalk or lime it is well to supply it. An annual mulching with rotted manure given about November is of benefit, especially on poor soil. Such pruning as may be necessary for these wild types should be done in February. The stronger growers stand pruning well, and if they grow up their supports too high and form a thick heavy tangle at the top, they may safely be cut hard back. The weaker ones rarely need pruning at all. The Clematises may be used to cover walls, mounds, arbours, pergolas and fences, and in the open, where no other support is available, rough Oak branches may be used for them, either singly or set together to form a pyramid, while the more vigorous species will run over trees.

C. æthusifolia.—A graceful climber, with slender stems and branches. The flowers have not bright colour, but are

gracefully borne and pendulous, from half an inch to three-quarters of an inch long, bell-shaped or tubular, the sepals yellowish white. Like most of the Clematis, this varies a good deal in shape of leaf, and one form has been considered distinct enough to receive the name of *latisepta*.

C. alpina (*Alpine Clematis*).—A very pretty plant flowering in spring. The flowers are nodding, the four large sepals being soft blue with a whitish margin, or sometimes almost entirely white. The flower is 2 ins. or more across. Syn., *Atragene austriaca*.

C. apiifolia.—A vigorous climber with ternate leaves, growing 10 ft. high, flowering in August and September in panicles dull white. Japan and China. Closely allied to this is *C. brevicaudata*.

C. aromatica is closely allied to *C. Viticella*, and if it be a hybrid, as it is supposed to be, that species must be one of the parents. It is a slender plant, 6 or 7 ft. high. The solitary flowers are about 2 ins. in diameter, and of a rich purplish blue, and have a delicate and slightly aromatic odour.

C. campaniflora (*Bell-flowered C.*)—A very pretty kind, small bell-shaped flowers about 1 in. in diameter, pale violet or almost white. The flowers are very freely borne, and against the deep green, often finely-divided foliage, they are very effective. The plant is rare in gardens, though coming freely from seed.

C. calycina (*Winter flowering C.*) (*C. balearica* of Richard).—A native of Minorca and Corsica, evergreen with dark brown angled stems, and during the winter the foliage acquires a fine bronzy hue. The flower is about 2 in. across, yellowish white, stained inside with oblong, irregular, reddish-purple spots. December to April. In the London district it ought to have the shelter of a wall to flower well. From its near ally, the following species, it differs in its narrower and more divided foliage.

C. cirrhosa (*Evergreen C.*) (*C. balearica* of Persoon). This evergreen species has been much confused with *C. calycina*. *C. cirrhosa* however, if it comes from the Balearic Islands at all, is not confined to them, but is a native also of various parts of Spain, and is found also in Algiers and on the mountains of N. Africa. The flowers are dull white or cream coloured, downy outside, smooth within, and about $1\frac{1}{2}$ in. in diameter. In South Europe it climbs over big trees, but it grows only some 8 or 10 ft. high in these colder latitudes.

C. coccinea (*Scarlet C.*)—A distinct and beautiful species, some 6 to 10 ft. high, the flowers varying in colour from rosy carmine to scarlet; they are swollen at the base, but narrow towards the top, where, however, the tips of the four sepals are recurved. These sepals are very thick and leathery. A larger-flowered variety is known as major, and various hybrids have been raised by crossing this and other species. N. America.

C. connata.—It is a climber with stout woody stems with leaflets 3 to 5 in. long, coarsely toothed, or sometimes more or less three-lobed. The bell-shaped flowers appear during autumn and are of a clear light yellow, pointed tips recurved. Himalaya.

C. crispa (*Frilled C.*)—This name applies to a number of plants alike in all essential features, but differing in the shape of the leaves and in the size and colour of the flower. The leaf consists of three, five, or more leaflets, which vary in outline. The calyx is cylindrical or bell-shaped, and from 1 to 2 in. long, the upper part of each sepal spreading. The colour is purple margined with white, or in some forms pale lilac. The flowers are fragrant and appear in June, continuing up to autumn. Some of the forms are bright in colour and pretty, but others are amongst the least effective of the shrubby Clematis, the thick, heavy sepals being of a dull purple (N. America).

C. Douglasi (*Douglas's C.*)—A Rocky Mountain species discovered by David Douglas, and at present scarcely known in English gardens. The flower is bell-shaped, 1 inch long, the sepals being recurved at the tips and of an intense purple inside, paler without.

C. flammula (*Fragrant Virgin's Bower*).—A vigorous grower, its leaves are of a rich dark green and remain fresh till well into the winter. The flowers are small (half-inch to three-quarters of an inch across) and appear in late summer and autumn fragrant, creamy-white, the fruit white and feathery. This species is variable, in the size and shape of the leaflets and in the flower panicles, some of which are large with numerous blossoms, whilst in other forms the panicles are few-flowered and scarcely branched.

C. florida.—A distinct species, grows 9 to 12 ft. high, the flowers 2 to 4 in. across, flat when fully expanded, sepals of a creamy white and the tuft of stamens purple. There is a double-flowered variety and others with violet or blush-tinted flowers (Japan).

C. Fremonti.—This has herbaceous

stems 1 to 2 ft. high, rarely branched, and carrying numerous leathery leaves, 3 or 4 in. long, without stalks ; the purple flowers drooping with recurved tips. The tails of the fruits are downy when young rather than feathery (N. America).

C. fusca.—A sub-shrubby or nearly herbaceous species, with prostrate rather than climbing stems. When given support, however, it grows 6 to 8 ft. high. The bell-shaped flowers are covered with a short, very thick, brown wool, the sepals being a reddish brown colour. The fruit forms a thick globular head, 1 in. across, of plumose tails (N. Asia).

C. Hendersoni (*Henderson's Virgin's Bower*).—This is considered to be a hybrid between *C. Viticella* and *C. integrifolia*, and was raised in 1835 by Mr. Henderson, at Pine-apple Place, St. John's Wood. The plant grows to a height of 8 or 10 ft. The flowers, which have a faint sweet perfume, are over 2 in. across and of a deep bluish purple, appearing from June to September.

C. Heracleæfolia (*David's Virgin's Bower*).—A dwarf, sturdy plant under 2 ft. high, with large leaves and short-stalked corymbs of flowers of a Hyacinth-like shape and of a purplish blue colour. Much superior to it as a garden plant is the variety *Davidiana*, which often ranks as a species. Its stems are about 4 ft. long, but are rarely strong enough to stand erect without support. The largest leaflets often measure 6 in. in length by nearly as much in width. The bright lavender blue flowers are in dense heads, borne on long stalks in early autumn, but they also frequently appear in short, closely packed clusters right in the axils of the leaves. Each flower is three-quarters of an inch long, the points of the sepals reflexed and resembling a Hyacinth blossom (N. China).

C. integrifolia.—Herbaceous, 2 to 3 ft. high, its erect stems furnished with leaves 2 to 4 in. long and stalkless, or nearly so. The blue, drooping flowers are on the top of the stem and from the axils of the uppermost leaves from June to August. (Europe.)

C. lanuginosa (*Great flowered Virgin's Bower*).—A noble Chinese species 5 or 6 ft. high, the leaves covered beneath with greyish wool, the flowers the largest of any of the wild kinds, 6 in. across, and the sepals flat and overlapping and of a pale lavender colour. It is to this species more than to any other that the beauty of the garden hybrids of Clematis is due. Its flowers range in colour from pure white to deep rich purple, and appear from July to October.

C. ligusticifolia.—The flowers of this (male and female ones of which are borne on separate plants) appear in panicles white, three-quarters of an inch across. The variety *californica* is distinguished by its smaller, downy leaves. It is one of many examples that occur in the North American flora, where a widely-spread species is found to be smooth on the eastern side of the continent, but

Clematis lanuginosa alba growing through Azara.

downy or even woolly on the drier and hotter western side. This plant will climb to a height of 30 ft.

C. montana (*White Virgin's Bower*).—One of the most beautiful kinds, and when covered with its white flowers during May is one of the loveliest of all hardy climbers. It is quite hardy and vigorous and may frequently be seen covering walls to a great height ; also will run up trees and prove very effective in that way, thriving in ordinary soil and increased by seed or layers.

C. orientalis (*Yellow Indian Virgin's Bower*).—A vigorous climber growing 12 to 30 ft. high, flowering abundantly in

August and September, the four sepals being of a yellow colour, tinged with green, and having a sweet but not very strong fragrance. The fruit heads are handsome with the silky tail attached to each seed vessel (Mountains of India and N. Asia).

C. paniculata. (*Japanese Virgin's Bower*).—A vigorous climber, growing to a height of 30 ft. or more. The flowers have a hawthorn-like fragrance, the four sepals being of a rather dull white. It is hardy in Britain and flowers during September, but with nothing like the profusion that makes it so beautiful a climber in America. By planting it against a sunny wall its best qualities would perhaps be brought out.

C. patens.—Next to *C. lanuginosa* this is perhaps the most important of the wild types of Clematis. It is a native of Japan (having been found on the isle of Nippon), and possibly of China also. It was introduced about sixty years ago by Siebold, who obtained it in the gardens near Yokohama, where it had, no doubt, been long in cultivation. The sepals are from six to eight in number, narrow in the form originally introduced, and a delicate mauve colour, but the varieties subsequently obtained from it under cultivation have flowers much larger, the colours varying from white to deep violet and blue. Its value as one of the parent species of the garden Clematis is due not only to its beauty, but more especially to its flowering as early as May and June.

C. Pitcheri.—The flowers of this are pitcher-shaped, being broad and swollen at the base, narrow at the centre where the sepals press closely round the bunch of stamens, but have the tips expanded and recurved. They are 1 in. long and three-quarters of an in. wide at the swollen base, of a purplish blue outside, and in the typical form the recurved tips of the sepals are yellowish. The fruits are of a reddish purple colour (Colorado and Western America).

In the variety *lasiostylis* the sepals have but little of the yellow colour seen in the type, the recurved portion of the sepals being of a deep purplish blue. The fruits, too, are larger and of a richer red colour.

C. recta (*White Herbaceous Virgin's Bower*).—This is one of the best herbaceous species, its tufted stems growing about 3 ft. high and producing from June to August numerous white flowers sweetly scented, and each about 1 in. across. A handsome double-flowered variety, and in its own country the plant varies much (S. Europe).

C. Robertsiana (*Robert's Virgin's Bower*).—The nodding flowers of this are of a pale lemon-yellow, and are 3 to 5 ins. in diameter. The flowers have none of the petals or antherless stamens of the *Atragene* group, but otherwise, both in flower and foliage, the species bears a resemblance to the Alpine Clematis.

Clematis Lady Caroline Nevill.

C. stans.—A herbaceous plant, growing 4 or 5 ft. high, with dark green leaves; the flowers are not borne in such dense heads as in *L'Abbé David's Clematis*, but often in a large terminal panicle, frequently also in clusters close in the leaf axils. In early autumn each flower is about three-quarters of an inch long, pale blue, and of the hyacinth-like form common to this group of Clematis (Japan).

C. verticillaris (*Atragene americana*).—A climber with woody stems 8 to 10 ft. high or more. The flowers bluish purple and from 2 to 3 ins. in diameter (N. America).

C. Viorna (*the Leather Flower*).—Al-

though this is one of the oldest of the American Clematises in cultivation (having been introduced in 1730), it is not a common plant, being, indeed, one of the least attractive in the genus. It is not very vigorous in habit, growing 8 or 10 ft. high. The flower is pitcher shaped and very thick and leathery with sepals of a dull reddish purple colour appearing in summer (Eastern United States).

C. virginiana (*American Virgin's Bower*).—The common Virgin's Bower of the United States and Canada. The

Clematis Davidiana.

flowers are borne in flat panicles, the sepals thin, and dull white, and although hardy enough, is not in Britain so strong and woody a grower as our native Traveller's Joy.

C. Vitalba (*Traveller's Joy*).—There is no climber native to Britain that gives so near an approach to tropical luxuriance of vegetation as this. Even in winter when destitute of foliage its naked stems are ornamental. The numerous dull white flowers are each three-quarters of an inch or so across, with a faint odour resembling that of Almonds. It is, perhaps, most beautiful when covered with its white fruits, the seeds having long feathery tails.

C. Viticella (*Purple Virgin's Bower*).—A graceful climber, from 8 to 12 feet high; its flowers in summer $1\frac{1}{2}$ inches to 2 inches in diameter, the sepals blue, purple, or rosy purple, and the fruits have only short tails, which are devoid of the plumose covering

so often seen in this genus. There are now numerous varieties of the species superior to it in size of flower, and offering also a variety of shades, some very pretty.—W. J. B.

Hybrid Clematis.—Among the best of the many hybrids raised both abroad or in England are *Alba magna*, *Ascotensis*, *Beauty of Worcester*, *Belle of Woking*, *Blue Gem*, *Countess of Lovelace*, *Countess of Onslow*, *Duchess of Albany*, *Duchess of Edinburgh*, *Duchess of York*, *Fair Rosamond*, *Fairy Queen*, *Gem*, *Gipsy Queen*, *Henryi*, *Jackmani*, *Jackmani superba*, *Jackmani alba*, *John Gould Veitch*, *Lady Bovill*, *Lady Caroline Neville*, *Lucie Lemoine*, *Mme. Grange*, *Mme. Edouard André*, *Mme. Van Houtte*, *Miss Bateman*, *Miss Crawshay*, *Mrs. Geo. Jackman*, *Mrs. Hope*, *Otto Froebel*, *Princess of Wales*, *Purpurea elegans*, *Rubella*, *Sir Garnet Wolseley*, *Star of India*, *Stella*, *The Queen*, *William Kennett*. It has been usual in treating of these and other Clematis to throw them into groups, a misleading and useless plan from a garden point of view; the best way is to regard the species each separately, as they differ so much in vigour and in their use: the hybrids also are better to look at as a class apart, fitted more for flower-garden use than some of the species. The hybrid kinds are usually grafted, and this is no doubt the reason why they die off like flies, and why these fine plants, of which hundreds have been raised, are so rarely seen well grown in gardens. The stocks used are *C. Viticella* and *C. Vitalba*, plants very different in their nature from the fine species from China and Japan, and though a vigorous growth is obtained at first an early death too often follows of the kinds worked on them. The best way is to get the plants from layers, never to purchase any but these. Seed raising, too, should be regularly pursued, and in those ways we should get over the deaths of these fine plants caused by the short-sighted and ignorant practise.

THE BEST CLEMATIS IN COLOURS.

In this the general effect of the whole, the abundance and duration of the flowers, and the purity and brilliancy of their colours are the prime factors, enabling plant-lovers to obtain the richest effects. As regards the plants themselves, all but those of proved vigour and hardiness have been rejected; in fact, so robust are many of those here enumerated as to have reached the thickness of an old vine stem.

YELLOW.—*C. tangutica*, the most beautiful of its colour. Flowers of a fine yellow in spring. Stems woody and short, throwing out numerous flowering shoots each season. *C. orientalis*, light yellow in colour, flowering in summer and autumn; is best grown trained against a house or wall, when it sometimes attains a large size. *C. Wilfordi* resembles it; a plant for the rock-garden, where it forms low tufts covered with flowers, its shoots taking root wherever they touch the soil.

WHITE.—*C. apiifolia*, somewhat like *Vitalba*, flowering in autumn. *C. balearica*, scented blossoms during autumn and winter. *C. cirrhosa*, a vigorous plant, flowering from October to December. *C. flammula*; a variety *robusta* is larger, and flowers a little later. *C. lanuginosa candida*, large flowers, coming mainly in spring, but again at intervals during summer and autumn. There are in existence a great number of its forms, hybrid and otherwise, with beautiful white flowers, but none are so robust or lasting as the old form which has flourished for many years in our garden. *C. montana*; its variety *grandiflora* is larger in flower, but they are not fragrant. *C. Viticella alba*, a good plant with flowers of exquisite purity and grace; its form *Luxurians* is more robust, attaining a large size, and sometimes, as a result of its great vigour, the first flowers are somewhat greenish in colour. The varieties *Arabella* and *Madame Moser* are also forms of *Viticella alba*.

ROSE.—*Comtesse de Bouchaud*, large and beautiful flowers of a fine rose colour, and very free. *Madame Baron Veillard*, large flowers appearing rather late, towards the end of summer, and autumn. *Vagabonde*, flowers of four sepals set crosswise, pale rose in the centre, deepening towards the edges; a plant of great vigour. *C. Viticella rosea*, a charming plant, flowers smaller, but of a beautiful shaded rose. *Neige et cerise*, also a form of *Viticella*, medium-sized flowers, white in the centre, with a border of bright cherry-red. *Duchess of Albany*, flowers of a good light pink.

CRIMSON AND RED.—*Madame Edouard André*, crimson-purple; *Madame Furtado-Heine*, rose-shaded flowers; *Madame Julia Correvon*, dark crimson-red colour; *Oriflamme*, bright red, approaching vermilion, covered with minute touches of white; *Jackmanni rubra*; *Ville de Lyon*, crimson-red. Amongst red forms of *C. Viticella* are *Kermesina*, small flowers but very abundant and deep crimson in colour; *Leonidas*; *Rubra grandiflora*, reddish-crimson; *Flore-pleno*

purpurea, and *atropurpurea*, of a deeper purple; *C. coccinea*, Countess of Onslow, hybrid of *coccinea*, crimson shading to purple.

BLUE.—*Durandi*, intense blue; *Perle d'Azure*, large light blue flowers; *Victor Cerès*, a form approaching *lanuginosa*, with large flowers of a good blue; *Cæligina*, a fine shade of ultramarine in colour; *Bifrons*, light blue in the centre shaded to dark indigo at the edges, and silvery-white at the back; this double tinting on the same plant has at times a very peculiar effect. Of purple forms of *C. Viticella* there are *atragenoides*, a very free and vigorous plant, with blue flowers, paler in parts and towards the centre; *cærulea*, with myriads of bell-shaped, azure-blue blossoms; and *Monsieur Tisserand*, robust and good, with light blue flowers streaked with darker veinings.

VIOLET AND PURPLE FLOWERS.—The purple Clematis are a numerous class, but the best are as follows:—*C. Flammula rubra marginata*, flowers small but produced in such quantity as to make the plant one sheet of violet; *Etoile violette*, large well-formed flowers upon a vigorous plant, which reaches a great size. *Francofurtensis*, dark purple; *Gipsy Queen*; *Jackmanni* and its variety *superba*; *Madame Grangé*, ruddy violet; *Modesta* inclining to mauve; *Neptune*, clear blue-violet; *Prince of Wales*, rich violet-purple; *Rubella*, dark and richly shaded; *Star of India*, clear violet, with bright purple markings; *Rubro-violacea*, a peculiar brown tint of violet, passing to ruddy violet-crimson. Amongst forms of *C. Viticella* are *Iris*, rosy violet; *Négresse*, a dark velvety purple; *Venosa*, pale blue, veined with violet purple, passing to darker tones at the edges; and *Venosa violacea*, darker in colour; *C. odorata cærulea*, with scented blue flowers.

This list does not include a number of varieties still on trial in our gardens, which promise ere long to add to the list plants distinct in colour, particularly in the newly-developed group of hybrids of *coccinea* and *megalantha*, of which the Countess of Onslow, Sir Trevor Lawrence, Duchess of Albany, Duchess of York, and Grace Darling form a part.—FRANÇOISQUE MOREL.

CLERODENDRON.—Tropical or subtropical trees or shrubs, only two species of which have any claim to hardiness, *C. trichotomum*, a Japanese plant, and *C. fætidum*, a native of China, an old garden plant usually seen in greenhouses, but hardy enough for open-air culture in all southern and warm parts. In southern

gardens, especially near the sea, it grows 5 ft. high and is handsome for the several weeks it is in bloom. The other species is less common, and is a free-growing shrub, 6 ft. high or more, bearing large loose clusters of flowers, the corollas white, the calyces a deep brownish-red, blooming in September.

CLETHRA (*Sweet Pepper Bush*).—

Clethra alnifolia.

Shrubs and small trees of the Heath Order, the hardy species natives of North America. The Alder-leaved Clethra (*C. alnifolia*) in the wet coves of Virginia reaches a height of 10 ft. or more.

With us it grows from 3 to 5 ft., makes a dense bush, bearing in summer white sweet-scented flowers in feathery spikes. *C. acuminata* has more pointed leaves, and it also has spikes of white scented flowers; it is quite a small tree in the woods of the Alleghanies. Both are valuable shrubs for moist peaty places.

C. arborea.—Is the handsome Lily-of-the-Valley tree. It bears panicles of white, bell-shaped flowers in the summer, at which time it is quite a feature at Tresco.

It thrives out-of-doors in the south, and may be worth trying in the warmer parts of S. Ireland, but usually in our country is a shrub for the greenhouse. Madeira.

CLIANTHUS (*Glory Pea*).—Brilliant shrubs seldom seen out-of-doors in the London district or home counties, but one

Clianthus puniceus.

kind is quite free as a wall plant in Irish and west-country gardens, and should be more frequently planted in sea-shore and warm places. It is *C. puniceus* a native of New Zealand, and as handsome a shrub when in bloom as one could wish to see, its splendid crimson blooms borne in large bunches during summer. Cuttings.

Clintonia. See DOWINGIA.

Cnicus benedictus. See CARBENIA.

COBÆA (*Cups and Saucers*).—In favourable localities in the southern and western counties *C. scandens*, a well-known greenhouse plant, thrives against an outside wall, and will cover a considerable space of trellis-work during summer. It should be planted in light rich soil, and if watered liberally during the growing season will soon cover a large space and flower freely. With some protection it will survive an ordinary winter.

CODONOPSIS.—Interesting and sometimes pretty plants of the Bellflower Order, easy to cultivate in light and warm soils, *C. ovata* being a fine bushy plant. They are suited for warm borders. Some are annuals, but most are hardy perennial flowers from the mountains of India.

COLCHICUM (*Meadow Saffron*).—Hardy bulbs, some handsome in autumn. The individual flowers do not, as a rule, last long, but, as they come in succession,

Colchicum in Grass.

there is a long season of bloom. The flowers are often destroyed through

being grown in bare beds of soil, where the splashing of the soil in heavy rains impairs their beauty. In the rock-garden among dwarf plants *Colchicums* thrive, and make a pretty show in autumn, when rock-gardens are often flowerless. They look better in grassy places or in the wild garden than in any formal bed or border. Their naked flowers want the relief and grace of Grass and foliage. There are about thirty kinds, though only about half of them are in cultivation, and among these the differences are often slight. Though there are so many names to be found in catalogues, the distinct kinds are few, and there is such a striking similarity among these that they may be conveniently classed in groups. The best known is

C. autumnale, commonly called the autumn Crocus. The flowers appear before the leaves, rosy purple, in clusters of about six, 2 or 3 in. above the surface, flowering from September to November. There are several varieties, the chief being the double purple, white and striped; rose-lilac; rose-lilac, striped with white; pale rose; and pure white.

C. Parkinsoni.—A distinct and beautiful plant, readily distinguished from any of the foregoing by the peculiar chequered markings of its violet-purple flowers. Its flowers come in autumn and its leaves in spring. Similar kinds are *Bivona*, *variegatum*, *agrippinum*, *chionense*, *tessellatum*, all of which have the flowers chequered with dark purple on a white ground.

C. speciosum, from the Caucasus, is large and beautiful, and valuable for the garden in autumn, when its large rosy-purple flowers appear nearly 1 ft. above the ground. Like the rest of the Meadow Saffrons, this is as well suited for the rock-garden as the border, thriving in any soil; but to have it in perfection, choose a situation exposed to the sun, with sandy soil—in fact, a spot likely to dry up during summer.

COLEUS.—A few kinds of these pretty-leaved plants, of the Sage Order, succeed in the open air in summer, and, when used judiciously, give a fine effect. In some of the London parks they are arranged by themselves in large masses, generally of one kind only. Though there is a host of varieties, few succeed in the open air. Mr. Wildsmith, of Heckfield, wrote: "We have tried at least a score of varieties for bedding-out, with the result that the first kind recommended (*Verschaffelti*) is still the only

one that succeeds well. The culture of all the varieties is of the simplest nature; cuttings strike freely in any sandy soil, in a moist heat of 70°.

COLLETIA.—Curious shrubs of the Buckthorn Order from Chili, some species of which are hardy enough for the open air in all but the coldest parts of the country, in free sandy soils. They have spiny branches with a few minute leaves. *C. cruciata* is the commonest; its stems are

Colletia cruciata (*C. bictoniensis*.)

armed with stout flattened spines, its flowers white and small, making a bush about 4 ft. high. *C. spinosa* has its spines round or awl-shaped, the white flowers, though small, are very numerous in summer. Under favourable conditions it makes a formidable hedge in the southern counties, where it flourishes.

COLLINSIA.—Pretty N. American annuals. If sown in autumn, they will, on some soils, survive the winter, and flower much better than spring-sown plants, the flowers coming early. They are of the easiest culture. Plants from seed sown in spring flower in twelve weeks. There are from nine to a dozen species or varieties in cultivation and enumerated in the catalogues, the only one requiring special treatment being *C. verna*, which must be sown in autumn. The prettiest use for these plants is for the spring-garden in beds, or occasionally as a broad edging.

COLLOMIA.—*C. coccinea* is a bright annual, 1 ft. to 18 in. high, flowering in summer and autumn. Sow it in April in open ground; or else in a frame in autumn and protect it during winter, if good

plants are desired either for pots or planting out. On warm soils it grows best and sows itself every year, surviving the winter, and growing much stronger.

COLUTEA (*Bladder Senna*).—The Bladder Sennas cannot be called choice flowering shrubs, but they are very useful for poor hungry soils, particularly for dry sunny banks where few other plants can exist. Like the Gorse and a few other shrubs of

Colutea arborescens.

the Pea family, they delight in a dry sandy soil, and when in flower, which is during several weeks in late summer and in autumn, they have a pretty appearance, their foliage being light and elegant. They have numerous names, but there are only one or two distinct kinds. The commonest is *C. ar-*

borescens, which, under favourable conditions, grows 6 or 8 ft. high, has large flowers, varying in different varieties from yellow to a deep reddish-yellow. *C. cruenta*, *C. halepica* and *C. media*—all natives of Europe—are smaller, and have bright yellow flowers; but all have much the same aspect.

COMMELINA (*Blue Spiderwort*).—A charming old garden plant with flowers of a fine blue, *C. Cælestis* delights in light, warm soils. The roots are fleshy, and in some districts it is well to cover them with coal-ashes on the approach of winter. In cold wet districts the roots may be lifted, and stored in dry leaf-mould. On some warm or stony soils, and in districts near the sea where light soil prevails, it grows like a weed. It is so fine in colour that a group or small bed is always welcome. There is a white form (Mexico).

Comptonia. See MYRICA.

CONANDRON.—*C. ramondioides* is a small Japanese plant allied to *Ramondia*, having thick wrinkled leaves, in flat tufts, from which arise erect flower-stems some 6 in. high, bearing numerous lilac-purple and white blossoms. Though said to be quite hardy, it requires a sheltered position, such as is afforded by a snug nook in the rock-garden. Plants placed between blocks of stone thrive if there is a good depth of soil in the chink and the soil is moist.

CONVALLARIA MAJALIS (*Lily-of-the-Valley*).—It is well to have a plantation of Lilies-of-the-Valley upon a south aspect, for the sake of earliness and of producing them in succession, for by this means flowers may be gathered a fortnight or three weeks earlier. The best places are those under shady walls. Give liberal surface-dressings of rotten manure, and an abundant supply of moisture throughout active growth. Frost is destructive to the blooms, which appear with the leaves. Spruce or other evergreen branches placed sparsely over the beds are a protection, and encourage growth. Preference should be given to a soft loamy soil well enriched with rotten manure and with plenty of sand, though fine Lilies may be grown in rather heavy loam. Whatever the soil, it should be moderately firm before planting.

The best time to plant is early in autumn, immediately after the foliage decays, selecting the crowns singly and dividing them. For beds likely to remain undisturbed for several years, the crowns may be planted 2 or even 3 in. apart, as they do not become crowded so soon as to require thinning out. Cover the surface after planting with 1 or 2 in. of rotten manure,

(Lily-of-the-Valley.)

thorough maturity being only insured by repeated applications of water—weak

manure-water being the most effective. Treated thus, with annual surface-dressings of manure, the beds will keep in good condition for years, and bear fine blossoms in abundance. When the plants become crowded with shoots they should be thinned out, or, better still, lifted and replanted. It is now largely forced into flower early, the roots being usually imported from the Continent, where they are grown and prepared for the purpose. It may be naturalised, too, on any place sufficiently moist and shaded, and soon spreads into broad masses. There is a variety with gold-striped foliage, and another with double flowers, but this is not pretty. The finest form is called Fortin's, which is more robust than the common kind, having larger flowers.

CONVOLVULUS (*Bindweed*).—Handsome climbing herbs; some hardy, and where properly used effective.

C. dahuricus (*Dahurian C.*)—A showy twining perennial, bearing in summer rosy-purple flowers. Excellent for covering bowers, railings, stumps, cottages, &c., and also for naturalisation in hedge-rows and copses. It grows in almost any soil, and, like its relation the Bindweed, is readily increased by division of the roots, which creep. Syn. *Calystegia* (Caucasus).

C. major. See IPOMŒA.

C. mauritanicus (*Blue Rock Bindweed*).—A beautiful prostrate twining plant from N. Africa, with slender stems. The flowers blue, 1 in. across, with a white throat and yellow anthers. The rock-garden, and raised borders; supposed to require sunny positions, in sandy, well-drained soil, but I find it fine on stiffish cool soils, and even hardy on them. Division or cuttings.

C. pubescens fl.-pl. (*Double Bindweed*).—Handsome and useful for clothing trellises, stumps, porches, and rustic-work. It grows rapidly to the height of 6 ft. The flowers are large, double, and of a pale rose, appearing in June and onward. The Double Bindweed likes a light rich soil and a warm aspect. It may be grown in large pots, tubs, or boxes, and prettily used for forming small bowers on balconies, to hide low fences, or to climb round posts. Division. (China.)

C. Soldanella (*Sea Bindweed*).—A distinct trailing species with fleshy leaves; flowering in summer, pale-red, and handsome in the rock-garden, if planted so that its shoots droop over stones. Also suited for borders, in ordinary soil. Division. Europe and Britain.

C. sylvaticus.—No plant forms more

beautiful and delicate curtains of foliage and flowers than this, which grows vigorously in any soil. The wild garden is the place where it is most at home, and where its vigorous roots may ramble without doing injury to other plants. Among bushes or hedges, over railings, or on rough banks, it is charming, and takes care of itself. The rosy pink form *incarnata* is supposed to be a native of N. America, but is naturalised in some

Convolvulus sylvaticus.

parts of Ireland. Native of S. Europe and N. Africa.

C. tricolor.—One of the most beautiful of hardy annuals, too well known to need description. There are numerous varieties, varying more or less in colour of flowers or in habit of growth. The flowers of the type are blue, yellow, and white, but there are varieties entirely white, and almost every variety is worth growing. The plant being perfectly hardy, may be sown in the open ground in September for flowering in spring, or sown in February, in a heated frame, for transplanting in May for mid-summer flowering, and in the open ground from April to the end of May for flowering in late summer and autumn. Syn., *C. minor*.

COPTIS (*Gold Thread*).—*C. trifolia* is a little evergreen bog plant 3 or 4 in. high with trifoliate shining leaves, deriving its common name from its long bright yellow roots. Northern parts of America, Asia, and Europe, flowering in summer; white. Easily grown in moist peat or very moist sandy soil. Division.

CORDYLINE (*Club Palm*).—Although these fine-leaved shrub plants are common in greenhouses, it is only in the mildest

parts of England and Ireland that they can be grown well in the open air. In the Isle of Wight, and from thence along the shores of Devonshire and Cornwall to the Scilly Isles, they succeed well, forming a fine feature even in cottage gardens, whilst in some larger gardens whole avenues are planted. But, in far less favoured places, it is often seen thriving for years in the open air, though it is not worth trying in cold, high, and inland places, especially on clay soils.

abundance of seeds, from which seedlings were easily raised in a cold frame. In the Scilly Islands the plant becomes a great tree, in the warmth and moisture from the Gulf Stream. The fact that in Dublin young plants annually flower and ripen seed is sufficient proof of its hardiness and of its prospects of success in many districts. It is readily increased also from pieces of the stem and offsets. If a plant is cut down close to the ground, there soon spring up a number of young shoots, which can be

Cordyline australis, Bosachan, Cornwall.

The true *C. indivisa* is distinct, and a large number of plants have at different times been in cultivation; owing, however, to their being treated as tropical plants, they usually proved short-lived. One of the finest specimens in the country is in Mr. Rashleigh's garden at Menabilly, Cornwall. *C. i. lineata* is a fine variety, with leaves much broader than those of the type, and sometimes 4 in. across, coloured with reddish pink at the sheathing base. There are many forms. At Knockmaroon Lodge, near Dublin, a plant, 16 ft. high, with a stem some 6 in. in diameter, annually flowered and bore an

taken off as cuttings, and which strike with freedom. Recent severe winters may have hurt it in many places; but after so many years' success no one in a likely district will give up its culture.—B.

COREOPSIS (*Tickseed*).—Showy North American herbs, perennial or annual; the annuals being pretty summer flowers, and the perennials valuable late-blooming plants. One of the best of the perennials is *C. auriculata*, about 2 ft. high, with a spreading growth, and bearing, in autumn, abundance of rich yellow blossoms on slender stalks. Nearly allied and similar to it is *C. lanceolata*, an equally showy

plant, also delighting in a rich damp soil. *C. tenuifolia* is a pretty plant, with elegant feathery foliage and rich golden-yellow blossoms from summer till autumn. *C. verticillata* is similar to it, and is also a showy border plant. Neither of these is so robust as the taller kinds, and they therefore require more select spots, such as the front rows of a mixed border in the rougher parts of the rock-garden. The annuals are among the showiest summer flowers; being hardy, they make a fine display in spring from seeds sown in September; while an almost continuous bloom may be had from July to October by sowing successively from early March till the middle of June in ordinary garden soil—that of a moist description being preferable for the spring sowings. The following are the principal annuals: *C. aristosa*, 2 to 3 ft. high, with large golden-yellow blossoms; *C. Atkinsoniana*, 1 to 3 ft. high, flowers orange-yellow spotted with brown in centre; *C. coronata*, orange-yellow, with a circle of brownish crimson in centre; *C. Drummondii*, 1 to 1½ ft. high, golden-yellow; *C. tinctoria*, 1 to 3 ft. high, flowers crimson-brown tipped with orange-yellow.

C. grandiflora is a very fine showy plant. It fully deserves its name, as its flowers are very much larger than those of any other *Coreopsis* grown in gardens.

Even if we eventually come to treat it entirely as an annual, this will not detract from its value, for it is a graceful flower and worthy of special care. Raising a batch of seedlings once a year is easily done. The seed may be sown at any time in spring, and strong plants be ready to put out into their flowering quarters in autumn. Its handsome flowers are borne on strong stems 12 to 18 in. in length. In the garden the flowers are brilliant and long-lasting, and they are also valuable for cutting.—A. H.

CORIARIA.—Evergreen shrubs, natives of India and America; they seem to do well in southern parts of the country, and are even hardy in London, thriving in ordinary conditions, and best fitted for a place among shrubs of medium size. Two or three species are in cultivation, the most usual being *myrtifolia* (a native of S. Europe.)

CORIS (*Montpelier C.*)—*C. monspeliensis* is a pretty dwarf plant of the Primrose order, about 6 in. high, usually biennial in our gardens, thriving on dry sunny parts of the rock-garden, in sandy soil, and among dwarf plants. South of France. Seed.

CORNUS (*Dogwood: Cornel*).—Most of the Dogwoods known in cultivation are shrubs or small trees. Some are pretty shrubs, useful in the park and pleasure-garden, or along watercourses, the shoots of some giving fine colour in winter; and there are two very dwarf species for the bog-garden.

C. alba, the white-fruited Dogwood, is a native of Asia, growing to a height of from 5 to 10 ft., with slender branches clothed with bright-red bark, giving a charming effect all through the year, either in a mass or as a specimen plant on a lawn or in the shrubbery.

The flowers, white or cream-coloured, are in crowded cymes, followed by white fruits. The variety *Spathi* is one of the finest—in our climate, at any rate—of shrubs with coloured leaves. In

Cornus alba.

spring the leaves are bronzy, in summer deeply and irregularly margined with gold. The habit of the plant is vigorous, the variegation constant, and the foliage does not scorch in bright sunlight, as is the case in not a few plants with golden variegated leaves.

C. alba sibirica is dwarfer in habit than typical *C. alba*, but has still brighter-coloured bark. Nothing is definitely known of the origin of this charming shrub. Apparently the first mention of it is in Loddiges' catalogue for 1836. There is a form of this variety with variegated leaves, but it is not so desirable as the type.

C. canadensis (the dwarf Cornel or Bunchberry) is a pretty little herbaceous plant with creeping underground rhizomes and upright simple stems from 4 to 8 in. high, the leaves in a whorl of four or six near the summit of the stems; the true flowers are minute, but the four rather large white or cream-coloured bracts conspicuous. The berries are red and show well above the short stems: in taste they are sweet and palatable. This species grows in Japan and Manchuria, and across the continent of N. America, and is one of the prettiest plants for the bog garden or the cool parts of the rock-garden.

C. capitata (*Strawberry-tree*).—This plant is more widely known under the name of *Benthamia fragifera*. It is a sub-ever-

green tree, a native of N. India and China. Unfortunately, it is not hardy in this country, except in Devon and Cornwall, where some remarkably fine specimens exist. In the gardens of Mr. R. G. Lake, Trevarrick, St. Austell, some trees are about 40 ft. high, and the trunk of one is 5 ft. in diameter at 5 ft. from the ground; these are believed to be the largest in this country. There are numbers of fine specimens at Trelissick, and also in the gardens of Mr. J. Rashleigh. The large bracts, white tinged with pink or rose, make this one of the most beautiful trees when in flower, and the large clear red fleshy fruits, somewhat resembling a Strawberry in appearance, make it equally attractive when in fruit.

C. circinata.—This is conspicuous by reason of its large round leaves, which are 4 or 5 in. long and 3 in. or more wide, and its clusters of bright-blue fruits, each being about the size of a Pea. It is 3 ft. or more—rarely reaching 10 ft.—in height, and has rather rigid erect stems covered with warted bark, which is at first pale green, and later becomes light brown or purple. The flowers are small, yellowish white in colour. A native of the Eastern United States.

C. florida (the *Flowering Dogwood*) is very showy in flower, scarcely less so in fruit, and very beautiful in autumn when the leaves change colour before falling. Unfortunately, we do not obtain sufficient summer heat to thoroughly ripen the wood, and so the flowering of this species in Britain is a rare occurrence, although it was one of the earliest amongst North American shrubs to find its way to British gardens.

C. Kousa is a native of Japan, and a new species, quite hardy, but needs to be thoroughly well established and several years old before it really shows to advantage. The white flowers appear in May and June. Syn. *Benthamia japonica*.

C. Mas (*Cornelian Cherry*).—Although the flowers of this species are small, they are borne so freely by old trees that, with the exception of the Witch Hazels, there are no large shrubs flowering in February or March which can vie with it, the clusters of yellow flowers conspicuous on the leafless twigs. Old trees fruit freely, and bear fruit half an inch long or more, bright red and individually as handsome as a Cherry. On the Continent in many places selected varieties are grown for the sake of the fruit, for preserving. Amongst the forms are some with yellow, bright blood-red, and violet fruits, and another with fruit much

larger than that of the wild plant. The Cornelian Cherry is a native of Central and Southern Europe, and sometimes attains 20 ft. in height. There are fine-leaved varieties; the best are *C. Mas variegata*, a pretty shrub with white variegated leaves, and *C. Mas elegantissima*, with gold and green leaves often suffused with red.

C. Nuttalli.—A tree, in its native country, 50 or 60 ft. high. Generally it has six large, broad white bracts 2 in. or 3 in. long, so that the so-called flower measures 4 in. or 6 in. across. It is one of the most beautiful trees in the forests in many parts of California and Oregon.

C. stolonifera (*Red Osier Dogwood*).—It spreads and multiplies freely by prostrate or subterranean shoots, and grows 6 or 8 ft. high; the leaves light green above and paler beneath; fruit varying from white to lead colour. In winter the growths, especially those of the previous season, are of a bright red-purple colour. In its native habitats it affects wet places, but in Britain I have seen it do well in dry ground. N. America.

C. suecica is a native of Northern and Arctic Europe, Asia, and America, in Britain occurring on high moorlands from Yorkshire northwards, and ascends to 3000 ft. It is a charming little plant, flowering in July and August, with conspicuous, rather large white bracts, followed by red drupes. It should be grown in light soil or in peat in partial shade in the bog garden.—N.

CORONILLA.—Flowering shrubs of the Pea family, including at least two good herbaceous plants.

C. Emerus (*Scorpion Senna*).—An elegant loose bush, 3 to 6 ft. high, in mild seasons, remaining green through the winter. The flowers are reddish when first expanded, becoming yellow. It blooms freely in early summer, and flowers again in autumn. This is the only bushy Coronilla that can be well grown in the open air in our country, but in mild districts *C. glauca*, a beautiful shrub with glaucous foliage and yellow flowers, usually grown in greenhouses, may be grown out-of-doors. S. Europe.

C. iberica is about 1 ft. high, and has a dense tuft of slender stems that trail on the ground or fall gracefully over the ledge of a rock. It makes a pretty show in early summer with its bright-yellow

Coronilla.

blossoms, resting on deep-green foliage. Its place is the rock-garden, also thriving on the margins of borders, but not so well as on a bank or in the rock-garden. Cuttings, inserted in early spring. Asia Minor.

C. varia.—A handsome plant, with pretty rose-coloured flowers; found in stony places and on many railway banks in France and Northern Italy, forming low dense tufts, sheeted with rosy pink, their beauty conspicuous among the weeds. Seeds.

C. minima is similar to *C. iberica* but smaller—a pretty rock plant.

CORYDALIS (*Fumitory*).—A numerous family, of the Poppy order, not many important.

C. bracteata (*Bracted Fumitory*).—A distinct kind, with yellow flowers. More erect than some other kinds, the flowers cluster together at intervals. The plant is of quite easy culture, and may be best used around the base of the rock-garden. Siberia.

C. bulbosa (*Bulbous Fumitory*).—A compact tuberous-rooted kind, 4 in. to 6 or 7 in. high, with dull purplish flowers in April, and a solid bulbous root, quite hardy, and of easy culture in almost any soil. A pretty little plant for borders, for naturalising in open spots in woods, and also for the spring garden. It is naturalised in several parts of England, but its home is in the warmer parts of Europe. Syns., *C. solida* and *Fumaria solida*.

C. cava.—One of the dwarfest race, flowering early in the year, with purplish blossoms. A prettier kind is the variety *albiflora*, which is similar, save the colour of the flowers.

C. Ledebouriana (*Ledebour's Fumitory*).—Distinct on account of its peculiar glaucous leaves, arranged in a whorl about half-way up the stem, 9 to 12 in. high. Flowers are a deep vinous purple, with pinkish spurs. It is early and hardy. Siberia.

C. lutea (*Yellow Fumitory*).—Graceful masses of delicate pale-green leaves dotted with spurred yellow flowers. It is pretty in borders, and grows to perfection on walls, and the tufts, when emerging from some chink in a fortress wall where rain never falls upon them, are often as full of flower as when planted in fertile soil. A naturalised plant in England. Seeds.

C. nobilis (*Noble Fumitory*).—A distinct and handsome plant, 10 in. or 1 ft. high; the flower-stems are stout and leafy to the top, and in summer bear a head of rich golden-yellow flowers with a small reddish-chocolate protuberance in the centre of each. It is easy of cul-

ture in warm borders, but is rather slow of increase. Division. Siberia.

C. Semenovii.—A pretty kind from Turkestan. The yellow flowers cluster together in the upper part of the stem and assume a somewhat pendent position. The spur in this kind is very short. It flowers usually in early spring.

C. thalictrifolia.—A charming addition to rock-garden plants. One foot high, tufted, and spreading, the thin, wiry stems each carry two pairs of leaves on pedicels an inch long, and a terminal leaflet, all deeply notched. The blossoms are yellow, each about an inch long. It flowers profusely from May to October, and in autumn the foliage assumes a reddish tone. China.

CORYLOPSIS.—A small group of hardy shrubs, allied to the Witch Hazel from China, Japan, and N. India. They are thin and dwarf, have ribbed leaves resembling the Hazel, and bear flowers in drooping racemes. The best known is the Japanese *C. spicata*, 3 or 4 ft. high, with cowslip-coloured and cowslip-scented flowers, in spikes produced before the leaves in spring, like those of the Witch Hazel. As these are early spring-flowering shrubs, they should be planted in spots sheltered from cold winds.

CORYLUS (*Hazel-nut*).—A small group of European and Asiatic trees, represented in our country by the Hazel, *C. avellana*, which is precious in its nut-bearing forms for our gardens. There are varieties, including a weeping one, *pendula*, and cut-leaved and nettle-leaved forms. Other species worth growing are *C. americana*, *heterophylla*, *mandshurica*, and *maxima*, with its very fine variety *atropurpurea*, and other forms, among them the varieties of cobs and filbert nuts grown for their fruits. It is a very pleasant way to plant a group of the best fruiting Hazel in the pleasure ground, or to form what is called a Hazel walk. This used to be done in old times, and where there is sufficient room is often worth doing, for the sake of the fruit as well as the associations of the trees.

COSMOS.—Mexican plants allied to the Dahlia. *C. bipinnatus* is a handsome annual, 3 ft. to 5 ft. high, having finely divided feathery foliage, and large Dahlia-like bright-red-purple blossoms, with yellow centres. It is best raised a tender annual by sowing the seeds in February or March in a heated frame, and transplanting in May in good, rich soil with a warm exposure. It flowers from August to October, is good for grouping with bold and graceful

annuals. There are now varieties rose, white, purple and orange. *C. atropurpurea*, called the "Black Dahlia," is a handsome plant with nearly black flowers thriving in ordinary soil. *Syn.*, *Cosinea*.

COTONEASTER (*Rockspray*).—Valuable rock-shrubs and low trees of much variety. Some of the rock-trailing kinds are common, but the bright-berried low trees from the mountains of India are little used. These might give good effects if grouped, and they are very hardy and easy to grow. The trailing kinds are excellent rock plants of very easy culture and propagation.

C. adpressa.—A new and as yet rare kind, forming a low, dense, spreading shrub. It is related to *C. buxifolia*, with flowers resembling those of *C. horizontalis*, *i.e.*, white with the extremities of the petals rose. The fruit is a brilliant red and ripens in August. It is likely to be a valuable shrub for the rock-garden. China.

C. angustifolia.—A new kind, 3 to 5 feet high, with spreading spiny stems, loaded with brilliant red berries, persistent throughout the winter. If this plant proves hardy in our winters, it will be of great value in gardens.

C. bullata.—A shrub reaching 3 to 4 feet in height, with a somewhat drooping habit, bearing berries of a dark blood-red colour. A distinct, new and deciduous species, with blistered leaves (*bulle*); the flowers white and borne in corymbs; fruit brilliant and about the size of a pea. Thibet.

C. buxifolia.—A free-growing bush that at times attains the height of 6 ft., forming a rather wide-spreading bush, the branches clothed with deep-green box-like leaves; the crimson berries, nestling in profusion among the leaves, are pretty in autumn.

C. Francheti.—An erect-growing handsome shrub, 4 to 5 feet in height, stems at first covered with white hairs, then brown. It flowers in June, white, marked with red on the outside of the petals; the berries, light orange in colour, appear in September, and last during a great part of the winter. Handsome in form and berry, and likely to be very useful in gardens. Yunnan.

C. frigida.—A low tree reaching 20 ft. or more. During mild winters some of the leaves will be retained throughout the year, while if the weather is very sharp it will become quite bare, the showy fruits being of a bright crimson. If untouched by birds, the berries retain their beauty a long time; but, if the weather be severe,

they soon disappear. Mountains of India. The berries of this Cotoneaster are when ripe of an orange-scarlet tint, and the long shoots are in many cases crowded with them for some distance. It is useful for grouping here and there, its main value, however, being from the beauty of its berries. Himalayas. Certain other allied Indian kinds, without being any better in effect than this, such as *C. affinis*, *C. baxillaria*, all free-growing hardy low trees.

C. horizontalis (*Plumed C.*).—In this the branches are frond-like and almost horizontal, while the small leaves are regularly disposed along the thick sturdy branches. A charm of this species is the manner in which the leaves die off in the autumn: frequently the leaves will be of a glowing red colour, with the exception of those on the tips of the shoots. The berries are very showy, bright vermilion, and the flowers large and pretty. China.

C. microphylla (*Wall C.*).—An evergreen clothed with tiny deep-green leaves, in spring crowded with whitish blossoms, the berries crimson, and, if untouched, remaining on the plants for a long time. There are some well-marked varieties of *C. microphylla*. It is useful for sloping banks or like positions, while it will cover a wall with such a dense mass that nothing else can be seen. Again, in the larger parts of the rock-garden a place may be found for it; and its variety, *congesta*, is more at home when draping a large stone than in any other way. On the lawn the spreading shoots dispose themselves in a very pretty way when planted as a small group. Himalayas.

C. pannosa.—A free and graceful kind, a native of Yunnan, white flower and a woolly calyx, and a red, pear-shaped fruit.

C. rotundifolia is like the preceding, but with thicker branches and rounder leaves. The berries are of a brighter tint. Both these species may, where a group of the larger Cotoneasters is planted, be used for the outskirts of the clump.

C. Simonsii.—An erect, woody shrub of medium height, with long slender branches and shoots covered with stiff hair. The blossoms appear at the beginning of July, borne singly, or at most in umbels of twos or fives, white with red stains; the fruit, bright vermilion. I have found this a poor kind for effect, only useful as an undergrowth, and poor at that. It is much over-planted.

C. thymifolia (*Thyme Rockspray*).—A handsome shrub, with outstanding branches and the smallest leaf of the family. The shoots, at first covered with soft

hairs, soon become smooth and red-brown in colour. The flowers and berries are smaller than those of *microphylla*. Himalaya from Kashmir to Sikkim.

For a very complete account of this interesting group, see *Flora and Sylva*, vol. ii., p. 175. It is an intricate family to distinguish; not a few of the kinds have little garden value, but we may expect good kinds yet to come, as the country they mostly come from is so vast and as yet so little known.

CRAMBE. — One of the finest of hardy and large-leaved herbaceous plants, as easily grown as the common Seakale, and in rich ground having many stout leaves and dense sprays of small white flowers. *C. cordifolia* may be planted wherever a bold type of vegetation is desired. *C. juncea*, a dwarf kind, has white flowers and much-branched stems, the ramifications of which are elegant, but it is not so valuable as *C. cordifolia*.

CRATÆGUS (*Thorns*). — Beautiful hardy flowering trees, of which some of the most beautiful kinds are seldom seen out-

Cratægus parvifolia.

side botanical gardens: many are charming for their flowers, others for their pretty fruits, while in a few the habit is picturesque. Perhaps the most beautiful of all is *C. Oxyacantha*, the Hawthorn or Whitethorn, and its varieties have every gradation of tint from deep crimson, through pinks, to the snowy whiteness of the double sort. Paul's Double Scarlet, the double pink, double white, the single scarlet (*Punicea*), rose (*Carminata* or *Rosea*), and various others are precious for the garden. Some varieties, like the graceful *Pendula*, are remarkable for their habit others have distinct foliage, and a few differ as regards fruit, there being white and yellow-berried varieties.

Other species deserving of a place in

gardens are many. A selection of the best includes: The Cockspur Thorn (*C. Crus-galli*), from North America, usually about 10 ft. high, is remarkable for peculiar growth, especially the variety *pyracanthifolia*. In this the branches spread out like a table, and the older the tree becomes the more pronounced the table-like growth. Other distinct sorts of the Cockspur Thorn are *nana*, *linearis*, *ovalifolia*, and *prunifolia*. The Scarlet-fruited Thorn, also North American, is beautiful both when covered with white bloom in early summer or with scarlet fruits in autumn. The Tansy-leaved Thorn (*C. tanacetifolia*) is distinct in foliage, with cut leaves of a whitish hue, and it is one of the latest Thorns to flower. *C. Azarolus*, *Aronia*, and *orientalis* are all natives of the Levant, and they are so beautiful in autumn, with fine-coloured fruits as big as Hazel nuts, that they deserve a place. One specimen of any of these on a lawn would be sufficient in a small garden, as they are spreading, and in good soils 15 or 20 ft. high. The Washington Thorn (*C. cordata*) flowers when all the others are past; hence its value. *C. glandulosa*, also known as *C. flava*, has yellow fruits. *C. Douglasi* has dark-purple haws, and *C. melanocarpa* and *C. nigra* have black haws. The *Pyra-cantha* (*C. Pyra-cantha*), so common as a wall climber, is a favourite because of its orange-scarlet berries and evergreen foliage. It is suitable for planting in the open, and some beautiful effects may be made by making its spreading and trailing growth serve as a margin to groups of taller Thorns, or other small trees. The variety *Lælandi* fruits more freely than the common *Pyra-cantha* when planted as a bush, and another variety, *Pausiflora*, is dwarfer and closer in habit, and, in France, where these shrubs are much grown, is found to be the hardiest.

CREPIS (*Hawk's-beard*). — Of this genus of *Compositæ* few, save *B. rubra*, the Red Hawk's-beard, are worthy of culture. It is a hardy Italian annual, bearing pretty pink flowers about the size and form of the Dandelion, and should be sown in spring or autumn like other hardy annuals in any ordinary garden soil. It flowers from June to September, and is suitable for borders or beds of annual flowers. There is also a variety with white flowers. *C. aurea* is a perennial, 6 to 12 in. high, with small orange blossoms, but seldom more than one to each slender stem. *C. incisa* is a good species for border, owing to its compact habit and large showy light-purple flowers, as is also

indica, a dwarf species, free-flowering and pretty. Division and seed.

CRINUM.—A few South African species of these are hardy, and very beautiful. One of the best-known and the hardiest is *C. capense*, a handsome bulbous plant, 2 to 3 ft. high, flowering late in summer, the large funnel-shaped pink blossoms in umbels of ten or fifteen blooms on a stout stem. There are several varieties—*album*, pure white; *riparium*, deep purple; *fortuitum*, white; and *striatum*, striped pink and white; and fine hybrids have also been raised—all good in borders or small beds, with groups of hardy plants, especially those that flower in late summer and early autumn; or for grouping and massing near the margin of water. Few plants repay better for a sheltered and warm position, and deep rich soil, with abundance of water in summer, and in very cold situations a little pile of leaves

Crinum Moorei album.

may be placed over the roots in winter; by planting the top of the bulbs 6 in. deep there need be no fear of the weather. Division and seed.

C. campanulatum is also hardy, but as it scarcely ever flowers it is not worth growing in the open. *C. Moorei* and *ornatum* are in warm districts hardy, and certain hybrids of recent origin may prove hardy.

CROCUS.—Of a genus of nearly seventy species, it is surprising that only three or four are generally used for garden decoration; and these—*C. aureus* and *C. vernus* and their varieties, and perhaps one or two other species—have been in cultivation at least three hundred years. Crocuses flower at a time when every flower is of value; and we do not doubt that ere long species recently introduced will add largely to our means of garden decoration during the dull months from late autumn to early spring.

CULTURAL DIRECTIONS seem almost superfluous; but there are a few points to which it may be convenient to refer. The genus must be viewed as in succession, from the beginning of August till April; but of these only the earlier autumnal, or the distinctly vernal, species can be relied upon for open-air decoration. Although all are hardy, those that flower in November, December, and January are so liable to injury by frost and rain that they are practically worthless.

Crocuses are easily multiplied by seed, which should be sown in July as soon as ripe, though germination will not take place till the natural growing period of the species. Seedlings take from two to three years to arrive at maturity, and should be left for the first two years undisturbed in the seed-bed, and then taken up and replanted. Holland, with its rich light alluvial soil, and Lincolnshire, with its "Trent warp," have for many generations been the sources from which the English market has been supplied with the varieties of the three or four species grown in English gardens. The last five or six years have put us in possession of nearly the whole of the known species, and we must commend them to the Dutch and Lincolnshire bulb-growers.

For the less robust and less floriferous species a brick pit is necessary. The bottom of this should be well below the level of the ground, and it should be filled up with about 1 ft. in depth of fine river silt or sandy loam, the surface of which should be a little below the level of the adjacent ground. Proper drainage is essential, but Crocuses delight in a uniformly moist subsoil during their period of growth. It is convenient to separate the different species by strips of slate or tiles, buried below the surface, the corms being planted about 3 in. deep. A mulching of rotted Cocoa-nut fibre or finely sifted peat keeps the surface moist, and prevents the loam from clogging or caking on the surface. At the time of the maturity of the foliage, generally about the end of May, water should be withheld and the bed covered up and allowed to get quite dry till the end of July, when a copious watering may be given, or the pit may be exposed to rain.

Of the earlier autumnal species suitable for the open border the following may be enumerated for successional flowering:—

C. Scharojani, orange; early in August.

„ *vallicola*, straw-coloured; late in August and early in September.

„ *nudiflorus*, blue; September.

Crocus biflorus pusillus

Crocus etruscus

Crocus belansae

Crocus leucorhynchus

Crocus reticulatus

- C. pulchellus*, lilac ; Sept. and Oct.
 „ *speciosus*, blue ; Sept. and Oct.
 „ *iridiflorus*, blue ; Sept. and Oct.
 „ *Salzmanni* } lilac or blue ; October
 „ *Clusi* } and November.
 „ *cancellatus* }
 „ *Cambessidesei* } in the early autumn.
 „ *hadriaticus* }

These are succeeded by a long series of late autumnal, winter, and early vernal species, which are grown to best advantage in a brick pit.

Of the vernal species suitable for the border, the earliest is *C. Imperati*, flowering in February, followed by

C. susianus, or Cloth of Gold, in February.

- „ *biflorus*
 „ *etruscus*
 „ *suaveolens*
 „ *versicolor*
 „ *vernus*
 „ *Tommasinianus*
 „ *dalmaticus*
 „ *banaticus*
 „ *Sieberti* and *var. versicolor*
 „ *chrysanthus*
 „ *aureus*
 „ *sulphureus*
 „ *vars. pallidus* and *striatus*
 „ *stellaris*
 „ *Olivieri*
 „ *minimus*

Flowering from the end of February to the first week in April.

Of the Crocuses recently introduced, many vernal species will probably be suitable for the spring garden, but, as they are rare and scarcely procurable, we give those more generally known and easy to obtain.

C. alatavicus.—The flowers of this new Asiatic species are white, yellow towards the throat, the outer surface of the outer segments being freckled with rich purple. It is a free-flowering species, but from its early-flowering time, January and February, it can only be grown to advantage under a cold frame. A white variety without external purple freckling is not uncommon. The leaves are produced at the flowering time in early spring.

C. aureus.—A handsome plant from the Banat, Transylvania, European Turkey, Greece, and Western Bithynia, generally at low elevations, flowering in February. It was one of the first introduced to cultivation, and is the parent of our yellow garden or Dutch yellow Crocus, and of a number of old varieties—*lacteus*, *sulphureus*, *pallidus*, *striatus*, &c., the history of which is unknown ; they are not found wild, and are sterile. The wild plant varies considerably, from unstriped orange to varieties striped with gray lines, like

those in the Dutch yellow Crocus. The stigmata are short, unbranched, pale yellow, and much shorter than the anthers ; in the Transylvanian plant the stigmata are occasionally orange. The anthers are wedge-shaped, tapering towards the point, and notably divergent. The unstriped form readily produces seed when in cultivation, but the striped Dutch yellow is sterile, though effete capsules are occasionally formed. *C. Olivieri* resembles *C. aureus*, but is smaller.

C. banaticus.—Common in the Banat, Hungary, and Transylvania, where it takes the place of *C. vernus*, to which it is allied. It is highly ornamental ; the flowers are a deep rich purple, occasionally varied with white, with a darker purple blotch near the end of the segments. The throat is glabrous, which easily distinguishes it from *C. vernus*. It is cultivated in several Continental and English gardens under the name of *C. veluchensis*—a distinct species. Flowers in February and March.

C. biflorus.—The Scotch, or Cloth of Silver, Crocus is a large variety of the typical form, and is abundant throughout a large portion of Italy. The segments vary from white to a pale lavender, the outer surface of the outer segments being distinctly feathered with purple markings. In *var. estriatus*, from Florence, the flowers are a uniform pale lavender, orange towards the base. In *var. Weldenii*, from Trieste and Dalmatia, the outer segments are externally freckled with bright purple. In *C. nubigenus*, a very small variety from Asia Minor, the outer segments are suffused and freckled with brown ; *C. Pestalozzeæ* is an albino of this variety. In *C. Adami*, from the Caucasus, the segments are pale purple, either self-coloured or externally feathered with dark purple. *C. biflorus* is an early-flowering spring species, and is highly ornamental for border decoration.

C. Boryi.—Flowers white, but bright orange at the throat. Abundant at Corfu and in the neighbourhood of Patras, flowers in October, but it does not bloom freely in cultivation, and requires the protection of glass for the development of its flowers.

C. byzantinus. See *C. iridiflorus*.

C. cancellatus.—A beautiful autumnal species, varying from white to pale bluish-purple. The flowers are generally veined or feathered towards the base of the segments. They appear without the leaves, which come in spring. The flowering time is from the end of October to December. A robust species, easy of culture, but, like many late autumnal

species, is seen to best advantage under a cold frame. It is known as *C. Schimperii*, *C. Spruneri*, *C. cilicicus*, and *C. damascenus*. The western forms are nearly white, and the eastern are either blue or purple; but the differences of colour are not sufficient to distinguish them as species.

C. chrysanthus.—A vernal Crocus, flowering from January to March according to elevation, which varies from a little above the sea-level to a height of three or four thousand feet. The flowers are smaller than those of *C. aureus*, and are usually of bright orange, but occasionally bronzed and feathered externally. A white variety is also found in Bithynia and on Mount Olympus above Broussa; this species also varies with pale sulphur-coloured flowers, occasionally suffused with blue towards the ends of the segments dying out towards the orange throat. There are four varieties of this Crocus, distinct in colouring; they are *fusco-tinctus*, *fusco-lineatus*, *albidus*, and *cærulescens*.

C. Imperati.—One of the earliest vernal species, abundant south of Naples, and said to extend to Calabria. Lilac. Very variable in colour and markings. Two varieties occur near Ravello—a self-coloured white and a clear rose. The outer surface of the outer segments is coated with rich buff, suffused with purple featherings. Its robust habit and early flowering make it one of the most valuable species for spring gardening. It flowers a fortnight and three weeks before *C. vernus*. Similar to it is *C. minimus*, abundant on the west coast of Corsica, the neighbouring islets, and in parts of Sardinia; it flowers from the end of January to March. The flowers resemble those of *C. Imperati* in miniature, but are of a darker purple and heavily suffused with external brown featherings. Although perfectly hardy, it is not robust enough for gardens. *C. suaveolens* is also closely allied to *C. Imperati*, and flowers in February. The flowers are somewhat smaller and the segments more acute than in *C. Imperati*. It is hardy and free-flowering, and under bright sunshine is a good ornament to the early spring garden.

C. iridiflorus.—The Banat and Transylvania. Bears in September and October bright-purple flowers before the leaves. Remarkable for purple stigmata and the marked difference between the size of the inner and the outer segments of the perianth. This beautiful plant should be secured if possible. It is often sold as *C. byzantinus*.

C. lævigatus.—A pretty species from the mountains of Greece and the Cyclades. The flowers vary from white to lilac, being distinctly feathered with purple markings. Its usual flowering time is from the end of October to Christmas, but through the winter to March under cultivation. It does not flower freely in cultivation, and, like the allied species, it is seen to best advantage under a cold frame.

C. longiflorus.—Abundant in the south of Italy, Sicily, and Malta; flowers in October. The flowers are light purple, yellow at the throat. In general aspect it somewhat resembles *C. sativus*, especially in the stigmata, which are usually bright scarlet and entire, but occasionally broken up into fine capillary divisions. In Sicily the stigmata are collected from the wild plant for saffron. It is free-flowering, and very ornamental.

C. medius.—A beautiful purple autumn-flowering species, limited to the Riviera and the adjacent spurs of the Maritime Alps. The flowers are produced in October before the leaves, which appear in the following spring, and rarely exceed two or three to a corm; the blossoms are bright purple, veined at the base; the stigmata bright scarlet and much branched.

C. nudiflorus.—A pretty and well-known species. Pyrenees and North of Spain. Naturalised at Nottingham and elsewhere in the midland counties. Its large bluish-purple flowers are produced in September and October before the leaves. Where established it is difficult to eradicate; the corms produce long stolon-like shoots, which form independent corms on the death of the parent, and the plant soon spreads to considerable distances.

C. ochroleucus bears many creamy-white flowers, with orange throat, from the end of October to the end of December. It well deserves a cold frame, to preserve its showy flowers from frost and rain.

C. pulchellus.—An autumnal species, invaluable for the garden. The pale lavender flowers, with bright yellow throat, are freely produced from the middle of September to early in December. Seed.

C. serotinus.—S. of Spain. Flowers in November. The blossoms are more or less distinctly feathered with darker purple. *C. Salzmanni* is closely allied to *C. serotinus*, but is of larger stature, flowering with the leaves in October and November. It is robust and readily multiplied. As the flowers are liable to injury by frost and snow, it is seen to

best advantage under a cold frame. *C. Clusi* closely resembles *C. serotinus*, and flowers with the leaves in October.

C. Sieberi.—A vernal species common in the Greek Archipelago and the mountains of Greece. The flower is usually bright lilac, orange at the base, but the form found in Crete and the Cyclades presents a great variety of colour, from white to purple, and these colours are mottled, intermixed, and striped in endless variety, contrasting with the bright orange throat. The Cretan variety is of exceptional beauty. It flowers in cultivation from the end of February to the middle of March.

C. speciosus.—Among the handsomest autumn Crocuses, flowering at the end of September and early in October. Ranges from North Persia, through Georgia, the Caucasus, and the Crimea, to Hungary. The perianth segments, 2 in. high, are rich bluish-purple, suffused with darker purple veins, with which the bright orange much-divided stigmata form a beautiful contrast. It has been long in cultivation, and readily multiplies by small bulbels at the base of the corm.

C. susianus.—The well-known Cloth of Gold Crocus, an early importation from the Crimea. Both the orange and bronzed *susianus* are among the earliest vernal Crocuses, flowering in the open border in February. *C. stellaris* is an old garden plant somewhat resembling *C. susianus*. The flower is orange, distinctly feathered with bronze on the outer coat of the outer segments. It is sterile, and never produces seed. It flowers early in March.

C. vernus (*Spring Crocus*).—One of the earliest cultivated species. Alps, Pyrenees, Tyrol, Carpathians, Italy, and Dalmatia. Naturalised in several parts of England. Remarkable for its range of colour, from pure white to deep purple, endless varieties being generally intermixed in its native habitats, and corresponding with the horticultural varieties of our gardens. Flowers early in March at low elevations, and as late as June and July in the higher Alps. The parent of nearly all the purple, white, and striped Crocuses grown in Holland.

C. versicolor.—This well-known species has long been in cultivation. The flowers present a great variety of colouring, from purple to white, and are variously striped and feathered. It differs from the two preceding species in having the whole of the perianth segments similarly coloured, and the external buff coating of *C. Imperati* and *C. suaveolens* is absent. Its flowering time is March.

C. zonatus.—Mountains of Cilicia. Bright vinous-lilac flowers, golden at the base, abundant about the middle of September. It is highly ornamental and free-flowering, and easy of culture. The flowers come before the leaves, which do not appear till spring. It has been in cultivation about fourteen years.

This account of the genus is condensed from an article in *The Garden* of 28th January 1882, by Mr. Geo. Maw, of Benthall Hall, near Broseley. The article contains a full account of the family with descriptions of species not in cultivation, giving botanical authorities, and fuller technical descriptions.

CRYPTOMERIA.—*C. japonica* is a graceful and famous Japanese and Chinese tree much planted in Britain, but rarely thriving except under the genial influence of the sea, and even there never getting to half the noble dimensions it does in Japan. It has a number of synonyms and some varieties, *elegans* being the most popular. This, which looks well in the nursery state, is not a hardy or a good tree, suffering much in cold and snow, and is a "sport."

CUCURBITA (*Gourd*).—There is no Order more wonderful in the variety and shape of its fruit than that to which the Melon and Cucumber belong. From the writhing Snake Cucumber, which hangs down 4 or 5 ft. long from its stem, to the enormous round Giant Pumpkin or Gourd, the variation in colour, shape, and size is marvellous. There are some pretty little Gourds which do not weigh more than $\frac{1}{2}$ oz.; while, on the other hand, there are kinds as large as a barrel. Eggs, bottles, gooseberries, clubs, caskets, folded umbrellas, balls, vases, urns, balloons, all have their likenesses in the family. Those who have seen a good collection will understand Nathaniel Hawthorne's enthusiasm when he says: "A hundred Gourds in my garden were worthy, in my eyes at least, of being rendered indestructible in marble. If ever Providence (but I know it never will) should assign me a superfluity of gold, part of it should be expended for a service of plate, or most delicate porcelain, to be wrought into the shape of Gourds gathered in my garden. As dishes for containing vegetables they would be peculiarly appropriate. Gazing at them, I felt that by my agency something worth living for had been done. A new substance was born into the world. They were real and tangible existences which the mind could seize hold of and rejoice in." They may be readily grown in this country, and there are many ways in

which they may be grown with great advantage—on low trellises; depending from the edges of raised beds; the smaller and medium-sized trained over arches or arched trellis-work, covering banks, or growing on the level earth. Isolated, too, some kinds would look very effective; in fact, there is hardly any limit to their use. They cover arches, and the large leaves make a perfect summer roof. A cool tent might be made with free-growing Gourds, and it would have the additional merit of suspending some of the most singular, graceful, and gigantic of fruits from the roof. A bold and effective use may now and then be made of them on walls and on the roofs of sheds or out-houses, as the roofs “carry” the large leaves and showy fruit so well.

A SELECTION OF GOURDS.—Amongst the most beautiful are the Turk’s-cap varieties, such as Grand Mogul, Pasha of Egypt, Viceroy, Empress, Bishop’s Hat, &c.; the Serpent Gourd, Gooseberry Gourd, Hercules’ Club, Gorilla, St. Aignan, M. Fould, Siphon, Half-moon, Giant’s Punchbowl, and the Mammoth, weighing from 170 lbs. to upwards of 200 lbs.; while amongst the miniature varieties the Fig, Cricket-ball, Thumb, Cherry, Striped Custard, Hen’s-egg, Pear, Bottle, Orange, Plover’s-egg, &c., are very pretty examples, and very serviceable for ornament. All these are well suited to our climate, and there are many others equally suitable. Mr. W. Young, indeed, exhibited a collection of 500 varieties, all English-grown, the greater number of which had been sown where grown, and had come to maturity without protection. The ground being manured and dug one spit deep, the seed was sown the second week in May. Many of the plants had no water through the season, but others had it in various quantities, and the more the water the larger, freer, and better the produce. Sowing in a frame at the end of April, and exposing the plants to the air during the day to prevent their being drawn, and then removing the frame altogether to harden them off before planting out, is the best way to secure an early growth. Sowing in the open ground under hand-lights would do, but not so well. Where there are waste heaps of rubbish or manure it is a good plan to cover them with Gourds. Although they grow under the conditions described above, they do best with plenty of manure, and should be mulched or well watered if the soil be not deep and rich.

CUPHEA.—Pretty plants, of which *C. platycentra* (Cigar-plant) is useful for the summer flower garden. It is a dwarf

plant, about 12 in. high, with vermilion tube-shaped blossoms. Easily propagated by cuttings taken in September or April, and put in slight heat, and also raised from seed sown in heat in spring. *C. strigulosa* is a pretty variety, useful for planting out as single plants in the mixed border for cutting from, but chiefly used as a pot plant for the autumn greenhouse. *C. Zimapani* is a most useful annual, growing about 1½ ft. high, with flowers of a rich deep purple bordered with a lighter hue, resembling those of a Sweet Pea, and of about the same size. They are well fitted for cutting, as the branches lengthen and the flowers expand a long time in water. Other kinds are *C. eminens*, *Galeottiana*, *miniata*, *ocymoides*, *purpurea*, *Roezli*, and *silenoides*, all of less importance for the flower garden than those before named.

CUPRESSUS (*Cypress*). — Graceful evergreen trees, forming charming backgrounds, but not many really hardy, save in seashore and in warm southern districts, and even there they often perish in hard winters. The Monterey Cypress is beautiful in Ireland and in the western coast gardens, but even there it perishes in hard winters. The beautiful Eastern Cypress, so fine in the Italian and Eastern landscape, is worth planting under the best conditions; so distinct a tree would, if hardy, have been everywhere planted long ago. I have seen very fine specimens of it here and there, as at White Knights.

Many know the beauty of a few of these trees in the small state, but few realise their dignity and beauty as forest trees, such as the great Japanese Cypress, and if we take the trouble to grow and group them well there are no more effective trees in their perennial verdure. But the system of increasing them adopted in nurseries by which these trees, being very free in growth, lend themselves to increase from cuttings like verbenas and geraniums, does not help to the possession of the trees in all their dignity. *Trees* we should raise always in the natural way, *i.e.* from seed, and I find some of these cypresses and their allies break into a number of stems and lose the tree form, the result of this cutting propagation, so entirely needless in the case of forest trees of the highest beauty which some of these are. In the case of the numerous variegated and other garden varieties, cuttings or grafting must be followed in order that one particular variety may be preserved. In the tree this is quite needless and wrong;

but once started on the path of disease and novelty-hunting, and artificially increasing what are often mere "states" of the conifer, it is not so easy to return to more natural ways unless the planter protects himself by raising the tree from seed, or by insisting upon seedling plants. In the case of the Lawson Cypress there are, without end, variegated (*i.e.* merely diseased) forms, and many others with pompous Latin names, not only worthless themselves, but filling the catalogues with a pretence of shain science, chaotic lists of long and absurd names, the laughing stock of the learned. Unhappily the public is likely to think one name as good as another, and the really good points of a noble tree are obscured by the system of giving a name to every trifling "form" that happens to occur in a nursery.

C. FUNEBRIS (*Chinese Funeral Cypress*).—A hardy picturesque tree in its own country, and sometimes reaching a height of nearly 50 feet. Robert Fortune described it as having a beautiful effect in the Chinese landscape; but, unhappily, it is not hardy in our country, though here and there it may be seen in sheltered and warm places.

C. GOWENIANA (*Gowen Cypress*).—A low growing tree from the neighbourhood of Monterey, in California, and of doubtful hardness in our country. It may be classed with a group, unhappily, many of them tender in this country. It is known from the Monterey Cypress by its spreading, slender, and pendulous habit and small cones.

C. LAWSONIANA (*Lawson Cypress*).—A tall and beautiful tree of the Pacific coast of N. America, 100 feet high and very free in our climate. Unfortunately, I think, owing to propagation from cuttings instead of in the natural way from seed, the tree often breaks into a number of stems which interferes with its natural habit and beauty. It varies very much into what is called "sports," and which is really often a manifestation of disease, especially when they take the variegated form. There are a number of fastigate forms of which, perhaps, the best is Waterer's; but they are mere malformations, and as they get old the branches are pressed so closely together that they die, unless we take the trouble to tie or wire them up in some way to prevent them falling about. The spreading varieties are not so liable to this, but many of them go back, as they get older, towards the natural form of tree of which they are mere states. For the pendulous ones there is perhaps a little excuse—for the globular ones none at all; and the multiplicity of Latin names for these things in catalogues does harm in weakening the interest in the natural tree.

C. LUSITANICA (*Cedar of Goa*).—A name well known through books and lists, and a graceful tree of uncertain origin, but not succeeding in our country, save in seashore gar-

dens and very mild districts. It is naturalised in temperate countries like Spain and Portugal.

C. MACNABIANA (*Macnab's Cypress*).—A Californian tree, rather dwarf and without much of the grace of the Cypress generally. Compact, glaucous, not more than 10 feet high; coming from a cold country the true plant is quite hardy.

C. MACROCARPA (*Monterey Cypress*).—A very graceful and often stately tree, much planted and succeeding well near the sea coast. It is described in catalogues and even in books on Forestry as hardy, but it is not so, perishing in severe winters, even near the coast. Like many other conifers, it has varieties of little value.

C. NOOTKATENSIS (*Yellow Cypress*).—Really a most distinct tree, and I think the most precious of the whole family for our country, being quite hardy. It is a native of the Northern Pacific coast and British Columbia, and has various synonyms and several variegated varieties of no value compared with the wild tree. I have found it to thrive in cold ordinary soils, and it is a pleasure to see it at all seasons. The English name of Yellow Cypress was given by the colonists of Vancouver's Island from the fresh wood being yellow in colour. Syn: *Thuopsis borealis*.

C. OBTUSA (*Great Japanese Cypress*).—A very beautiful evergreen tree of the mountains of Japan, better known in our gardens under the wrong name of *Retinospora*. It has many forms and so-called varieties which are really states of growth only, and which are nearly always grown in nurseries under the name of "*Retinospora*." The confusion of names in this plant and its varieties has caused its great value as a tree to be overlooked. It grows nearly 100 feet high, and is very handsome. In its own country it is much used to form avenues. It has many varieties with Latin names, but few of them of real value as they grow old.

C. PISIFERA (*Peafruited Cypress*).—Here, as with *C. obtusa*, there is much confusion of names and giving of Latin ones to mere varieties and states of growth. It is a much smaller tree than the great Japanese Cypress, but a hardy and useful one. Syn., *Retinospora*.

C. SEMPERVIRENS (*Eastern Cypress*).—One of the most graceful of all evergreen trees, giving distinct and good effects in many parts of the East and Northern Africa, spreading into Northern India also. In some North Italian gardens it grows well over 100 feet, as in the Giusti Garden at Verona, and there are very old trees in Rome and many other parts of Italy. In Algeria and Tunis I have seen it forming noble shelters for the orange gardens, far better than any clipped tree could

Cupressus sempervirens.

do. Unhappily, it is not generally hardy in England, though it has some chance near the sea in mild districts.

C. THYOIDES (*Southern White Cedar*).—This is a tree of the North American woods, sometimes reaching nearly 100 feet high in its best state, inhabiting wet places and swamps in New England, westward and southward, rather near the coast, and forming very dark woods. Coming from a very cold country it is hardy, and may be planted in wet and marshy places. There are several varieties, one variegated and of no value. W. R.

Cupressus thyoides.

CYANANTHUS (*Lobed C.*).—A pretty Himalayan rock-plant, about 4 in. high, flowering in August and September; *C. lobatus* has purplish-blue flower, with a whitish centre, and thriving in sunny chinks in the rock-garden. It grows best in a mixture of sandy peat and leaf-mould, with plenty of moisture during growth, and is increased by cuttings. The seed requires a dry season; in wet weather the large, erect calyx becomes filled with water, which rots the seed-vessel. Campanulaceæ.

C. incanus.—This flowers more freely than *C. lobatus*; like that species, it should be planted in a dry, sunny, well-drained position, as, if the situation be too damp, the fleshy root-stock is liable to rot. It is even a good plan to place something over the plant during the resting season. The flowers are not so large as those of the other species, but are more charming in colour, their beauty enhanced by the white tuft of silky hairs in the throat of the corolla. Campanulaceæ.

CYATHEA (*Silver Tree-fern*).—This very handsome Fern, *C. dealbata*, known in N. Zealand as the Silver Tree-fern, has a slender, almost black stem, 4 to 8 ft. high, ending in a fine crown of fronds, dark-green above and milk-white below. It may be placed in the open air, in the southern and milder districts, from the end of May till the end of September.

CYCAS. — *C. revoluta* is a tropical

plant, with a stout stem, sometimes 6 to 10 ft. high, from the top of which issues a beautiful crown of superb dark-green leaves 2 to 6 ft. long. It is one of the most valuable greenhouse plants, that may be placed out from the end of May till October, and is particularly graceful in the centre of a bed of flowering plants, or isolated with the pot or tub plunged to the rim in the turf, always in a warm position. It is increased by seeds, or separation of suckers, which are occasionally thrown up.

CYCLAMEN (*Sowbread*). — Except the Persian, Cyclamens are as hardy as Primroses; but they love the shelter and shade of low bushes or hill copses, where they may nestle and bloom in security. In the places they naturally inhabit there is usually the friendly shelter of Grasses or branchlets about them, so that their large leaves are not torn to pieces by wind or hail. The Ivy-leaved Cyclamen is in full leaf through winter and early spring, and for the sake of the beauty of the leaves alone it is desirable to place it so that it may be safe from injury. It is easy to naturalise the hardier Cyclamens in many parts of the country. Good drainage is necessary to their open-air culture, as they grow naturally among broken rocks and stones mixed with vegetable soil, grit, &c., where they are not surrounded by stagnant water. Mr. Atkins, of Painswick, who paid much attention to their culture, thought that the tuber should be buried, and not exposed like the Persian Cyclamen in pots. His chief reason was that in some species the roots issue from the upper surface of the tuber only. They enjoy plenty of moisture at the root at all seasons, and thrive best in a rich, friable, open soil, with plenty of well-decayed vegetable matter in it. They are well suited for the rock-garden, and enjoy warm nooks, partial shade, and shelter from dry, cutting winds. They may be grown on any aspect if the conditions above mentioned be secured, but an eastern or south-eastern one is best. We have seen them under trees among Grass, where they flowered profusely every year without attention.

They are best propagated by seed sown, as soon as it is ripe, in well-drained pots of light soil. Cover the soil after sowing with a little Moss, to ensure uniform dampness, and place them in shelter out-of-doors. As soon as they begin to appear, which may be in a month or six weeks, gradually remove the Moss. When the first leaf is fairly developed,

they should be transplanted about 1 in. apart in seed pans of rich light earth, and encouraged to grow as long as possible, being sheltered in a cold frame, but always allowed abundance of air. When the leaves have perished in the following summer, the tubers may be planted out or potted, according to their strength.

There appears to have always been great difficulty in defining the species of *Cyclamen*, from the great variation in shape and colour of the leaves both above and below. Too much dependence on these characteristics has caused confusion

able weather, the plants will be better for slight protection, or a pit or frame in which to plant them out. Grown in this way during the early spring, from January to the middle of March, they are one sheet of bloom. When so cultivated, take out the soil, say 1½ to 2 ft. deep, place at the bottom a layer of rough stones 9 to 12 in. deep, and cover them with inverted turf to keep the soil from washing down and injuring the drainage; then fill up with soil composed of about one-third of good free loam, one-third of well-decayed leaf-mould, and one-third of thoroughly

Head of *Cycas revoluta*.

and an undue multiplication of species. Some of the varieties become so fixed, and reproduce themselves so truly from seed, as to be regarded as species by some cultivators. The following are the more important species and varieties.

C. Atkinsi.—A hybrid variety of the *Coum* section. The flowers are larger than in the type, varying in colour from deep red to pure white, and are plentiful in winter.

C. Coum (*Round-leaved Cyclamen*).—This, like the others of the same section, is perfectly hardy, and frequently in bloom in the open ground before the *Snowdrop*; yet, to preserve the flowers from unfavour-

decomposed cow manure. Plant 1½ to 2 in. deep; and, every year, soon after the leaves die down, take off the surface as far as the tops of the tubers, and fresh surface them with the same compost, or in alternate years give them only a surface dressing of well-decayed leaves or cow manure. During summer, or indeed after April, the glass should be removed, and they ought to be slightly shaded with Larch Fir boughs (cut before the leaves expand) laid over them, to shelter from the extreme heat of the sun. As soon as they begin to appear in the autumn, gradually take these off. Do not use the glass until severe weather sets in—at all

times, both day and night, admitting air at back and front—and in fine weather draw the lights off, remembering that the plants are hardy, and are soon injured if kept too close. They do not like frequent removal. There is a pretty white variety of *C. Coum*. Syn. *C. hyemale*.

Cyclamen Coum.

C. cyprium.—This well-defined species has rather small heart-shaped leaves of dark green, marbled on the upper surface with bluish gray and of a deep purple beneath. The flowers, which are pure white, tinted with soft lilac (the restricted mouth being spotted with carmine-purple), are well elevated above the foliage. This distinguishes it from most of its allies, except *C. persicum*, and its foliage distinguishes it from that at a glance. It is one of the most chaste and beautiful of the hardy kinds. Cyprus and other places in South Europe. It is found on shaded rocks in mountainous districts. Syn. *C. neapolitanum*.

C. europæum (*European Cyclamen*).—The leaves of this species appear before and with the flowers, and remain during the greater part of the year. Flowers from June to November, or, with slight protection, until the end of the year. The flowers are a reddish purple. Some of the southern varieties, by attention to cultivation under glass, may even assume a perpetual flowering character. *C. Clusi*, *littorale*, and *Peakeanum* are varieties of this section. The flowers are much longer, and of a more delicate colour, often approaching peach colour, and are almost the size of those of *C. persicum*; pure white are rare, but pale ones are not uncommon: they are very fragrant. *C. europæum* thrives freely in various parts of the country in light, loamy, well-drained soil, as a choice border and rock-garden plant. Where it does badly in ordinary soil it should be tried in a deep bed of light loam, mingled with pieces of broken stone. In all cases it is best to cover the ground with Cocoa fibre. It is very desirable on account of its fragrance and long succession of flowers. It

luxuriates in the *débris* of old walls and on the mountain side, with a very sparing quantity of vegetable earth to grow in. The bulb varies considerably in size and shape; sometimes it is elongated and irregular, and the plant is then the *C. anemonoides* of old authors. Syn. *C. odoratum*, *C. æstivum*.

C. hederæfolium (*Ivy-leaved Cyclamen*).—Switzerland, South Europe, and the north coast of Africa. Tuber not unfrequently 1 ft. in diameter, and covered with a brownish rough rind, which cracks irregularly so as to form little scales. The root-fibres emerge from the whole of the upper surface of the tuber, but principally from the rim; few or none issue from the lower surface. The leaves and flowers generally spring direct from the tuber without any stem (there is sometimes, however, a small stem, especially if the tuber be planted deep); at first they spread horizontally, but ultimately become erect. The leaves are variously marked; the greater portion appear after the flowers, and continue in great beauty the whole winter and early spring, when, if well grown, they are one of the greatest ornaments of borders and rock-gardens. Often these leaves are 6 in. long, $5\frac{1}{2}$ in diameter, and 100 to 150 spring from one tuber. They are admirable for table decoration during winter. The flowers continue from the end of August until October, and are purplish red, frequently with a stripe of lighter colour. There is a pure-white variety, and also a white one with pink base or mouth of corolla; these reproduce themselves tolerably true from seed. Strong tubers will produce 200 to 300 flowers. Some are delightfully fragrant. They are quite hardy, but are worthy of a little protection to preserve the late blooms, which often continue to spring up till the end of the year. This species is so perfectly hardy as to make it very desirable for the rock-garden and the open borders. It will grow in almost any soil and situation, though best in a well-drained rich border or rock-garden, which it well deserves. It does not like frequent removal. It has been naturalised on the mossy floor of a thin wood, on very sandy poor soil, and may be naturalised almost everywhere. It would be peculiarly attractive in a semi-wild state in pleasure-grounds and by wood walks.

C. ibericum (*Iberian Cyclamen*).—Belongs to the *Coum* section. There is some obscurity respecting the authority for the species and its native country. The leaves are very various. It flowers in spring, the flowers varying from deep

red-purple to rose, lilac, and white, with intensely dark mouth.

C. vernum (*Spring Cyclamen*).—The leaves rise before the flowers in spring; they are generally more or less white on the upper surface, and are often purplish beneath. Though one of the most interesting species, and perfectly hardy, it is seldom cultivated successfully in the open border or rock-garden; it is impatient of excessive wet about the tubers, and likes a light soil, in a rather shady nook sheltered from winds, its fleshy leaves being soon injured. The tubers should be planted deep, say not less than 2 to 2½ in. below the surface.

Cyclobothra. See CALOCHORTUS.

Cydonia. See PYRUS.

CYNARA (*French Artichoke*).—This plant, *C. Scolymus*, much grown for cooking, has as a foliage-plant much beauty; its long silvery deeply divided leaves, height (4 to 5 ft.), purplish flower-heads, and habit render it very suitable for the rougher parts of pleasure grounds, grass, &c., which are often occupied by fine plants far less handsome.

CYPERUS (*Galingale*).—A water plant of fine form from 2 to 3 ft. high, *C. longus* is crowned by a handsome, loose, umbellate panicle of chestnut-coloured flower-spikes, at the base of which there are three or more leaves, often 1 or 2 ft. long, the lower ones of a bright shining green arching gracefully. The root-stock is thick and aromatic, and was formerly much used as a tonic. A rare native plant, suitable for the margin of water.

CYPRIPEDIUM (*Lady's Slipper*).—Handsome Orchids, embracing several beautiful perfectly hardy species, of which the Mocassin-flower (*C. spectabile*) is the finest cultivated hardy kind. The following are a few of the cultivated kinds.

C. acaule (*Stemless Lady's Slipper*).—A dwarf species with a naked downy flower-stalk, 8 to 12 in. high, bearing a green bract at the top, flowers early in summer, large, solitary purplish with a rosy-purple (rarely white) lip, nearly 2 in. long, which has a singular closed fissure down its whole length in front. Northern States of North America in woods and bogs. Thriving in moist peaty or sandy soil or leaf-mould.

C. Calceolus (*English Lady's Slipper*).—The only British species and the largest flowered of our native Orchids, 1 to 1½ ft. high, flowers in summer, solitary (sometimes two) large flowers of a dark-brown colour, with an inflated clear yellow lip netted with darker veins, and about 1 in. in length. North Europe, and occasion-

ally in the northern counties of England, where, however, it is now almost exterminated. Very ornamental for the rock-garden, where it should be planted in sunny sheltered nooks of calcareous soil, or in narrow fissures of limestone rock, in well-drained, rich, fibrous loam, in an east aspect.

C. guttatum (*Spotted Lady's Slipper*).—A handsome kind, seldom seen in gardens, 6 to 9 in. high, flowers in summer, solitary, rather small, beautiful, white, heavily blotched, or spotted with deep rosy purple. Found in Canada, N. Europe (near Moscow), and N. Asia, in dense forests amongst the roots of trees in moist, black vegetable mould. Requires a half-shady position in leaf-mould, moss, and sand, and should be kept rather dry in winter.

C. japonicum (*Japanese Lady's Slipper*).—About 1 ft. high, and its hairy stems, which are as thick as one's little finger, bear two plicate fan-shaped leaves of bright green, rather jagged round the margins. The flowers are solitary, the sepals being of an apple-green tint; the petals, too, are of the same colour, but are dotted with purplish crimson at the base; the lip large, and curiously folded in front, as in the better-known *C. acaule*, to which it seems most nearly allied; the colour of the lip is a soft creamy yellow, with bold purple dots and lines.

C. macranthum (*Large Lady's Slipper*).—This bears a considerable resemblance to *C. ventricosum*, but has lighter-coloured flowers, large, of a uniform purplish rose with deeper-coloured veins; early in June. Lip globose, inflated, and finely marked with deep purple reticulations. This handsome and at present rare plant grows best in pure loam of a heavy nature. Siberia.

C. pubescens.—A dwarf species with a pubescent stem, seldom more than 2 ft. high, flowers early in summer, on each stem one to three flowers; scentless, greenish yellow, spotted with brown, with a pale-yellow lip from 1½ to 2 in. long, and flattened at the sides. America, found in bogs and low woods, from Pennsylvania to Carolina. Does well on dry sunny banks, among loam, stones, and grit.

C. spectabile (*Mocassin-flower*).—The most beautiful of this group; 15 in. to 2½ ft. high, flowers in summer, one or two on each stem (rarely three), large, with inflated, rounded lip, about 1½ in. long, white, with a large blotch of bright rosy carmine in front. A variety (*C. s. album*) has the lip entirely white. In America

it grows in open boggy woods, moist meadows, and also in peaty bogs in the Northern States. Good native specimens produce from fifty to seventy flowers on a single tuft, 3 ft. across, formed on a thick mat of fleshy roots. The plant is hardy, and succeeds if planted out in a deep, rich peaty soil, with a few nodules of sandstone or rough sandstone grit mixed with the soil. It also thrives in turfy loam on a moist bottom; in any case, however,

two or three varieties, *Dickieana* being the best. *C. alpina* is much smaller, and when once established not difficult to cultivate or increase, but more affected by excessive moisture than *C. fragilis*. A sheltered situation in a well-drained part of the rock-garden suits it. *C. montana* is another elegant plant requiring the same treatment as *C. fragilis*.

CYTISUS (*Broom*).—Beautiful shrubs, mostly from the warmer and arid hills of

Mocassin-flower (*Cypripedium spectabile*).

deep planting is necessary, as the roots are then cool and moist during the hot weather, and do not suffer from frost in the winter.

CYSTOPTERIS (*Bladder Fern*).—The cultivated kinds of this native group are small elegant Ferns of delicate fragile texture. They grow on rocks and walls, chiefly in mountainous districts. The best-known are: *C. fragilis*, which has finely cut fronds about 6 in. high. It is of easy culture, succeeding in an ordinary border, though seen to best advantage on shady parts of the rock-garden in a well-drained soil. There are

southern and western Europe, some hardy in our country. They are easily raised from seed and profuse in effective bloom. No doubt in the colder parts of the country some are short-lived and tender, and they may also have the drawback of getting rather ragged after a time. A number of kinds which come from the Canary Islands (Teneriffe, &c.) are tender, and are excluded from our selection for the open air. Amongst yellow flowering shrubs few are richer in their display than the Brooms, for, while other colours are represented, shades of yellow prevail, and as soon as one kind fails another takes its

turn, until from early spring to late autumn it is possible to rejoice in the rich effulgence of the *Cytisus* group. They have their faults; they are difficult to transplant; are apt to become bare and leggy below, and sometimes, especially when grafted (though this is hardly a fault of their own) are apt to die off suddenly and without apparent cause. On the other hand, their merits are no less pronounced, being for the most part hardy and profuse in flower and seed, free from disease and insect foes, growing well in dry and even poor ground, upon hot banks and other spots unsuited to border plants. Some sorts thrive perfectly in heavy, uninviting soil, while by using kinds of varied colour, such as the White Broom and the rich crimson-brown of André's Broom, it is possible to produce effects of great beauty at a trifling cost in the shrubbery, or on pieces of rough ground which would be otherwise an eyesore and a perplexity. Many kinds come freely from seed scattered here and there, if care be taken to give the young plants some little protection from accident in their earliest stages; it may also be taken as an axiom that no kind should be grafted that can possibly be obtained on its own roots.

***Cytisus albus* (The White Spanish Broom).**—A graceful shrub, reaching a height of 5 or 6 feet in three or four years from seed, while old plants sometimes reach 15 feet, but are then apt to show naked below. When thickly covered with its white blossoms, borne in long racemes, there are few finer flowering shrubs, and beautiful effects may be gained by massing it in a bold way with one or other of the Golden Brooms; it bears but few leaves, which are silky and divided in threes. The plant ripens seed in abundance, from which young plants are easily raised. Two or three varieties of this kind are grown: *incarnatus*, bearing flowers tinged, especially when in bud and newly opened, with pink or red-purple; *multiflorus*, a free-flowered garden variety with flowers of creamy white; and *grandiflorus*, with blossoms that are larger and of a fine pure white. To this plant belongs a confusing list of synonyms, classing it with *Genista*, *Spartium*, and *Sarothamnus*, but it is well known by its English name.

***C. Ardoinii* (Dwarf Alpine Cytisus).**—A low trailing shrub, 4 to 6 inches high, and a gem for the rock-garden. It is covered during April and May with deep yellow flowers, thriving in dry and sunny spots, its silky trifoliate leaves carried upon fine rod-like stems. It is a scarce plant even in the Maritime Alps, its home, perhaps owing to the nibbling of goats, which destroy flower and seed alike. Cuttings or seed.

***C. argenteus* (Silver-leaved Cytisus).**—A

silvery-leaved plant found in the Maritime Alps, its leaves and stems densely clothed in thick white down, and growing in the sunniest and most arid spots.

***C. austriacus* (Austrian Cytisus).**—A hardy deciduous kind from the east of Europe, growing as a compact leafy bush of 2 to 4 feet, bearing terminal clusters of yellow flowers during early summer and again in autumn. It is grown in two or three distinct forms: *leucanthus*, showing paler flowers than the type; and *axillaris*, a new kind bearing its flowers in the axils of the leaves instead of at the end of the shoots. *Rocheli*.

***C. Beanii* (Bean's Cytisus).**—A cross between *Ardoinii* and *biflorus*, which originated in the Royal Gardens, Kew. It is a dwarf, prostrate shrub with the habit of *Ardoinii*, useful in masses for the rock-garden, its yellow flowers coming early in May.

***C. biflorus* (Twin-flowered Cytisus).**—The earliest of the Brooms, it is neat in habit, growing very freely and about 4 feet high. The bright yellow flowers appear in the axils of the leaves throughout the long shoots. It is quite hardy, and a fine plant for the open shrubbery.

***C. candicans* (Hoary Cytisus).**—A robust downy shrub found throughout the south-east of Europe, from Italy to the Levant, bearing its yellow flowers somewhat sparsely at the ends of the shoots during summer.

***C. capitatus* (Cluster-flowered Cytisus).**—A low semi-evergreen shrub growing in the outskirts and clearings of sunny woods throughout central and southern Europe, bearing clusters of pale yellow flowers at times shaded with bronze, at the tips of the long erect shoots. Though less showy than some kinds, its habit is neat and compact, and it flowers from the middle of July into autumn, when few sorts are in beauty. It is sometimes seen grafted upon tall standards of Laburnum, but is finer in its low form, and is easily raised from seed.

***C. decumbens* (Trailing Cytisus).**—A dwarf, prostrate shrub from eastern Europe, with large pale yellow flowers in long erect spikes coming from June till August. A scarce plant, but, where obtainable, very pretty in the rock-garden.

***C. glabrescens* (The Italian Cytisus).**—A hardy plant from the mountains of North Italy, and almost untried in gardens, though pretty as a rock plant. It forms a small bush with the pendulous habit of *C. purpureus*, but with golden flowers crowded in the axils of the leaves; these are deciduous, smooth above, and covered with soft hairs beneath.

***C. hirsutus* (The Hairy Cytisus).**—A dwarf shrub 1 to 2 feet high, with trailing stems and yellow flowers in June and July, and useful in the rock-garden or the front line of the shrubbery. The hairiness is only in the young growths, the adult leaves being smooth. It is a plant of many names, including *falcatus*, *polytrichus*, and *triflorus*. S.-E. Europe and Asia Minor.

***C. kewensis* (The Kew Cytisus).**—A beau-

tiful prostrate plant raised in Kew Gardens as a cross between *Ardoinii* and the White Broom, but distinct in habit from both parents. It spreads by long trailing shoots, rising only about 3 inches, but, in old plants, covering a wide surface. Its creamy white or pale yellow flowers are large and numerous, thickly covering the pendant shoots during May and June, their colour often paling with exposure.

C. linifolius (*Fine-leaved Cytisus*).—An erect shrub 4 or 5 feet high, with narrow leaves and yellow flowers at the ends of the shoots in a long succession from spring to early summer. Being somewhat tender it can only be used in the open in gardens of the south and west, but is worth a place under glass in colder districts for its distinct habit and early flowers. Syn. *Genista linifolia*.

C. nigricans (*Summer-flowering Cytisus*).—Of neat habit with long slender shoots reaching 6 feet or more when full grown, hardy and thriving in dry warm ground. The pale yellow flowers are borne in long erect spikes of 9 inches at the ends of the new growths; it is easily raised from seed. The leaves, formed of three leaflets, are downy and dark green, fading to black when cut—to which fact the plant owes its specific name. Two or three varieties of this plant are grown in *longispicatus*, with longer spikes of flower, and *Carlieri* with a long season of bloom and showing flower-spikes and reddish seed-pods intermingled. Syn. *Lembotropis nigricans*.

C. præcox (*Early-flowering Cytisus*).—A hybrid of *C. purgans* and the White Broom, with sulphur-coloured flowers from early May, and, though hardy, should be planted in a sheltered spot with some protection from wind, or its flowers are soon marred in bad weather. Grouped amongst rocks, it is fine in effect, being one mass of bloom when in flower. Old plants are best renewed from cuttings, as they do not break freely when cut back and rarely come true from seed.

C. purgans (*Auvergne Broom*).—A bush of 2 or 3 feet, the flowers, in April and May, yellow and fragrant, while the plant retains its good habit longer than many kinds. It is easily increased from seed or cuttings under glass in August. A native of the mountains of France, it is quite hardy.

C. purpureus (*The Purple Cytisus*).—A hardy plant from eastern Europe, often grafted standard high upon the Laburnum, and in that way short lived; it is better on its own roots as a low spreading bush in rock-garden, its drooping shoots hung with purple flowers from May onwards. It is so readily increased from seed or cuttings that there is no need for grafting. There are several varieties distinct in habit or colour of flower: *albus*, with white flowers in long curving wreaths; *atropurpureus* with flowers of deep purple; *albocarneus* with flowers borne in threes, rosy white on opening, deepening to rosy lilac, with leaves and stems covered with down; *erectus*, with flowers deep in colour and a rigid upright habit; *incarnatus*,

with fewer flowers but large and variously shaded with rose and lilac; *pendulus*, grown as a standard, with slender weeping branches; and *superbus*, with large clusters of rosy lilac.

C. Ratisbonensis (*The Ratisbon Cytisus*).—A low shrub akin to *hirsutus*, not exceeding 3 feet, and very free in its golden flowers during May.

C. schipkaensis (*The Schipka Cytisus*).—Of low spreading habit, flowering in a long succession from the end of June, the yellowish-white flowers borne in clusters. It is distinct, hardy, but a greatly overrated kind.

C. scoparius (*The Common Broom and its Varieties*).—For adorning ugly dry spots it has perhaps no equal. Though a native wild plant, the Broom sometimes suffers in severe winters, especially when upon low valley bottoms; in this way it shows itself less hardy than the white and early Brooms (*Cs. albus* and *præcox*). There are several varieties of the Common Broom, the finest is André's Broom (*C. Andreanus*), in which the lower petals are richly shaded with crimson or bronze colour. It originated with a wild sport found growing in Normandy, and, while rather difficult to raise from cuttings, layers will root and a good percentage come more or less true as seedlings, of which the best only should be selected, many being dingy in colour. When grafted it never lives long, often disappearing suddenly; but on its own roots it is as indifferent to conditions as any of the Brooms, fine mature plants reaching a height of 12 feet or more, fully branched, and of great beauty when in flower. Variation in habit is shown by *pendulus*, a dwarf shrub with large flowers and pendant shoots, sometimes well used to drape boulders or ledges in the rock-garden; and *cantabricus*, a similarly prostrate form with fine flowers and silky leaves and stems, found as a wild plant in the mountains of Spain. The most effective way to grow the Broom in country places of any extent is to throw it out of hand on any waste places, such as railway banks, newly-formed fences, bare patches in woodland; in that way the amount of beauty it may give us is difficult to describe.

C. sessilifolius (*Stemless-leaved Cytisus*).—A shrub from southern Europe, with small, glossy green, almost stemless leaves, and short erect spikes of yellow flowers in May. It is of upright habit, neat and distinct, reaching a height of about 6 feet. Though rarely seen in England, it is well grown in the Dublin Botanical Garden. Syn. *Lembotropis sessilifolius*.

C. versicolor (*Many-coloured Cytisus*).—A peculiar plant, hybrid of *purpureus* and *hirsutus*, in growth and outline like the Purple Cytisus. Its leaves and shoots are, however, thickly pubescent and its flowers, appearing in May, pass from creamy-white to rose and lilac, the several stages showing in the same cluster. Though not a new plant, this hybrid is uncommon and distinct.

The many forms of Laburnum, including the

peculiar graft-hybrid once known as *Cytisus Adami*, are now classed by themselves in a separate group.—B.

Daboecia. See ERICA.

DACRYDIUM (*Huon Pine*).—A tree of the Pine order of exquisite grace, but not hardy in Britain except in the Cornish and Devon gardens, and others of the south of England and Ireland, where it is occasionally very beautiful. In other parts of the country if people want them they must be grown in the cool greenhouse or winter garden, but in the face of the number of beautiful hardy Pines we have that is a doubtful practice except in botanic gardens. There are two species, *D. Franklini* (*Huon Pine*) and *D. cupressinum* (*New Zealand Cypress*), a common New Zealand tree attaining nearly 100 feet in height, like the other kind.

DACTYLIS (*Cocksfoot*).—The variegated forms of this native Grass are attractive to those concerned much with bedding out, *D. glomerata variegata* being one of the most useful of edging plants, and easily increased by division in autumn or spring, thriving in almost any soil, but if the soil be too poor the plant is apt to look rusty in dry autumns. There are several other variegated forms graceful as edgings to beds, as carpets or mixtures, or as tufts in borders.

DAHLIA.—The Dahlia group is not a large one, so far as wild plants go, and every species is a native of Mexico. It is valued chiefly for the many beautiful varieties that have been raised from seed, the garden varieties being separated in various classes. When well placed in the garden the Dahlia is superb, its profusion of bloom creating fine masses of colour in the late summer and autumn months, especially when the best forms of the Cactus section are used. Distinct beds of Dahlias present a fine effect, if the colours are well chosen, and many good effects are spoilt by mixing up tall and dwarf bushy kinds indiscriminately. A mass of one colour looks well, especially if backed by dark-leaved shrubs, whilst distinct beds are a welcome feature in the flower garden, being gay far into the autumn when the weather is not frosty.

CLASSES.—The recognised classification of Dahlias is convenient, but not very distinct. A few years ago the two leading classes were the Show and Fancy Dahlias—distinctions confusing to some, as a White or Yellow Dahlia, edged or tipped with a dark colour, was classed as an edged, tipped, or laced Dahlia, and

included among the show flowers; but if the disposition of colour was reversed, and dark-coloured flowerets were tipped with a light colour, the plant was classed as a Fancy Dahlia. All the kinds with Carnation-like stripe were Fancy Dahlias. The catalogues abound with names of varieties, and the grower can make his own selection, especially as new forms are often raised. Varieties that do not conform to the stiff ideal of the hard-shell florist sometimes please the artist or the gardener best.

SHOW AND FANCY DAHLIAS.—These are not so much grown in gardens as formerly, but are still seen at the exhibition, Dahlias being shown in a far freer way than was usual a generation ago, and the Cactus and Single classes have, to some extent, overshadowed the formal Show and Fancy varieties. The reason why these are less valuable than many other kinds of Dahlia in the garden is because of the weight of the flowers. There is little graceful beauty about them, the stems being bent with the burden of a too heavy blossom, hence the greater popularity of the many lovely Cactus varieties.

Show Dahlias.—Agnes, Alexander Cramond, Bendigo, Colonist, Crimson Globe, Canary, Eclipse, Ethel Britton, George Gordon, George Rawlings, Glowworm, J. T. West, John Walker, Harry Keith, John Wyatt, Mr. Harris, Mrs. W. E. Gladstone, Mrs. S. Hibberd, Nellie Cramond, Queen of the Belgians, Richard Dean, R. T. Rawlings, Shirley Hibberd, J. T. Saltmarsh, W. H. Williams, W. Garratt, Wm. Keith, Wm. Rawlings.

Fancy Dahlias.—Buffalo Bill, Charles Wyatt, Comedian, Duchess of Albany, Frank Pearce, Gaiety, General Gordon, H. Eckford, H. Glasscock, Fanny Sturt, Mrs. Ocock, Mrs. Saunders, Peacock, Rebecca, Rev. J. B. M. Camm, Sunset, T. W. Girdlestone.

POMPON OR BOUQUET DAHLIAS are not so popular as either the Cactus or single forms. They seem to have gone out of cultivation to some extent, though they are useful for cutting. The tendency of recent raisers has been to increase the size of the flowers, but they should be quite small, as the name Pompon suggests, not like a Show or Fancy Dahlia. Although many additions have been made to this section, the pure-white variety White Aster still retains its popularity, and it is grown largely for cutting, and also for its effect. The Pompon Dahlias are very free-blooming,

throwing their charming flowers well above the leaves.

Pompon Dahlias.—Admiration, Arthur West, Countess von Sternberg, Coquette, Crimson Beauty, Cupid, Darkness, Dove, E. F. Jungker, Eurydice, Eva, Fairy Tales, Gem, German Favourite, Glow-worm, Golden Gem, Hedwig Pollwig, Juno, Lilian, Little Bobby, Little Ethel, Marion, Midget, Pure Love, Tommy Keith, Vivid, White Aster.

SINGLE DAHLIAS.—*D. coccinea* (*D. Mercki*), *D. variabilis*, and others formed the foundation, so to say, of this group. The value of Single Dahlias as beautiful garden flowers was not considered until a reaction set in against the show blooms, and then the elegant single kinds became popular. It is so easy to cross them and raise seedlings that the earlier varieties were quickly improved upon in colour and habit of growth, until we have now a delightful group of garden plants, free, and making a continuous display through the late summer and early autumn months. In the best kinds the flowers are carried erect above the foliage, the growth bushy, and the flowers abundant. No summer flower gives a greater variety of brilliant colours, rich selfs and delicate hues of mauve and rose to pure white. With all this choice, one, unfortunately, sees much of the striped kinds, too often praised, for the reason perhaps that they are well shown at some exhibition, but a new Dahlia should be seen in the garden to judge of its merits. The striped kinds are also sportive, like striped Carnations, and depend in a large measure for their peculiar colour upon the weather. This class must not be confounded with those that have flowers boldly margined with colour. As the round-flowered form of Single Dahlia is declining in popularity one sees less of the big saucer-shaped blooms, so large that it was necessary to support them when gathered. These flabby varieties won few friends, and the more recent kinds are far smaller and better.

Single Dahlias.—Annie Hughes, Butterfly, Chilwell Beauty, Conspicua, Duke of York, Duchess of Westminster, Eclipse, Evelyn, Gulielma, Jack, James Scobie, Miss Glasscock, Midget Improved, Mikado, Magpie, Nellie Ware, Paragon, Rose Queen, Yellow Boy, Yellow Satin.

"CACTUS" DAHLIAS.—These originated from *D. Juarezi*, which was introduced from Mexico about 1879, and they retain the characteristic shape of that species, the petals twisted, so to say, and reminding one of those of some

of the Cacti. The earlier Cactus Dahlias had one fault—hiding the flowers amongst the leaves; but this is to a large extent changed, so that we have now a beautiful race of garden plants for summer and autumn, with flowers of bold form and charming and varied colours. A new group is formed by the single Cactus kinds. The flowers are quite single, about as large as those of a good single Dahlia of the ordinary type, and with twisted petals.

Cactus Dahlias.—Beauty of Eynsford, Bertha Mawley, Cannell's Own, Countess of Gosford, Countess of Radnor, Delicata, Ernest Cannell, Juarezi, Kentish Invicta, Kynerith, Lady Penzance, Matchless, Mrs. Francis Fell, May Pictor, Professor Baldwin, Robert Cannell.

TOM THUMB DAHLIAS.—This is a very dwarf race, the plants forming little bushes, but they are not satisfactory, as they appear not to bloom with great freedom, whilst the growth does not retain its true dwarf character. When true, the habit is compact, dense, and the single flowers borne well above the mass of leaves. Fortunately the colours of the flowers are for the most part simple, and raisers should steer clear of the ugly striped kinds. Dwarfing any flower naturally tall and graceful is a doubtful practice.

BEDDING DAHLIAS.—This is the name given to a small list of dwarf varieties, which are used for massing, blooming profusely. One kind named Rising Sun has the flowers brilliant scarlet, and used with good effect in the London parks.

SPECIES.—Amongst these we may note the following:—

D. coccinea, a tall plant with bright-scarlet flowers that rarely vary. Nearly related to it, and differing only in some slight points, is *D. Cervantesi*, also with showy scarlet flowers.

D. glabrata is a beautiful plant of dwarf spreading growth, more slender than any of the other species. The flowers are smaller than those of other kinds, and vary from pure white to deep purple. It is hardier than any other Dahlia, and plants left in the ground are generally uninjured throughout the winter. Its dwarf growth adapts it for positions unsuitable for the latter kinds, and it has a good effect in masses, its colour being unlike that of any other Dahlia. It is known also as *D. Mercki*, *repens*, and *Decaisneana*.

D. gracilis is a distinct and graceful plant, with slender stems and finely divided foliage, which gives it a freer

habit than any other Dahlia. The bright-scarlet flowers are of the ordinary size.

D. imperialis has large and graceful much-divided leaves, and flowers of a beautiful French white, thrown up in a great cone-like mass. It rarely flowers in the open air, but it is of service both in the flower garden and conservatory. Planted in rich soil, and placed in a

all the garden varieties. The wild plant has scarlet flowers like *coccinea*, and is of similar growth. A packet of seed, however, will yield plants with flowers of all shades, from crimson to white and yellow.

CULTURE.—To get a good result it is essential to have rich, deep, and moist soil, and to put out strong plants as early as may be safe, so as to secure a good

Cactus Dahlia "Juarezi."

warm, sheltered position in the open air at the end of May, it grows well in summer, and its large and graceful leaves make it an ornament worthy of being used as a "fine-foliaged" plant. Similar to this, but not so fine, is *D. Maximiliana*.

D. Juarezi is now well known. It is the more desirable because of its easy culture, as it requires no different treatment from ordinary Dahlias. It is not quite double, but is very fine in form and brilliant in colour, though it flowers somewhat sparsely.

D. variabilis is the supposed parent of

growth or autumn bloom. Where weak plants are put a little too late they may only give a few poor blooms before the frost comes. If planted in May and frost is feared, protect the young plants at night by turning a garden pot over them. If the soil is not deep, rich, and moist, manure-water should be used. Watering is usually necessary in early growth, afterwards it is not so in moist districts where the plant is well treated as regards depth and quality of soil. In dry places water is essential in most seasons. Staking and tying out the shoots must be attended to, as the stems

are brittle and break under little wind-pressure. Earwigs are great enemies to Dahlias, but can be trapped in small round troughs which may be got from any pottery. They may also be caught on pieces of Hemlock stem, 6 in. long, by leaving a joint at one end, and sticking the pieces here and there through the Dahlias. Small pots, with a little bit of dry Sphagnum Moss inside, inverted on the tops of stakes, also form good traps.

INCREASE.—The usual practice is to take up the roots and store them in a dry frost-proof cellar in winter. Dahlias may be propagated by cuttings, root-division, and seed, the last way being used only where new kinds are sought. Cuttings are the best means of propagating Dahlias, though division of the roots is usually practised. If started in February or March in a temperature of 60° to 70° F., each crown will produce three or four cuttings every two or three days. These may be taken off even as early as March, close to the crown, without however injuring it, as others will come up at the base of those removed. The cuttings must not be too long before they are taken from the tubers, as then they flag. When the crowns have supplied all the cuttings that can be got from them they may be divided, and therefore nothing is lost. Cuttings may be successfully struck during the summer months; but this is unusual except in the case of choice varieties. Three-inch pots are best for putting the cuttings into, six cuttings being put in each pot. They should be plunged in a brisk bottom-heat, covered with hand-glasses, and shaded from bright sunshine. In less than a fortnight they will be all rooted, and may be potted off singly into large 3-in. pots. Harden them off gradually until planted out in May.

To raise seedlings sow the seed in heat in February, and treat the young plants in the same way as cuttings. To propagate from layers the lowest branches of the plant should be pegged down. If the soil be sandy they will root freely, but in the absence of sandy soil a quantity of leaf-mould with a mixture of sand may be laid down for them to root into. Pure white sand alone is best suited for striking them in, and a mixture of leaf-mould and sand is very good to start the crowns in.

WINTERING.—As long as the weather keeps mild Dahlia roots are best in the soil, and need not be taken up till the end of November; but should sharp frosts

be followed by heavy rain they should be promptly removed from the ground. Lift the roots on a dry day and cut off the stems to within 2 or 3 in. of the crown. Remove the greater portion of the soil from the tubers and lay the latter out in the sun to dry before storing. The floor of a greenhouse where frost can be excluded, or a dry cellar, is a good place to store the roots in. A little ventilation is necessary to keep them from getting mouldy; but a hot dry atmosphere must also be avoided, as the tubers might shrivel in it. By lifting the roots with some soil adhering to them, they are kept plump during the winter, which is best when they are required for early forcing. They will generally keep well on the floor of a greenhouse, as it is light and airy, and during mid-winter much water should not, as a rule, be given. The tubers of some sorts are more difficult of preservation than others, and choice varieties are frequently bad keepers.

The species of Dahlia are natives of Mexico and adjacent regions: 1, arborea; 2, astantiæ-flora; 3, coccinea; 4, excelsa; 5, gracilis; 6, imperialis; 7, Maximiliana; 8, Mercki; 9, platylepis; 10, pubescens; 11, scapigera; 12, variabilis; 13, Juarezi.

DAPHNE (*Garland Flower*).—Alpine and mountain shrubs, beautiful, fragrant, and of high value for the garden. They are chiefly natives of Europe, and in cultivation do best when shaded in summer from the mid-day sun, and in winter screened from cold winds. If nurtured by the fallen leaves of trees, they will grow with a vigour that we can scarcely hope to see in ordinary soil. They have but few roots, and are best transplanted when young. The best soil is a mixture of free loam and decayed leaf-mould, with some old road sand added. None of them require a rich soil, and some of them even prefer old road sand to any other; this is especially the case with the *Mezereon*.

D. alpina (*Mountain Mezereon*).—A dwarf summer-leaving and distinct rock shrub, about 2 feet high, the flowers yellowish-white, silky outside, fragrant, in clusters of five from the sides of the branches. It is a low, branching shrub, flowering from April to June, and bearing red berries in September. Central and S. Europe.

D. Blagayana (*The King's Garland Flower*).—A dwarf alpine shrub, 3 inches to 8 inches high, of straggling growth the leaves forming rosette-like tufts at

the tips of the branches, encircling dense clusters of fragrant, creamy-white flowers, blooming in spring and thriving in the rock-garden in well-drained spots surrounded by stones; increased by layers pegged down in spring.

D. Cneorum (*Garland Flower*).—A dwarf spreading shrub, from 6 inches to 10 inches high, and bearing rosy-lilac flowers, and so sweet that, where much grown, the air often seems charged with

Garland-flower (*Daphne Cneorum*).

their fragrance. It is a native of most of the great mountain chains of Europe, and is one of the best plants for the rock-garden, thriving in peaty and very sandy soils; in stiff soils often fails; is usually increased by layers.

D. Collina (*Box-leaved Garland Flower*).—The leaves of this much resemble in shape and size those of the Balearic Box, the upper surface of a dark glossy green. The flowers are in close groups, and of a light lilac or pinkish colour, the tubes rather broad and densely coated with silky white hairs. It forms a low, dense, evergreen shrub, the branches of which always take an upright direction and form a level head, covered with flowers from February to May. S. Europe. *D. Neapolitana* is a variety of it.

D. Fioniana (*Fion's Garland Flower*).—A compact shrub, the heads of bloom are in clusters, five fragrant flowers in each, of a pale lilac colour, the tubes densely covered externally with short silvery hairs. This shrub flowers from March to May, and is hardy about London.

D. Genkwa (*Lilac Garland Flower*) is a summer-leaving shrub of from 2 feet to 3 feet in height, with downy branches and fragrant violet-coloured flowers thickly set on the leafless branches in early spring. There appear to be several

varieties of *D. Genkwa*, some with much larger flowers than others, and some of a darker shade of purple. It is not quite hardy in cold districts. Syn., *D. Fortunei*.

D. Houtteiana (*Van Houttes Mezereon*).—This forms a robust spreading bush, 3 feet or 4 feet high, with all the leaves collected on the young branches, while the old ones are naked. It is distinct, hardy, flowering in the spring before the leaves appear, and is said to be a hybrid between *Mezereon* and the Spurge Laurel. Its leaves are from 3 inches to $3\frac{1}{2}$ inches long, purple on the upper side when fully developed, and, when quite young and in the bud state, of a dark purple colour. The flowers are small, dark purple, quite smooth, and are borne along the shoots of the previous year before the young leaves appear.

D. Mezereum (*Mezereon*).—A wild plant in English woods, is a charming and fragrant bush, and the earliest to flower, often in February. Where the shrubby rock-garden is carried out, nothing is more lovely for its adorning than a group of this. Though quite hardy, it is slow, and not so pretty on some cold soils. It is best to begin with little plants; and it is easily raised from seed.

D. odora (*Sweet Daphne*).—A fragrant and beautiful kind, in mild and southern districts hardy on the rock-garden, usually best on western aspects; but in the north a greenhouse plant. There are varieties called *alba*, *rubra*, *Mazeli*, *punctata*. *Mazeli* is, according to Max Leichtlin, hardier than the older kind. Syn., *D. indica*. China.

D. rupestris (*Rock Garland Flower*).—A neat little shrub, with erect shoots forming dense, compact tufts, 2 inches high, often covered with flowers of a soft-shaded pink, in clustered heads. It is a mountain plant, growing wild in fissures of limestone in peaty loam, of slow growth, and it takes some years to form a good tuft. It seems to thrive in very stony and peaty earth, with abundance of white sand, and should be planted in a well-drained but not a dry spot.

D. striata (*Alps Fairy Garland Flower*).—A hardy trailing kind, forming dense, spreading masses, 1 foot to 3 feet across, in June and July are covered with rosy-purple, scented flowers in clusters. The spreading habit of this plant recommends it for covering bare spots in the rock-garden. Alps.

Species.—*D. alpina* (S. Europe and Himalayas), *altaica*, Siberia. *aurea*, Orient. *Blagayana*, Carniolia. *cannabina*, Himal. *caucasica*, Caucas. *Charnipioni*, China. *Cneorum*, S. Europe. *decandra* (Java). *Genkwa*, China. *glomerata*, Caucasus. *gnidioides*,

Asia Minor. *Gnidium*, S. Europe. *involucrata*, India. *jasminea*, Greece. *jezoënsis*, Japan. *Kuisiana*, Japan. *Laureola*, Europe. *linearifolia*, Syria. *Mazeli*, Japan. *Mezereum*, Europe and N. Asia. *odora*, Japan. *oleoides*, S. Eur. Asia Minor. *pendula*, Burma. *petræa*, Tyrol. *pontica*, Asia Minor. *pseudo-mezeureum*, Japan. *Rodriguezi*, Minora. *Roumea*, China. *sericea*, S. Eur. and Asia Minor. *Sophia*, Asia. *striata*, S. Europe. *tangutica*, China. *tenuiflora*, Ins. Timor. *triflora*, China.

DAPHNIPHYLLUM. — Evergreen shrubs of fine effect of foliage and little beauty of flower. *D. Glaucescens* grows well in the home counties so far as tried, especially at Lyndhurst in Sussex, the leaves over 6 in. long, and glaucous underneath, the flowers small, in the autumn; but the habit is so fine wherever evergreens are cared for that this will be worth growing at least in the southern and warmer counties. The other species known is *D. josoenses*. It is a much dwarfer plant, and is an under shrub in the forests of Yezo. These plants seem to be hardy enough in the Southern districts of Britain, but may require a little care to establish. Rich as we are in evergreen plants in Britain, these are distinct enough to take a good place.

DARLINGTONIA (*Californian Pitcher-plant*).—A most singular plant, resembling the *Sarracenias*, but very distinct: the leaves of *D. californica* rise to a height of 2 ft. or more, are hollow, and form a curiously shaped hood, from which hang two ribbon-like appendages, the hood often a crimson-red, and the flowers are almost as curious. This remarkable plant is found to grow in our climate if care be taken with it; and it would be difficult to name a more interesting plant for a sheltered bog garden. It is less trouble out-of-doors than under glass; indeed, it only requires a moderately wet bog in a light spongy soil of fibrous peat and chopped *Sphagnum* Moss. A place should be selected by the side of a stream, in an artificial bog or in any moist place, and the plants should be fully exposed to direct sunlight, but sheltered from the cold winds of early spring when they are throwing up their young leaves. They require frequent watering in dry seasons, unless they are in a naturally wet spot. When they become large they develop side shoots, which, if taken off and potted, soon make good plants. The plant is also raised from seed, but this requires several years.

DATISCA.—*D. cannabina* is a tall and graceful herbaceous perennial from 4 to 7 ft. high, the long stems clothed with large pinnate leaves, yellowish-green flowers appearing towards the end of summer. The male plant is very strong and graceful in habit: the female remains green

much longer than the male; when it is laden with fruit, each shoot droops gracefully, and the plant should be included in any selection of hardy plants of good form. Seed will be found the best way to increase it, and would secure plants of both sexes. The border is not its place; it is, above most other plants, suited for the grassy margin of an irregular shrubbery, and will be all the more effective if planted on a grassy slope, where its deep-seeking roots will soon defy the most protracted drought.

DATURA (*Thorn Apple*).—Plants of the Nightshade family, including several handsome garden plants that well deserve cultivation. Being natives of Mexico and similar countries, none are hardy, but owing to rapid growth some succeed well if treated as half-hardy annuals, and make effective plants in a short season. The best are: *D. ceratocaula*, from 2 to 3 ft. high, with large, scented, trumpet-like flowers, often 6 in. in length, and 4 or 5 in. across, white, tinged with violet-purple, expanding in the afternoon and closing on the following morning. *D. fastuosa* is a handsome species, having white blossoms smaller than the preceding; there is a fine variety of it with the tube of the flower violet and the inside white. The most striking forms of this species bear "double" flowers, the primary corolla having a second and sometimes a third corolla arising from its tube, all being perfectly regular in form, and often being parti-coloured, as in the single variety with violet flowers. *D. fastuosa* Huberiana of the seed catalogues, and several varieties of it that are offered, are reputed to be hybrids of this species with the dwarf *D. chlorantha flore-pleno* or *D. humilis flava* of the gardens; but although they offer a greater variety of colour, they are less hardy than the older forms just described, and appear to require a warmer climate for their complete development. *D. meteloides* is a handsome Mexican plant, called in gardens Wright's *Datura*. Isolated specimens of it have a fine aspect in sunny but sheltered nooks. It is from 3 to 4 ft. high, has wide-spreading branches, and blooms from the middle of July till frost sets in, the flowers white, tinged with mauve; from 4 to 6 in. across, showy and sweet, but the leaves emit a disagreeable odour. Besides these there are other kinds in cultivation, such as *D. ferox* and *quercifolia*, but those described are the finest. Fresh seeds are readily raised in an ordinary hot-bed; the young plants while small should be pricked out singly in pots, and finally planted out where they are to stand.

They need ample space for their full growth, and should be grown in light warm soils.

The plants hitherto known as *Brugmansia* are now considered to belong to *Datura*.

They are of easy cultivation, and soon make large plants. The best way of

came round the growth would be stronger. When in a house either in tubs or in the border, an annual pruning should be given early in the spring, and they should be kept within bounds. Under glass the chief enemy is green-fly, but fumigation soon disposes of this. For the open border of a large house a few standards

D. cornigera (*Brugmansia Knighti*) in the flower garden.

growing is as standards, so that their long drooping flowers may be better seen. In the flower-garden a sheltered but sunny position should be chosen. The plants may be safely put out about the end of May in good warm soil. It would be best to pot them into large pots or tubs, and turn them out of these, as thus treated they would not die back so far in the winter, and when planting time again

with stems 8 ft. or so in height make a grand show. Their propagation is simple, the young shoots being merely taken off in spring and struck in a gentle heat, one cutting in a small pot. Grow them on as fast as possible, keeping them to the one stem until of good height. They will yield a few flowers the first autumn when planted out, but as they get older they flower more profusely, the growth being

less luxuriant. When planted out in the open ground, they are best as centre plants to fairly large beds, with a carpet of dwarf things under them. They should not be smothered up, the example of *D. cornigera* (*Brugmansia Knighti*) in the illustration being an instance of good effect when not overcrowded. This is one of the best varieties, with many large handsome double flowers. It is more robust and compact in growth than other kinds, its leaves too of a darker green. *D. suaveolens*, another good white variety, is a profuse bloomer, its flowers being perhaps larger than those of *D. cornigera*, but single. *D. sanguinea* has flowers of a deep orange-yellow tinged with green towards the base; it does not flower quite so freely as the white kinds, but should be grown for its distinct character. There is also a double yellow variety of *D. chlorantha*, which is free-flowering and well worth growing, being pleasing in pots.

Some years ago, at Nuneham Park, Oxford, *D. suaveolens* was used with good effect in the flower garden during summer and autumn. Mr. Stewart, the gardener, used to raise plants annually by striking cuttings in autumn in bottom heat. They were potted as soon as rooted, and kept growing gently in a warm greenhouse all through the winter. About the end of February they were placed in an atmosphere of about 55°, when they were encouraged to grow freely. As soon as the roots appeared above the surface, liquid manure and sometimes a top-dressing of old cow manure were given. They were kept growing on in this way until the middle of May, when they were 2½ ft. high, after which they were gradually hardened off, and during a dull time taken out-of-doors, placed in a sheltered corner, and screened from the sun before being planted out. Out-of-doors the plants flowered freely, and gave off a sweet perfume during the evenings in July and August.

Species.—*D. arborea*, S. America. *ceratocaula*, tropical America. *chlorantha*, *cornigera*, Mexico. *discolor*, Mexico. *dubia*, *erinacea*, Brazil. *fastuosa ferox*, China. *floribunda*, S. America. *inermis*, Abyssinia. *Leichhardtii*, Australia. *Metel*, tropical countries. *meteloides*, W. America. *microcarpa*, *nigra*, Malaya. *præcox*, *quercifolia*, Mexico. *sanguinea*, S. America. *scandens*, Brazil. *Stramonium*, common everywhere. *suaveolens*, Mexico. *trapezia*, India.

Davidia involucrata.—A remarkable tree from the mountains of central China, where the winters are severe, so that it may prove hardy in this country. It

belongs to the Dogwood family, and the large white bracts are more showy than the flowers. It is described by Dr. Henry as a large tree, bearing thousands of flowers, which are most peculiar. Inside a pair of white bracts about the size of the hand is a head of red-anthered stamens, and a tree in full flower is a marvellous sight, owing to the alternate white and green caused by the large bracts intermingling with the leaves. It will be some time before its value for our islands is known, and at first it should be planted in open soils and in the best positions among the choice trees and shrubs.

DECAISNEA.—Curious ailanthus-like shrubs, natives of mountain woods, China and India; as yet little known in our country but deserving of a place, as soon as they can be obtained, among rare and beautiful shrubs. The leaves of *D. Fargesii* are pinnate and the flowers not showy, but the fruits become an attractive blue in autumn. Until more common, cultivate in open free soil and sheltered places.

DECUMARIA.—Two species of this interesting genus are in cultivation; both are hardy, and useful climbers for walls and buildings. *D. barbara*, a native of Carolina, where it is found in shady places along the margins of swamps, is a very elegant plant. The branches cling to the wall by small rootlets, as in the Ivy, and when allowed to ramble at will are very grotesque, ascending trees or walls to a considerable height, and requiring no nailing and little attention. The flowers are in large bunches in May and June, pure white and fragrant, resembling *Hydrangea*. *D. sinensis* is a native of Central China, and a beautiful hardy species. It is a climber, and was found by Dr. Henry covering the cliffs of the Ichang Gorge with clusters of fragrant white flowers.

DELPHINIUM (*Larkspur*).—Few plants contribute so much to the beauty of the garden as these fine plants of the Crowfoot Order. There are in cultivation many species, both annual and perennial, but the most important are the tall hybrid perennials, of which there are many varieties with a wonderful range of lovely colour. They are very valuable for their great variety in height, from 1 to 10 ft.; for their greater variety in shades of colour, which range from almost scarlet to pure white, from the palest and most chaste lavender up through every conceivable shade of blue to deep indigo; and for the variety of size and form of

their individual blooms, some of which are single, some semi-double, and some perfectly double, and all set on spikes ranging from 1 to 6 ft. in length. About a dozen species have given rise to the cultivated varieties, the chief species being *D. grandiflorum*, *formosum*, *lasio-stachyum*, *cheilanthum*, *elatum*, and *peregrinum*.

Delphinium.

CULTURE AND POSITION.—The combinations in which they can be placed are numerous. They are splendid objects in various positions, and may be used in various ways—in the mixed border, in masses or groups in one or several colours, or associated with other flowering plants or with shrubs. Perennial Larkspurs thrive in almost any situation or soil; they are easily increased, and are quite hardy. A deep friable loam, enriched

with rotten manure, is a good soil for them, but they will grow well in a hot sandy soil if it be heavily manured and watered. Every three or four years they should be replanted and divided, and this is best done in spring, just as they are starting into growth, or in summer; if it is done in summer, cut down the plants intended for division, and let them remain for a week or ten days until they start afresh; then carefully divide and replant them, shading and watering until they are established. Late autumn division is not advisable. Delphiniums can be made to bloom for several months by continually cutting off the spikes immediately after they have done flowering. If the central spike be removed, the side shoots will flower, and by thus cutting off the old flowers before they form seeds we cause fresh shoots to issue from the base, and to keep up a succession of bloom. Another plan is to let the shoots remain intact until all have nearly done flowering, and then to cut the entire plant to the ground, when in about three weeks there will be a fresh bloom. In this case, however, to keep the plants from becoming exhausted, they must have a heavy dressing of manure or manure-water. Top-dressings keep the soil cool and moist, give the plants a healthier growth, increase the number and improve the quality of the flowers.

The following is a selection of the good kinds: *Single Varieties*.—Belladonna, Hendersoni, Cambridge, Granville, Gloire de St. Mande, Barlowi, versicolor, Coronet, magnificum, Lavender, pulchrum, formosum, lilacinum, Celestial, Madame Hock, mesoleucum superbum, Defiance, and Attraction. The grower should consult his own taste, and raise seedlings of his own, taking care to have a good stock of the standard varieties he likes best. *Double Varieties*.—Madame E. Geny, Madame Henri Jacotot, Madame Richalet, Pompon Brilliant, Roi Léopold, Hermann Stenger, Claire Courant, George Taylor, Roncevaux, Le XIXe. Siècle, Keteleeri, Prince of Wales, General Ulrich, Arc en Ciel, Sphere, Michael Angelo, Delight, Glynn, Barlowi vittatum, Star, Perfectum novum, Triomphe de Pontoise, Pompon de Tirlemont, Victor Lemoine, Trophée, Madame Henri Galotat, Louis Figuier, Azureum plenum, and Madame Ravillana. The beautiful old *D. grandiflorum* fl.-pl., another double variety, is one of the most charming of border plants.

The best of the numerous perennial species distinct from the hybrids are—*D. cashmerianum*, with flowers nearly as

large as those of *D. formosum*, and with stems about 15 in. in height. The flowers are 1 in. in diameter, and are usually of a light blue-purple, but they vary in shade to mauve and dark blue, and are produced in terminal corymbs of six or more. *D. cashmerianum* is well suited for the border or for a large rockery; in either case perfect drainage is essential, and this is best attained in rock-garden culture. Its branches have a prostrate habit, apparently adapting it to such conditions. It is best increased from seed. *D. cardinale* is a beautiful species of tall

nial, is easily raised from seed, and continues to flower throughout the summer till late in autumn. It is suited for borders and beds. *D. nudicaule* has scarlet blossoms, a dwarf, compact, branching growth, a hardy constitution, and a free blooming habit, 1 to 3 ft. high. The flowers are in loose spikes, each blossom being about 1 in. in length; the colour varies from light scarlet to a shade verging closely on crimson, and when seen in the open air, especially in sunshine, dazzles the eye by its brilliancy. *D. nudicaule* is perfectly hardy, and commences growth

Delphinium grandiflorum.

growth, having bright-scarlet flowers, like those of *D. nudicaule*. It blossoms later in summer, and continues longer in flower than *D. nudicaule*, owing in part to its slower development. It is a most desirable plant, and as hardy as *D. nudicaule*. Seedlings will probably not flower till the second season. In very damp soil it would be prudent in winter to protect the root with a hand-light or inverted pot. *D. chinense* is distinct from other Larkspurs, and is neat and rather dwarf in growth, having finely cut feathery foliage, and freely producing spikes of large blossoms, usually of a rich blue-purple, but sometimes white. It is a good peren-

so early that it may almost be termed a spring flower, but it may be had in bloom during several of the summer months, and is handsome for warm borders. Although somewhat apt to damp off on level ground, it is a perennial on raised ground, and keeps up a succession of bloom. It is as easy to raise from seed as other Larkspurs. A tall variety of *nudicaule* is called *elatus*.

THE ANNUAL LARKSPURS.—In these hardy annuals there is also a wealth of beauty for the summer garden, and we have a host of beautiful sorts with a wide range of colour. There is great diversity too in the habit of growth, some being as

dwarf as a Hyacinth, others 3 or 4½ ft. high, others with a branching habit resembling a candelabrum. The species

Portion of a group of Delphiniums in the garden at The Grange, Knutsford, Cheshire.

which have given rise to these varieties are *D. Ajacis* (Rocket Larkspur) and *D. Consolida*. *D. Ajacis* has the flowers in long loose spikes forming an erect and

spreading panicle, the stem vigorous with open spreading branches. All the varieties of the Rocket Larkspur may be arranged in three great groups: 1. *D. Ajacis majus* (large Larkspur).—The stem of this is single, and varies in height, from 3 to 4 ft. 6 in.; the flowers double, in a long, single, and compact spike, generally rounded off at the extremity. This kind has given the following varieties—white, flesh-coloured, rose, mauve or puce-coloured, pale violet, violet, ash-coloured, claret, and brown. 2. *D. Ajacis minus* (dwarf Larkspur).—The stem of this is from 20 to 24 in. in height, and is even shorter when the plant is sown thickly or in dry or poor soils. The flowers are very double, and in a single well-furnished spike, usually cylindrical, and rounded off at the extremity, but rarely tapering. The principal varieties are—white, mother-of-pearl, flesh colour, rose, mauve, pale mauve, peach blossom, light violet, violet, blue-violet, pale blue, ash-gray, brown, light brown, white striped with gray, rose and white, and flax-coloured and white. 3. *D. Ajacis hyacinthiflorum* (dwarf Hyacinth-flowered Larkspur).—The varieties of this group have been raised in Belgium and Germany. They do not differ from other kinds in form of flower, but only in the spike on which the flowers are set, being more tapering, and the flowers farther apart than those of the two previously mentioned groups. There is a strain called the tall Hyacinth Larkspur. Other strains mentioned in catalogues are the Ranunculus-flowered (*ranunculiflorum*) and the Stock-flowered, both of which are worth cultivating.

D. Consolida (Branched Larkspur).—This species has branching stems and beautiful violet-blue flowers hung on slender stalks, and coming later than those of *D. Ajacis*. It embraces several varieties, both single and double, all of which may be reproduced from seed. The principal sorts are white, flesh colour, red, lilac, violet, flaxen, and variegated. The varieties especially worthy of cultivation are candelabrum, bearing pyramidal spikes of flowers of various colours; and the Emperor varieties, of symmetrical bushy habit, which form compact and well-proportioned specimens, 1½ ft. high by 3½ ft. in circumference, doubleness of flowers possessing great constancy. There are three colours—viz. dark blue, tri-coloured, and red-striped. In *D. tricolor elegans* the flowers are rose-coloured, streaked with blue or purple, and about 3 ft. high.

CULTURE.—Annual Larkspurs should be sown where they are to remain at any time after February when the weather permits—usually in March and April. They may also be sown in September and October, and even later when the ground is not frozen, but the produce of winter sowing is liable to be devoured by slugs and grubs. The sowing may be made either broadcast or in rows 4 in. to 8 in. apart, and the plants should stand 4 in. or 5 in. asunder. The branching varieties may be sown in reserve beds, and in March when about 12 in. or 16 in. high should be transferred to the flower beds, lifted carefully with balls of earth round the roots, so that they may not suffer. These branching varieties are well suited for the garden, either in masses of one colour or of various colours. They may be planted in borders or among shrubs thinly planted. One great advantage of this class is that it flowers earlier and longer than the dwarf Larkspur—that is to say, it flowers throughout the summer, and, according to the period of sowing, from the end of June or July to September, and even to October if the flower-stems that have shed their blossoms be cut off. They succeed, moreover, in the driest calcareous soils, and even upon the declivities of hills. By pinching, dwarf plants useful under certain circumstances may be obtained. Seed should be taken only from flowers perfectly double; and for this purpose single-flowered plants should be carefully weeded out. Larkspurs are at their best in June and July; they bloom almost anywhere, especially in dry localities, and do not require much attention. They look well whether they are all of one colour, or of all the colours mixed, and, by separately using varieties possessing different colours, striking contrasts may be produced.

DENTARIA. See CARDAMINE.

Dendromecon rigidum (*Shrubby Poppy*).—A half-shrubby poppy wort from the mountains near St. Barbara, bearing flowers in summer. It should be planted in a sandy loam in warm positions: seed.

DESFONTAINEA.—In favoured gardens along the southern coast and in other mild parts *D. spinosa*, a very beautiful evergreen shrub from Chili, can be grown and flowered out-of-doors. It is of moderate growth, having foliage very much like the Holly, and handsome flowers in the form of a tube of bright scarlet tipped with yellow. It usually flowers about the end of summer, and in some parts of Devonshire it blooms profusely, thriving in a

light loamy soil, and even round the coasts as far as the north of Ireland, but once a few miles from the protection of the sea air it ceases to thrive and perishes, and is therefore only of value in very favoured places.

DESMODIUM (*Tick Trefoil*). — A few of the North American species are cultivated, but their weedy appearance prevents their general culture. These are *D. canadense*, *marilandicum*, and *Dilleni*, all from 2 to 4 ft. high, with slender stems, terminated by dense racemes of small purplish flowers. *D. penduliflorum* is a really pretty shrub, and hardy if the stems are annually cut down, with graceful shoots, bearing along their upper portions numerous rich violet-purple blossoms in September. It is the name by which the beautiful *Lespedeza bicolor* is generally known. It is a slender shrub, graceful when in flower, 6 ft. or more in height, bearing drooping racemes of small Pea-shaped flowers of a carmine-purple colour. It is a native of China and Japan, and hardy enough for open-air culture except in cold districts. It makes a good wall shrub.

DEUTZIA. — Hardy, summer-leaving shrubs of high value for the garden, requiring no special attention, and of varied character, owing to hybrids having been raised by M. Lemoine and others, and species newly introduced from China. These shrubs deserve a better fate than that of the common shrubbery, mixed up with all sorts of things of different natures and sizes, and should be grouped by themselves. They thrive in ordinary soils, and when pruned should not be reduced to mopheadedness by cutting back, but only old and exhausted wood should be cut out, the natural forms of the plants being kept. It is better not to prune at all than to pack them into ugly shapes. They ought to have a good position among choice shrubs on banks or on masses.

D. corymbiflora.—Forms a shrub from 4 feet to 5 feet high, the young shoots erect and clothed with bronzy green bark. The mature growths of the previous year carry massive clusters of white flowers, with often from 50 to 100 buds and expanded blooms opening in summer. Though a promising shrub in some parts of France, it in this country appears to be too tender to prove valuable. This is the *D. corymbosa* of gardens, and *D. setchuensis* of Franchet. China.

D. crenata.—Reaches a height of 6 feet to 10 feet, the flowers in erect thyrses, each flower composed of five pointed petals. Chief among its varieties are *D. crenata*, *flore punices*, whose double white

flowers are shaded with rosy-purple on the exterior: *alba plena*, *candidissima plena*, and *Pride of Rochester*, for the three are almost if not quite identical; *Watereri*, white, flushed with rosy-lilac on the outside; and *Wellsii*, a double white flower, but in habit quite different from the other white forms.

D. discolor.—The true plant is a charming little shrub, with arching wand-like shoots of 2 feet to 3 feet, crowded from base to tip with clusters of rose-flushed white flowers, each three-quarters of an

inch across. At present a rare plant, *D. discolor* is represented in our gardens by the variety *purpurascens*, which is a more vigorous plant than the wild form, reaching a height of 3 feet to 4 feet, with slender rounded stems of a bronzy-green or red colour, covered with little starry scales. The flowers, six to eight in a cluster, are rosy-purple on the outside, showing within as a pretty flush; the buds are of a carmine tint.

D. discolor grandiflora.—In this the influence of *D. gracilis* is shown in the long leaves borne upon stiffly erect shoots. The flower panicles are longer than in *D. purpurascens*, and the rosy-tinted flowers themselves larger, covering the stems throughout their length.

D. gracilis.—Between this and *D. discolor purpurascens*, M. Lemoine has raised a number of hybrids, two of which have been just dealt with. The following,

Deutzia myriantha.

however, of the same parentage, are so much more nearly related to *D. gracilis* that they may well be regarded as varieties of that well-known species.

D. gracilis rosea.—A dense shrub a yard or more in height, hardy, and free-flowering. Its growth is erect, with small narrow leaves, and upright sprays of open bell-shaped flowers, rosy-grey on the outside and soft carmine within.

D. discolor floribunda.—The other parent of this was *D. gracilis*, but it shows more of the influence of *D. discolor*. It forms a somewhat erect-growing little shrub that flowers freely; the blossoms

D. gracilis venusta.—A medium-sized kind with narrow, pointed leaves and snow-white flowers, crisped at the edges.

D. gracilis campanulata.—This is taller than the others of its class, and bears long sprays of large milk-white

flowers, which are bell-shaped and borne on dark coloured stems.

D. gracilis carminea.—The flowers of this are pale rose in colour, with carmine tinted buds.

D. gracilis eximia.—Comes nearest to *D. gracilis*, its brown stems being covered with leaves of a dark bronzy-green, flower-heads rounded and erect, the expanded blooms frilled at the edges, pale rose on the outside, and milk-white within.

D. kalmiæflora.—A hybrid 3 feet to

containing about fifteen flowers. *D. Lemoinei* is largely grown for forcing, and so treated it is a delightful shrub, but out-of-doors, in many districts at least, the spring frosts often injure the blossoms.

D. Lemoinei Snowball.—Nearer to *D. parviflora* than its other parent, the flowers of this are mostly borne at the tips of the branches in compact rounded heads. Individually they are of great substance, with wavy petals, and in colour creamy-white, relieved by stamens and disc of pale yellow.

Deutzia parviflora.

4 feet high, flowering towards the end of May in spreading clusters of a pale silvery-rose colour, deepening towards the edges of the waved petals. The outside of the petals and the buds are of a bright rose-lake tint, while the peculiarity to which the plant owes its name is the ring of petal-like stamens forming a raised disc in the centre of the flower.

D. Lemoinei.—A hybrid, between *D. parviflora* and *D. gracilis*. In habit it is about midway between its parents, and forms a rather upright growing shrub, with elongated clusters of blossoms, each

D. Lemoinei Avalanche.—In this the stems are densely clothed with small dark green leaves and a profusion of crowded flower clusters, whose weight causes the stems to arch over in a pleasing manner. The flowers are of medium size, and it is hardy.

D. Lemoinei Apple Blossom.—An erect shrub, 2 feet high, laden with rounded clusters of 20 to 30 flowers, springing erect from every joint. The petals fold back prettily, with margins fringed and waved, passing from rose in the bud to blush-pink, becoming white when fully expanded.

D. Lemoinei Roseball.—A counterpart of the last, save in the flowers, which, opening towards the end of May, are of a bluish-pink with yellow stamens, the red flush deepening at the edges and on the outside of the petals.

D. myriantha.—The massive flower clusters of this open early in June, the bloom each three-quarters of an inch wide and of snowy whiteness, save for the pale yellow stamens. From the period at which it flowers this forms a valuable succession to those just named, while, in addition, it is perfectly hardy.

D. parviflora.—This species, which has played a part in the production of some of the varieties above named, is in itself a handsome shrub of 4 feet to 5 feet, its erect stems being crowned in spring by flattened clusters of flowers, suggestive of those of the Hawthorn. The manner in which the bark peels away in bands from the older stems is characteristic of this kind. It flowers in April and May, and it is by no means proof against spring frosts.

D. scabra.—To M. Lemoine we owe the reintroduction of this scarce shrub, the true *D. scabra*, a name often erroneously applied in gardens to *D. crenata*. The true *D. scabra*, which is from Japan, flowers about the middle of May, and is sometimes injured by late frosts. The shrub itself is a rather loose grower, while the flowers borne in spike-like clusters are each about half-an-inch across and of snowy whiteness with yellow stamens.

D. staminea.—A tender shrub from the moist mountain valleys of India, which except in particularly favoured parts of this country can only be regarded as suitable for the greenhouse. The flowers, at their best about midsummer, are white, and borne in compact terminal heads.

D. Vilmorinæ.—A new kind of considerable promise, native of China. It bids fair to attain a height of 5 feet to 6 feet, while the flowers, at their best in the early part of June, are disposed 20 to 35 together in large clusters, which, at first erect, become afterwards from their weight partially drooping. This though charming from the graceful habit of the plant and its bloom, has yet to be tested as to its value in the open air in this country.

DIANTHUS (Pink).—Plants of the highest garden value, containing several of our finest families of hardy flowers—the Carnation, Pink, and Sweet William—besides numerous alpine and rock plants that are among the most charming of mountain plants. Many of the species are plants of the heath, dry meadow, or maritime

Alps ; or shore plants, such as the Fringed Pink (*D. superbus*) ; and, so far as our climate is concerned, they are almost at home in lowland gardens. On the other hand, some are among the very highest alpine plants, like the Glacier Pink and the Alpine Pink.

The following is a selection of the best species for gardens.

D. alpinus (Alpine Pink).—A beautiful and distinct plant, distinguished at a glance from any other cultivated Pink by blunt-pointed shining green leaves. The stems bear in summer solitary circular flowers, of deep rose spotted with crimson, and when the plant is in good health they are so numerous as to hide the leaves. In

Dianthus alpinus (Alpine Pink).

poor, moist, and very sandy loam this Pink thrives and forms a dwarf carpet, though the flower-stems are little more than 1 in. in height ; but both leaves and stems are much more vigorous and tall in deep, moist peaty soil. Wire-worms cause its death more frequently than unsuitable soil. It should be placed in a fully exposed spot, and carefully guarded against drought, especially when recently planted. It is not difficult to increase from seed, and it comes true ; and it may be also increased by division. Alps of Austria.

D. barbatus (Sweet William).—One of the most admired of garden flowers, hardy and vigorous ; bearing a profusion of bright flowers which form sheets of bloom, the colours being vivid and pretty, and the flowers often finely and distinctly marked. What makes the Sweet William of such high value for small gardens is that

its culture is so easy, and it may be raised from seed without the aid of glass.

The Sweet William has been greatly improved of late years, and the old varieties are surpassed. The points the "florist" improver aims at are a circular flower, with no indentation where the petals meet, thick in petal, and with all the petals marked alike, the colours meeting each other in clearly defined lines without any feathering or flushing into each other; but in this, as in other flowers, the more variety the better. In the Sweet William colours vary, and they may be classed under two heads—dark and light kinds. Of the latter there is a strain known as the Auricula-eyed, the blooms of which have a clear white eye in a setting of red or purple or some other rich dark colour. Smooth-edged flowers, such as Hunt's strain, have their admirers. Fine, evenly rounded trusses are always present in a good strain, but size is generally allied to high culture. Except for shows, however, very large trusses are not the best, as they usually need support. The finest strain is usually found where year after year care has been exercised in selecting only the finest flowers, with the largest trusses and most varied markings. The only self-coloured flowers are those of pure white, pink, or crimson; all the others are parti-coloured or variously marked, some very prettily mottled, others more or less edged with white or pale pink.

CULTURE.—This is very simple; sow the seed in April, in a well-prepared bed in a sunny spot, thinning out the young plants when they are large enough, or, if a large stock is required, planting them out about 6 in. apart in good soil. About the end of September transplant them to their permanent quarters, and in the following summer they will bloom. When, however, any particular strain is to be rapidly increased the following plan is a good one: Sow in pots, and allow the seedlings to become a little drawn and lanky before planting out. Plant out in light loam, dressed only with a little leaf-mould or loam from rotted turfs, placing the seedlings so that a few of the lower joints are under the soil. When the blooming stems are well above the foliage, prick in a dressing of guano all round the plants, give plenty of water in dry weather, and a further slight dressing of guano just before the flowers begin to open. The result will be vigorous stocky shoots from the buried joints, all rooted and ready to plant out as soon as the bloom is over. Sweet Williams may

also be propagated by cuttings taken off in early summer; for the main stems, which should rise for bloom, creep along the ground, and throw up from every joint shoots suitable for cuttings; and a little sheaf of cuttings may be taken from the tips of the main stems, so that each plant would furnish over a hundred cuttings.

Double-flowered kinds, as a rule, are not desirable except the double dwarf magnificus, the deep velvety crimson flowers of which are the finest among the double kinds: the large heads of flower are numerous, the colour is rich and effective, it is a dwarf, vigorous grower, and soon forms a strong tuft.

D. Caryophyllus (*Carnation*).—This beautiful flower, so much loved in all countries where it can be grown both under glass and in the open air, in all its forms, is derived from a wild *Dianthus* of Western Europe and the Alps, which as regards our own country is wild on Norman castles such as Rochester. From very early days it seems to have been a favourite flower, as in Dutch pictures nearly 200 years old the Carnation, mostly in its striped forms, is shown in perfection. Clearly at this early date the tendency of the flowers to vary in colour and markings was greatly admired. At a very early date the Carnation was divided into four classes—viz. Flakes, Bizarres, Picotees, and Painted Ladies. The Flakes had two colours only, the stripes going the whole length of the petals. Bizarres (from the French, meaning odd or irregular) were spotted or striped with three distinct colours. Picotees (from the French, *piquotée*) had a white ground with additional colours in spots, giving the flowers the appearance of being dusted with colour. Painted Ladies had the under side of the petals white and the upper side red or purple, so laid on as to appear as if really painted. Unfortunately this class has so entirely disappeared that many growers are not aware that it ever existed. The first two classes still remain unchanged; but the Picotee, instead of being spotted, has the colours confined to the edge of the petals, and any spot on the ground colour (which may be either white or yellow) would detract from the merits of the flower as an exhibition flower.

Another class, too long neglected, consists of self-coloured kinds. A familiar type is the old crimson Clove, a sweet and lovely thing, which may be had also in several different shades of self-colour. The florists of the old school did not pay

much attention to self-coloured Carnations, and till recently there was a scarcity of fine varieties. We may now have them in all shades of colour. They combine hardiness and vigour with free blooming and great effect. For the flower garden they are the most important. They should be grown in bold groups or simple masses associated with Roses or choice hardy flowers.

The Tree Carnation is very valuable as a pot plant; or, if planted out in a greenhouse border, it produces flowers in winter and spring, when none can be had out-of-doors. The most popular of this class is *Souvenir de la Malmaison*, with large cream-coloured blossoms and de-

advancement of Carnation culture in gardens where we should see and grow fine selfs of brilliancy and beauty. As garden flowers Carnations have been badly treated, and yet there is no brighter and sweeter flower for the garden throughout summer and autumn. This fact is dawning on English raisers, but we have had the greatest success with fine French-raised selfs that combine hardiness with good form and colour, and, what is more precious, a perpetual blooming habit. Nothing could be better than *Countess of Paris*, *Carolus Duran*, *Colin de Harville*, *Mad Roland*, *Murillo*, *Madame Lafausse*, *Mdlle. Rouselle*, *Veronica*, *Jenny Lind*, *Comte de Mel-*

Bed of Carnations at Bulwick.

lightful fragrance, and from this have been obtained sports of different colours; so that, with these and other varieties, there is now no difficulty in obtaining all colours, from pure white to bright scarlet.

As a rule, the choice-named varieties of Picotees and Carnations for show are grown in pots, but we confine our remarks to their culture in the garden, also treating of it, shortly, from the exhibiting florist's point of view.

A great number of people still think Carnations are tender, and they coddle them up in frames throughout the winter. The florists, too, continue much in their old ways, which do not tend to the

bourne, and *Flora*. Of English kinds the only one we have had to equal the preceding is *Alice*, a white self of perfect form and a perpetual bloomer. Some standard kinds of the present are: *Ketton Rose*, *Purple Emperor*, *Mrs. Muir*, *Germania*, *Rose Celestial*, *Emma Lakin*, *Hebe*, *Mary Morris*, *Mrs. Reynolds Hole*, *Aline Newman*, *Celia*, and *Joe Willett*.

SOILS.—The soil has a marked influence upon Carnations. In very light hot soils as in Surrey they cannot be grown well at all. They want a loamy soil, but as this varies in texture and richness so the plants vary in growth. In very rich soils they are so luxuriant that it is necessary to make new plantations, annually destroying the old

plants. In some soils however they make a harder growth, and stand two or more years, spreading into great tufts and bushes.

CULTURE FOR BORDERS AND BEDS.—First, then, of the wants of the general grower, who rightly esteems a good crimson or white Clove as it grows in the open garden as much as the most exact staged flower. And rightly so, because, in the opinion of those who have thought and studied most about it, the superiority in form is wholly with the bold, free, undressed flower. What applies to the individual flower applies with greater force to its culture in the garden. It does not appear at its best in lines, or circles, or dotted here and there as in pattern gardening; but good kinds planted in groups of from twelve to fifty, according to room, will give us when in

Carnation.

flower the truest idea of the value of fine Carnations for ornamenting the garden. These groups should be renewed annually, or fresh ones should be made elsewhere, a stock of plants having been raised from layers. Only in a few cases are Carnations likely to spread and make healthy tufts, able to stand for two or three years. It is generally advisable to destroy the old plants after flowering, and, if we do not, the frost often does. Young strong layers, planted during September about 9 in. apart, will produce an effect hardly to be surpassed. Layering has to be performed when the plants are in full flower, and as it is undesirable to interfere with the groups in flower, the best plan is to have a few plants of each kind grown in nursery quarters solely for layering. We can then enjoy all that is gained from planting groups thickly, and suffer no inconvenience. We shall also have plenty of flowers, and can cut great numbers without missing them. Varied colour is the distinctive charm of the florist varieties. Few of them are likely to produce bold effects like the selfs, but they may be grown in special beds and borders in a less prominent spot. Some nurserymen are beginning to

see the mistake of neglecting a noble flower like this, and are trying to raise bold, free, and varied border flowers easily grown in every garden. They will succeed, and our gardens will be all the better for it. In specially cultivating the better kinds in beds, it is usual to cover the surface with 1 in. or more of fine rotten manure passed through a sieve, and in dry weather to give plenty of water; but as many will not pay more attention than is necessary, it may be stated that neither water nor top-dressing is usually required in good garden soil, and, without either, the result will be quite as valuable from an ornamental point of view. But when a good collection is grown in special little beds in a warm border of the kitchen garden, a top-dressing of one barrow of mould to three of decayed manure could be given in a very short time, and if the weather or soil were very dry an occasional heavy watering would improve matters. Varieties are endless; and as English, Continental, and American florists are busy raising seedlings, these varieties are likely to be much added to, though enough attention has not as yet been paid to the raising of vigorous border and flower garden kinds with a great range of colour, form, continuity of bloom, and fragrance. It would be well for raisers to discard the kinds which burst their flowers. This is a great defect, an unnatural habit too long condoned, and its evils are most manifest in the flower garden. In ordering, the public should distinctly make known their wishes as to colour, form, and fragrance. The Carnation does not depend for its beauty on elaborate instructions, which only the special grower for exhibition cares to master.

CARNATIONS IN POTS AND VASES.—It is a common practice to have pots and vases of flowers in the garden, but the Carnation is rarely seen in them. It is a grand flower for the purpose if naturally grown, allowing its flower spikes to droop where they will. The flowers on these last longer in bad weather, as they protect themselves from wet. Wherever pots can be stood they look admirable, but are seen to special advantage if above the line of sight. In window boxes they would make a pretty picture. The essential thing to do them well is to pot up some good strong layers in autumn and keep in a frame all the winter. In spring they should be potted into their flowering pots or vases. There should be no tying or training.

PERPETUAL CARNATIONS IN THE OPEN AIR.—These, if from a good strain

of French seed, are very satisfactory plants, and useful for cutting. Their drawback is the habit of flowering in winter, but this can be obviated by sowing early, so as to get them to a good size by autumn, when they will flower in the spring and continue to bloom all the summer. Pipings struck in the spring and planted out in the autumn will behave in the same way. Old plants are difficult to manage in the open air, but survive the winter if well thinned out ; the only

good mellow loam, or, if it be stiff, add the same quantity of sand. Then, whenever time can be spared, fork in the dressing well and dig it over. Then put the plants in firmly, putting all of the same sort in a row with a good legible label at the end. Being perfectly hardy, they will need no attention till next spring. At the same time take up and put in in the same way any seedlings sown in the spring, which will now be fine strong plants. The next spring, when the severe cold has

Redbraes Picotee.

danger is damp cold, which rots them at the surface of the ground. They grow very well in light rich soil on chalk. Their free-rooting habit makes them unsuitable for pots. Many of my plants filled almost 3 ft. of soil with their roots ; it is manifest waste to cram such free-growing plants in pots.—J. D.

GARDEN CULTURE FOR EXHIBITION.—About the end of July cover the bed intended to be devoted to Carnations, &c., about 2 in. with good rotten manure, and if the soil be sandy add to this 2 in. of

ceased (about March or April), hoe the beds over carefully between the rows, and in fine weather water them if they are dry. When the flower-stems begin to rise, place a stick about 30 in. long to each plant. These sticks should be painted a light whitish green. The flower-stems must be kept well tied up as they grow, but they must be tied quite loosely, for if they are tied tightly they will knee and bend, and finally break. About 20th June (or later), when the buds appear, take off all but three on each shoot, so as to leave

each bud a little footstalk to itself when it grows (what is lost by this in quantity will be regained twenty-fold in quality). From this time until the buds are near showing colour, give occasionally a little weak manure-water—a handful of well-rotted stable manure to a large pot of water. As soon as they show colour at the top, tie them round with a little strip of bass about half-way down. This should be done every morning in July, as it saves much trouble as well as the unsightly peculiarity termed a “split pod.” If in spite of this the pods split on one side, carefully open the bud all round at the other segments, using the flat wedge handle of a knife used for layering. Unless it is intended to save seed, cut off dead blooms as soon as they wither, and the flower-stems as soon as all the buds have come out, which will be about the end of August or beginning of September. Not later than the last week in July see to layering. As soon as the layers are rooted, which will be early in September, take them off and lay them in by the heels for a time, while taking up and throwing away the old stools, top-dress and fork over the bed with 2 in. of well-rotted stable litter or cow-house sweepings, replace the layers, and they will be in the same condition as at the beginning.

PROPAGATION BY SEED.—The proper time to sow is about April or May. Prepare a compost of equal parts of loam, leaf-mould, and silver sand, sift it fine, and fill a number of 3-in. pots (as many as you have sorts of seed) to within 1 in. of the rim. Sprinkle each pot with a fine rose, flatten the surface, and with the point of a knife put down the seeds separately about $\frac{1}{2}$ in. apart. Cover them very lightly with finely sifted compost, and put them in a cold frame or house out of danger of frost. When they show three pairs of leaves, prick them out about 2 in. apart round the edges of 5-in. pots filled with the same compost, and keep them still in the cool house till there is no fear of frost. When they are about 3 in. high, prick them out into beds, keeping them about 4 in. apart. The beds may be enriched with a little sand and manure. In the autumn they will be nice little plants, and may be planted where they are to flower, which will be the next year. Keep and name any really good kind, discarding all singles, and using the rest for borders or beds for cutting from.

BY PIPINGS.—When the plants throw up shoots too numerous to layer, or when

the root is attacked by disease, the shoots may be taken off as follows: Take the shoot just above the fourth or fifth joint from the top, and with a sharp pull draw it out from the socket formed by the next joint, which it will pull away with it. Just through the joint make a little upward slit in the cutting, and thrust it firmly into a pot filled to within 1 in. of the top with the compost described, and the rest with silver sand. Water the pot and plunge it in fibre under a hand-light for three or four weeks, when the pipings will be rooted. They may then be potted off singly or bedded like layers, and will flower the next year. Plants thus struck are never so good as those propagated by layers, but this method is a useful expedient to save a good sort or to get up a good stock.

BY LAYERS.—This is the best and most generally accepted method of propagating Carnations and Picotees. It should be commenced at latest the last week in July, and finished by the second week in August. It is performed as follows: Scrape away the earth round the plant to the depth of 2 in., and substitute for the earth removed the compost prescribed. Strip each shoot up to the top three or four joints, going all round the plant before proceeding farther. Then with a fine sharp knife cut half through a shoot, just below a joint, make a slanting cut up through the joint, and bring the knife out just above it; take a peg with a hook in it and thrust it into the fresh compost just above the tongue, so that as the peg comes down it will catch the tongue and peg it into the earth. Cover it with a little more compost placed firmly. Proceed thus all round the plant, finally watering carefully with a fine rose water-pot to settle the soil around the layers. In about a month the layers will be rooted, and by the second week in October all the young plants ought to be in their winter quarters.

SEVERAL DISEASES affect Carnations. Two of the worst are fungoid growths. One of these is a fungus which grows between the membranes of the leaf, and the only method of destroying it is to pick off and burn every infected leaf. It appears at first as a small blister which bursts, scattering its spores and leaving a dark-brown scar. A more familiar disease is that known as spot; a damp atmosphere or overcrowding of the plants being the causes. It spreads rapidly, but some kinds enjoy a complete immunity from it. Dusting the plants two or three times with a mixture of soot and sulphur has been

found effectual. The gout is a swelling of the stem close to the surface of the ground, which eventually bursts, supposed to be caused by little worms which eat their way into the collar of the plant and lay eggs there which hatch worms that feed upon and eventually kill the plant. The Maggot is a small insect with great powers for mischief. It comes in the spring from an egg laid no doubt in the skin or tissues of the leaf, and, eating its way down under the skin of the leaf, it makes a home in the main stem of the plant, eating out the centre and killing it.

Pink requires peculiar treatment, as in winter it perishes in the ordinary border, while quite happy on an old wall. It is a native of Europe and Britain (the rocks at Cheddar, in Somersetshire). To establish it on the top or any part of an old wall sow the seeds on the wall in a little cushion of Moss, if such exists, or, if not, place a little earth in a chink with the seed, and it may also be grown upon the rock-garden, in firm, calcareous, or gritty earth, placed in a chink between two small rocks.

D. deltoides (*Maiden Pink*).—A pretty

Dianthus neglectus (*Glacier Pink*).

The only remedy appears to be diligently searching for and hunting it out before it has traversed the leaf. Wire-worm is a pest to be reckoned with, but usually only gives trouble in fresh soil. Spittle fly, which appears when the flower-spikes are growing, must be destroyed, or it will do serious harm. An open situation and a well-drained soil are conditions unfavourable to the spot diseases, whilst rotation in planting keeps the stock free from the worm pests and maggots.

D. cæsius (*Cheddar Pink*).—One of the neatest and prettiest of the dwarf Pinks, the fragrant and rosy flowers appearing in spring, on stems 6 in. high, and in good soil sometimes taller. This

native plant, with bright pink-spotted or white flowers, on stems from 6 to 12 in. long. It grows almost anywhere, in borders or on rockwork, does not appear to suffer from wire-worm, like most other Pinks, and often flowers several times during the summer. It may be readily raised from seed, and is easily increased by division. The variety *glauca* has white flowers with a pink eye. It is abundant on Arthur's Seat, near Edinburgh, and forms a charming contrast to the crimson kind.

D. dentosus (*Amoor Pink*).—A distinct and pretty dwarf Pink, with violet-lilac flowers, more than 1 in. across, the margins toothed, and the base of each petal having a regular dark-violet spot, which forms a

dark "eye" nearly $\frac{1}{2}$ in. across in the centre of the flower. The plant flowers from May or June till autumn, and thrives in sandy soil, in borders, or on rockwork ; seed. South Russia.

D. neglectus (*Glacier Pink*).—A brilliant alpine plant, forming, very close to the ground, tufts like short wiry grass, from which spring many flowers, 1 in. across, and of bright rose. It grows freely in very sandy loam, either in pots or on the rock-garden, rooting into the sand through the bottom of the pots as freely as any weed, is hardy, easily grown, increased by division and seed. Alps and Pyrenees. *Syn.*, *D. glacialis*.

D. petraeus (*Rock Pink*).—A charming Pink, forming hard tufts, 1 or 2 in. high, from which spring numerous flower-stems, each bearing a fine rose-coloured flower. It seems to escape the attacks of wire-worm. It flowers in summer, and should be planted on the rock-garden in sandy and rather poor moist loam. Hungary ; seed or division.

D. plumarius (*The Common Pink*).—This is the parent of our numerous varieties of Pinks, and has single purple flowers, rather deeply cut at the margin, and is naturalised on old walls in various parts of England. The wild plant is rather handsome when grown in healthy tufts, but on the level ground it is apt to perish. The many fragrant double varieties are welcome everywhere, and should be cultivated as rock or bank plants, as they live longer and thrive better when raised above the general level of the ground, though they grow well in ordinary soil. They have for many years been amongst the favourite "florists'" flowers in European countries, and are hardier and dwarfer than the Carnation. In August, Pinks should be planted 9 in. apart, the ground being rich and well prepared. If the winter be very severe, a little litter should be put over them, and in spring the surface of the beds should be stirred a little, and given a top-dressing of fine old manure and a slight dusting of guano. As they push up their flower-spikes these should be staked, and if they are for exhibition the buds should be thinned, as many varieties produce buds too freely. The culture of Pinks, however, either for exhibition or for the garden, is simple, and the outlay small. Get newly struck pipings in August and September—the best months to plant them in a sunny place. In a smoky town a cold frame will be needed ; but if the air be clear, an open bed will do.

When the pipings are once planted in the open garden, they require little care till they begin to push up their flower-stems. Spring planting should be commenced as early as the weather permits, and, as soon as the plants begin to grow, the bed should be mulched about 1 in. deep with equal quantities of well-rotted horse manure and leaf-mould. The plants will then fast push on their new growth.

INCREASING STOCK.—If the plants have made good growth in July, cut the strongest shoots with a sharp knife, cut off the ends of the grass, and cut the shoot two or three joints below the grass or leaves. Prepare some ground as follows : Scatter a little salt on the surface, then riddle on 2 in. deep of fresh soil, prick in the pipings, and put a light or hand-glass over them ; and they will be rooted in a few weeks.

Where seed is wanted, protect the flowers from wet, and as they decay remove the withered petals, which encourage damp and form a harbour for insects. Seed should be saved only from the finest and most constant varieties of vigorous and hardy growth, and may be sown early in June in pots, or in the open ground.

GARDEN OR BORDER PINKS.—The show Pinks may be left to the exhibitor. There are certain kinds both old and new which must be taken care of by the "general lover" of flowers. These are the hardier border kinds, grown for their beauty and fragrance. As in the case of the hardier Carnations, we must encourage these. Some of the best of the hardier kinds are—Anne Boleyn, Ascot (soft pink), Fimbriatus major, Fragrans (pure), George White, Hercules, Lady Blanche, Mrs. Moore, Mrs. Pettifer, Mrs. Sinkins (Mule Pink), Marie Paré (Mule Pink), Napoleon III., Multiflorus, Newmarket, Pluto, Purity, Robustus, Rubens, Thalia, White Queen, Wm. Bruce, High Clére, Multiflorus flore-pleno, Multiflorus roseus, Stratiflorus, Speciosus fl.-pl., Coccineus, Early Blush, Fimbriatus albus (old white), Lord Lyons, Miss Joliffe, Nellie, White Perpetual, the Clove Pink, Her Majesty.

DWARF SINGLE AND DOUBLE PINKS.—Messrs. Dicksons, of Edinburgh, have raised some dwarf profuse - blooming Pinks so compact in habit and stiff in stem that they do without stakes. Most Pinks are better without stakes, especially when their foliage is healthy, and is in such wide tufts as to shield the flowers from splashed earth ; but these new dwarf sorts may be compact enough for

the rock-garden. Mr. J. Grieve, who raised them, says: "Both the single and the dwarf double varieties will prove quite a boon to the flower-gardener and for bouquets. To the ordinary eye all florists' Pinks consist of but one variety; whereas amongst the single and dwarf sorts there are endless colours, and many of the flowers are so varied in colour as to render them easily mistaken for other plants. Numbers of the single sorts look like miniature Petunias." *Carnea Beauty*, *Delicata*, *Rosea*, *Spicata*, and *Odorata* are among the best of these new dwarf Pinks, and the class will no doubt be added to.

D. sinensis (*Chinese Pink*).—This has given rise to a race of beautiful garden flowers. It is an annual, or biennial, according to the way it is sown and grown. If sown early, the plants will flower the first year; if late, the second. On dry soils, and if the winters be mild, they will live for two or three years. The varieties, both single and double, are now very numerous and beautiful, and may be classed under *D. Heddegi* and *D. laciniatus*. The forms of *Heddegi*, the Japanese variety, are dwarf and handsome, while there are double-flowered forms, particularly *diadematus*, the flowers of which are large and very double. The petals of the lacinated section are very deeply cut into a fine fringe. Of this class there are also double-flowered forms. The colours of both are much varied, and there are striped crimson and white sorts. There is a pretty dwarf class (*nanus*), about 6 in. high, but it is less useful than the taller varieties for cutting from. Two beautiful and distinct selected sorts, *Crimson Belle* and *Eastern Queen*, are among the best varieties. Sow *D. sinensis* under glass in February, with very little or no bottom-heat; give air freely during open weather, and in April plant out in well-cultivated soil, which need not be rich. Place the plants 9 in. to 12 in. apart each way, and they will form compact tufts. Encourage the laterals by pinching off decayed flowers, and the result will be a mass of blossom throughout the summer, and probably till November. Some sow in autumn, and winter the young plants in frames or under hand-glasses,—hardening them off by degrees in spring, until they have become fully established. These Pinks are admirable for the flower garden, either in beds by themselves, or mixed; they may be well used with taller plants of a different character dotted sparsely among them.

D. superbus (*Fringed Pink*).—A fragrant wild pink, easily known by its petals being cut into strips for more than half their length. It inhabits many parts of Europe from Norway to the Pyrenees, and is a true perennial, though it perishes so often in gardens that many regard it as a biennial. It is more likely to perish in winter on rich and moist soil than on poor and light soil, and, when it is desired to establish it as a perennial, it should be planted in fibry loam, well mixed with sand or grit. It grows, however, on nearly any soil; and, by raising it every year from seed, an abundant stock may be kept up even where the plant perishes in winter. It comes true from seed, and is often more than 1 ft. high; flowering in summer or in early autumn, and is better suited for mixed beds and borders than for the rock-garden.

DIAPENSIA (*D. lapponica*) is a sturdy and dwarf evergreen alpine shrub, often under 2 in. in height, growing in dense rounded tufts, having narrow closely packed leaves, and bearing in summer solitary white flowers, about half an inch across. It may be grown well on fully exposed spots on the rock-garden, in deep sandy and stony peat which is kept well moistened during the warm season. It is a native of N. Europe and N. America, being found on high mountains or in arctic latitudes.

DICENTRA (*Bleeding Heart*).—Graceful plants of the Fumitory Order, including about half a dozen cultivated species, of which the finest are—

D. chrysantha.—This handsome plant forms a spreading tuft of rigid glaucous foliage, from which arises a stiff leafy stem, 3 to 4 ft. high, with long branching panicles of bright golden-yellow blossoms, about 1 in. long in August and September; it seems hardy in light rich soil if warm and sheltered. Seed. California.

D. Cucullaria (*Dutchman's-breeches*) and *D. thalictifolia* are less important, and rather belong to the curious garden.

D. eximia combines a Fern-like grace with the flowering qualities of a good hardy perennial. From 1 to 1½ ft. high, with numerous reddish-purple blossoms in long drooping racemes. It is useful for the rock-garden and the mixed border, or for naturalising by woodland walks; thriving in rich sandy soil. Division. N. America.

D. formosa is similar to the preceding, having also Fern-like foliage, but is dwarfer in growth, its racemes shorter and more crowded, and its flowers lighter. Suitable for same positions as *D. eximia*. California.

D. spectabilis.—A beautiful plant, too well known to need description, as nearly every garden is adorned with its singular flowers, which resemble rosy hearts, and, in strings of a dozen or more, are gracefully borne on slender stalks. It succeeds best in warm, light, rich soils, if in sheltered positions, being liable to be cut down by late spring frosts. It is moreover suited for the mixed border, but is of such remarkable beauty and grace that it may be used with the best effect near the lower flanks of rockwork, in bushy places near it, or on low parts where the stone or "rock" is suggested rather than shown. It is worthy of naturalisation on light rich soils by wood walks. It is also excellent for mixed borders, and for snug corners on the fringes of choice shrubs in peat, as such soil suits it well. There is a "white" variety, which is by no means so ornamental, though worth growing for variety's sake. Propagated by division in autumn.

The species are *D. canadensis*, N. Amer. *chrysantha*, Calif. *Cucullaria*, N. Amer. *eximia*, do. *formosa*, do. *lachenaliaeflora*, Siberia. *ochroleuca*, Calif. *pauciflora*, Calif. *pusilla*, Japan. *Roylei*, Mts. of India. *scandens*, do. *spectabilis*, Japan. *thalictrifolia*, Mts. of India, *torulosa*, do. *uniflora*, N. America.

DICKSONIA.—A noble evergreen Tree Fern, *D. antarctica* having a stout trunk, 30 ft. high or more, the fronds forming a magnificent crown, often 20 to 30 ft. across. They are from 6 to 20 ft. long, becoming pendulous with age. It is the hardiest of Tree Ferns, and the most suitable for the open air, in sheltered shady dells. From the end of May to October. In favourable localities it may even be left out all the winter.

D. punctilobula.—A beautiful hardy fern found in shady woods and moist copses in North America, from New Brunswick and Canada to the central United States. Its graceful pale-green fronds are 1 to 2 feet long and 5 to 9 inches broad, twice or thrice divided, and carried upon roots which creep just under the ground. The fronds are held very erect upon hairy stems, are soft in texture, and dry prettily in the autumn, when the tiny glands on the under surface give out a pleasing fragrance to which the plant owes its name of the Hay-scented Fern. It is hardy in Britain, thriving in peaty or leafy soils in partial shade. *Syn.*, *Dennstaedtia punctilobula*.

DICTAMNUS (*Fraxinella*). — *D. Fraxinella* is a favourite old plant, about 2 ft. high, forming dense tufts, flowers pale

purple, and with darker lines (there is a white form) borne in racemes in June and July. This plant does best in a light soil. It is propagated by seeds sown as soon as they are ripe, or by its fleshy roots, which, if cut into pieces, in spring, will form good plants much quicker than seedlings. It is a slow-growing plant in most gardens, though it is freer in some warm soils, and

Dictamnus Fraxinella.

a very long-lived plant where it likes the soil. It is at home in the sunny mixed border among medium-sized plants. Caucasian Mountains.

DIDISCUS.—A native of New Holland, and from 1 to 2 ft. high. In *D. cœruleus* the stems are erect and much branched, each branch terminating in a flat umbel of small flowers, of a pleasing clear blue colour, which are borne freely from August to October. It is a half-hardy annual, and requires rather careful treatment, as it is impatient of excessive moisture, especially in the early stages of its growth. It requires to be raised in a gentle hotbed, and the seedlings should be transplanted in May to a warm friable soil, in which they will flower freely. Those who seek distinct and novel effects might use this plant, as its pretty blue flowers are uncommon in the Parsley Order, which usually has pale flowers. A little bed or groundwork would be charming if only as a change. *Syn.*, *Trachymene cœrulea*.

Dielytra. See DICENTRA.

Diervilla. See WEIGELA.

DIGITALIS (*Foxglove*).—The most important plant of this genus is our native Foxglove, and the handsomest of the several species in cultivation. The best of the exotics is *D. grandiflora*, a tall slender plant, bearing large bell-shaped yellow blossoms in long racemes. The other kinds are *D. ferruginea*, *aurea*, *eristachys*, *fulva*, *lævigata*, *lanata*, *lutea*, *ochroleuca*, *parviflora*, *Thapsi*, *tomentosa*, but these are suited mainly for botanical collections.

D. purpurea (*Foxglove*).—Wild Foxgloves seldom differ in colour, but cultivated ones assume a variety of colours, including white, cream, rose, red, deep red, and other shades. The charm of these varieties, however, lies in their pretty throat-markings—spots and blotchings of deep purple and maroon, which make large flowers resemble those of a *Gloxinia*; hence the name *gloxiniæflora* is applied to some finely-spotted kinds. The garden plants make grand border flowers; they are more robust than the wild plant, and have stouter stems and larger flowers. If associated with other tall plants, they look well as a background to mixed borders; and the improved varieties have a fine effect in the wild garden if planted or sown in bold masses. They are good, too, among *Rhododendrons*, where these bushes are not too thick, and they charmingly break the masses of foliage. The seed is small, and is best sown in pans or boxes, under glass, early in May. When the young plants are well up they should be placed out of doors to get thoroughly hardened before being finally planted out. In shrubbery borders varied clumps of several plants produce a finer effect than when set singly. The Foxglove frequently blooms two years in succession; but it is always well to sow a little seed annually; and if there be any to spare, it may be scattered in woods or copses where it is desired to establish the plants. Those who do not require seed should cut out the centre spike as soon as it gets shabby, and the side shoots will be considerably benefited, especially if a good supply of water be given in dry weather. In a good variety a side shoot will supply an abundance of seed.—D.

The species are:—*D. ambigua*, W. Asia. *atlantica*, Algeria. *ciliata*, Caucas. *cochin-chinensis*, Cochinch. *dubia*, Balearics. *eristachya*. *ferruginea*, S. Europe. *Fontanesii*. *gloxinioides*. *laciniata*, Spain. *lævigata*, Danube and Greece. *lanata*, do. *leucophaea*, Greece. *longibracteata*, Austria. *lutea*, S.

Europe. *lutescens*, France. *mariana*, Spain. *minor*, Spain. *nervosa*, Persia. *obscura*, Spain. *orientalis*, As. Min. *parviflora*, S. Europe. *purpurascens*, Europe. *purpurea*, do. *sibirica*, Siberia. *Thapsi*, Spain. *viridiflora*, Greece.

DIGRAPHIS (*Ribbon Grass*).—Grasses, of which the Ribbon Grass (*D. arundinacea variegata*) is the most familiar. Being hardy and perennial, it is valuable for good effect in the flower garden. It should be treated liberally, and renewed by young plants every other year. If it be not desired in the flower garden proper, a few tufts by a back shrubbery will suffice. It grows anywhere.

Dimorphanthus. See ARALIA.

DIMORPHOTHECA (*Cape Marigold*).—A hardy annual from the Cape, 18 in. to 2 ft. high; the flowers of *D. pluvialis* are white and purplish-violet beneath, expanding in fine weather. Plants from spring-sown seed flower from July to September. It is a bold free annual thriving in any good soil and an effective ground plant with the larger flower-garden subjects; alone, however, it is well worth growing. *Compositæ*.

DIOTIS (*Sea Cotton-weed*).—*D. maritima* is a dwarf cottony herb suitable for the rock-garden, and sometimes employed in the flower-garden as an edging plant. It is apt to grow rather straggling, and to prevent this it is kept neatly pegged down and cut in well. It should have deep sandy soil. Increased by cuttings, as it seldom seeds in gardens. Native of our southern shores.

DIPHYLLEIA CYMOSA.—A perennial of the Barberry family, about 1 foot high, having large umbrella-like leaves in pairs. It flowers white, in loose clusters in summer, and succeeded by bluish-black berries. N. America, on the borders of rivulets and on mountains, thriving in peat borders and fringes of beds of American plants in moist soil.

Diplopappus. See ASTER.

DIPSACUS (*Tassel*).—Coarse-growing plants, annual or biennial, striking in form in woods and hedgerows, where their fine foliage and habit have a good effect. There are three native species, *D. Fullonum*, *pilosus*, and *sylvestris*; the boldest kind is *D. laciniatus*, a European species growing 5 to 8 ft. high, with large deeply-cut foliage. The seed may be sown in woody places and by freshly broken hedge-banks, where the plants will often perpetuate themselves.

DODECATHEON (*American Cowslip*).—Beautiful plants, of the Primrose family, perennials from N. America, where they are called Shooting Stars. They are all

hardy, requiring a cool situation and light loamy soil. The nature of the soil is, however, of small importance, as they grow almost as freely in peat or leaf-mould as in loam ; situation is the principal point. In borders where Primulas and Soldanellas thrive, Dodecatheons will soon establish themselves. All the kinds grow freely in sandy loam, and soon form large tufts, which should be divided every third or fourth year. The best time for transplanting them is the end of January or the beginning of February, when the roots are becoming active ; but care must be taken not to divide them into pieces too small, for fear of losing the plants while they are in a weakly condition. All may be easily raised from seed.

D. integrifolium.—A lovely flower ; the petals have a white base, and spring from a yellow and dark orange cup, the flowers deep rosy crimson, on stems from 4 to 6 in. high, in March. It is a native of the Rocky Mountains, and a choice plant for the rock-garden, if planted in sandy peat or sandy loam with leaf-mould. It is easily grown in pots placed in the open air in some sheltered and half-shady spot during summer, and kept in shallow cold frames during winter. Strong well-established plants produce abundance of seed, which should be sown soon after it is gathered. Careful division.

D. Jeffreyanum.—A stout kind, more than 2 ft. high in good soil, with larger and thicker leaves than *D. Meadia*, reddish midribs strong and conspicuous, and the flower somewhat larger and darker. *D. Jeffreyanum* is a hardy and distinct plant, thriving in light, rich, and deep loam, in a warm and sheltered spot, where its great leaves are not broken by high winds.

D. Meadia (*American Cowslip*), a graceful plant and a favourite among old border flowers, its slender stems from 10 to 16 in. high, bearing umbels of elegantly drooping flowers, the purplish petals springing up vertically from the pointed centre of the flowers, something like those of the greenhouse *Cyclamen*. It loves a rich light loam, and is one of the most suitable plants for the rock-garden, for choice mixed borders, or for the fringes of beds of American plants. In many deep light loams it thrives without any preparation, but where a place is prepared for it, it is best to add plenty of leaf-mould and plant in a somewhat shaded and sheltered position, though it often thrives in exposed borders. It is best increased by division when the plants die down in autumn ; but if seed is sown, it should be sown soon after it is gathered. There are numbers of pretty and distinct

varieties, differing more or less in height of plant and size and colour of flower. Among the best are *D. giganteum*, *elegans*, *albiflorum*, and *violaceum*. *D. californicum*, though sometimes thought a species, is probably only a variety of *D. Meadia*. It is, however, a distinct and pretty plant, and worth growing.

DONDIA (*D. Epipactis*) is a singular and pretty little herb, 3 to 6 in. high, having small heads of greenish-yellow flowers in spring, and suitable for the rock-garden, margins of borders, or banks ; increased by division after flowering. A model rock plant, a native of Carinthia and Carniola. *Syn.*, *Hacquetia Epipactis*.

DORONICUM (*Leopard's Bane*). — Showy plants of the order *Compositæ*, of which half-a-dozen species are in gardens, all of vigorous growth, flowering in spring, and thrive in any soil ; they are therefore excellent for rough places, for naturalising,

Doronicum plantagineum excelsum.

or for dry banks, where little else will thrive. All are readily increased by division of the roots. They range in height from 9 to 12 in., and have large, bright yellow Daisy-like flowers. The best species are *D. austriacum* and *caucasicum*, both of which are neater than the rest and produce in early spring a profusion of blossoms that enliven the borders besides being useful for cutting. The other kinds are *D. Clusi*, *carpetanum*, *Columnæ*, *Pardalianches*, and *plantagineum*, all natives of Europe. *D.*

plantagineum var. excelsum (*syn.*, Harpur Crewe) is by far the best.—D.

The species are: *D. altaicum*, Siberia. *austriacum*, Europe. *Bourgaei*, Canaries. *cacaliæfolium*, As. Minor. *carpetanum*, Spain. *caucasicum*, As. Minor. *Clusii*, Pyrenees. *Columnæ*, S. Europe and As. Min. *corsicum*, Corsica. *croaticum*, S. Europe. *dentatum*. *Falconeri*, Spain. *glaciale*, do. *grandiflorum*, Europe. *hirsutum*, do. *hungaricum*, S.E. Europe. *macrophyllum*, Caucas., Persia. *maximum*, Armenia. *oblongifolium*, Caucas. *Orphanidis*, Greece. *Pardalianches*, Europe. *plantagineum*, Europe. *Roylei*, Mts. of India. *scorpioides*, Europe. *stenoglossum*, China. *Thirkei*, Bithynia.

DOUGLASIA. See ANDROSACE.

DOWNINGIA.—Charming little Californian half-hardy annuals, generally known as Clintonia. There are two species, *D. pulchella* and *elegans*, similar to each other, resembling the dwarf annual Lobelias in habit, but more brilliant in colour. *D. pulchella* is of dwarf habit, rarely exceeding 6 in. in height, and is suitable for edging small beds or borders, as when covered with its bright blue flowers it is very pretty. In March and April the seed should be sown in the open ground in a free soil and an open situation, but, if the plants are intended for pot culture, the sowing should be two months earlier. Each plant should be allowed quite 8 in. for development, and in hot weather those from the latest sowing should be well watered. The flowers of the several varieties of *D. pulchella* differ in colour, the best variety being alba (white), rubra (red), and atropurpurea (dark purple).

DRABA (*Whitlow Grass*).—Minute alpine plants, most of them having bright yellow or white flowers, and leaves often in neat rosettes. They are too dwarf to take care of themselves among plants much bigger than Mosses, and therefore there are few positions suitable for them; but it would be very interesting to try them on mossy walls, ruins, or bits of mountain ground with sparse vegetation. The best-known and showiest is *D. aizoides*, found on old walls and rocks in the west of England. It forms a dwarf, spreading, cushion-like tuft, which, in spring, is covered with bright yellow blossoms. *D. Aizoon*, *alpina*, *ciliaris*, *cuspidata*, *lapponica*, *rupestris*, *frigida*, and *helvetica* are very dwarf, compact-growing plants. In each the small flowers, white or yellow, are produced abundantly. Rarer kinds are *D. Mawi*, *glacialis*, and *bruniæfolia*, all worth growing in a full collection of alpine flowers for a choice rock-garden.

Dracæna. See CORDYLINÆ.

DRACOCEPHALUM (*Dragon's-head*).—Plants of the Sage family, among them a few choice perennials suitable for the rock-garden or the mixed border, succeeding in light garden soil and increased by division or seed. *D. altaense* has bright green leaves, and axillary clusters of large tubular flowers of a dense Gentian-like blue, spotted with red in the throat. *D. austriacum* has flower-stems nearly 1 ft. in height, densely covered with rich purple blossoms; *D. Ruyschianum*, a handsomer species, has narrow Hyssop-like leaves and purplish-blue flowers, but its variety *japonicum*, a new introduction from Japan, is even more showy. *D. peregrinum*, with pretty blue flowers always produced in pairs, is desirable, and so is *D. argunense*, which is a variety of *D. Ruyschianum*. The most beautiful of all is *D. grandiflorum*, a rock-garden plant, which is the earliest in flower. It is very dwarf, and has large clusters of intensely blue flowers, which scarcely overtop the foliage. In *D. speciosum*, a Himalayan species, the small deep purple flowers are nearly smothered by the large green bracts. The hardy annual kinds, such as *Moldavicum* and *D. canescens*, are ornamental, and worth a place in a full collection.

DRIMYS.—Evergreen shrubs of the Magnolia family, natives of Tasmania, Australia, and South America, thriving also as evergreens in much of the southern parts of England and Ireland. *D. aromatica* is sometimes known as *Tasmanian aromatica*, R.Br.; *D. Winteri*, Winter's Bark, is a native of South America; these graceful shrubs are worth a place in the range of southern country, while they thrive in free soil and sheltered lawns.

DROSERA (*Sundew*).—Most interesting little bog-plants, of which all the hardy species but one are natives of Britain. All are characterised by tufts of leaves which have their surfaces covered with dense glandular hairs. When the native kinds are grown artificially the condition of their natural home should be imitated as far as possible. In a bog on a very small scale it is not easy to secure the humid atmosphere they have at home, but they will grow wherever Sphagnum grows. The native kinds are *intermedia*, *longifolia*, *obovata*, and *rotundifolia*. The North American Thread-leaved Sundew (*D. filiformis*) is a beautiful bog-plant, with very long slender leaves covered with glandular hairs, the flowers purple-rose colour, half an inch wide, and opening only in the sunshine. It is quite hardy, but appears difficult to cultivate.

DRYAS (*Mountain Avenas*).—Mountain plants of the Rose family, containing two or three dwarf alpine plants of spreading growth and neat evergreen foliage. They thrive in borders in light soil, though they are seen to best advantage in the rock-garden, where they can spread over the brows and surfaces of limestone rocks, best on an exposed spot, not too dry, though when well established they will flourish under almost any conditions. Division in spring. The kinds are *D. Drummondii*, a dwarf, hardy, evergreen trailer, with flower-stems 3 to 8 in. high; its yellow flowers, 1 in. across, appear in summer. A native of N. America. *D. octopetala*, a creeping evergreen, forming dense tufts, with pretty white flowers. It is a British plant and there are two others, *D. lanata*, a native of Europe, and *D. integrifolia*, American.

ECCREMOCARPUS.—*E. Scaber* is a delightful old climber for walls, trellises, and pillars, its orange-red flowers are beautiful, and its rambling shoots graceful. If the roots are protected during winter, they are uninjured and the plant annually increases in size. Increased freely by seed, and should be raised in this way occasionally. Syn., Calampelis.

ECHEVERIA.—Dwarf succulent plants, much used in the flower garden, especially the half-hardy species like *secunda*. Other species are tenderer and need a greenhouse to keep them through the winter, and a warm house or frame to propagate them in the spring. *E. secunda* is well known by its pale green rosette, leaves tipped with red. *E. s. major* is but a mealy form of the same. *E. s. glauca* differs only in having leaves rather more pointed and glaucous. *E. s. pumila* is a smaller form, with narrow leaves of the same colour as *E. s. major*. *E. glauca* *metallica* is intermediate between the well-known *E. metallica* and *E. secunda* *glauca*. Dwarf and massive, the leaves are very solid and fleshy. *E. metallica* is a noble species, and distinct in the size of its leaves and in their rich metallic hue. The dwarfer kinds are used mostly as edgings or panels. The fine *E. metallica* is very effective on the margins of beds and groups of the dwarfer foliage plants, or here and there among hardy succulents. It should be planted out about the middle of May.

INCREASE.—As soon as the seed is ripe prepare to sow it. Fill some 4-in. pots to within $\frac{1}{4}$ in. of the rim with equal proportions of leaf-mould and well-sanded loam. Make the surface very firm, and water the soil so that the whole body of it becomes thoroughly moistened. Having

allowed the moisture to drain away, scatter the seed lightly and cover it thinly with silver sand. Place the pot in a hand-light or in a close frame; cover with a pane of glass and shade. The seed will germinate before the soil can dry, and if it is sown as soon as it is ripe every seed will come up. As soon as the seedlings are large enough to handle, prick them out thinly into pans or 6-in. pots; keep them close until they are fairly established, and then allow them the full benefit of sun and air. After the middle of September give no water, and take care to remove all decay as soon as it is perceived. If planted early in April in well-worked and fairly-enriched soil, these little plants will be strong by the autumn. There is another method of increasing them. With a sharp knife cut out the heart of the plant, so as to induce offshoots. These taken off will speedily make good specimens. *E. metallica* may be increased in the following manner: Take off the flower-stems which come early in the season; cut off the embryo flowers and place the stems in pots of sandy soil. These stems will strike and will produce little offsets from the axils of the flower-stem leaves. If these are taken off they will readily strike. *E. metallica* may also be raised from seed in the manner above described.

Echinacea. See RUDBECKIA.

ECHINOCACTUS.—*E. Simpsoni* is a beautiful little Cactus (*Pincushion Cactus*) plant, a native of Colorado, occurring at great elevations, and hardy. It grows in a globular mass, 3 or 4 in. across, which is covered with white spines. It flowers early in March, bearing large pale purple blossoms which are very beautiful. In its native habitat it enjoys a dry climate, and, in some seasons at least, is more or less protected from frost by a covering of snow. In this country, however, it has withstood 32° of frost.

One of its varieties grows at the altitude of 8,500 feet above sea-level—where frost occurs every month in the year and the growing season is very short.

The common form is globose and thickly set with interlacing spines, so that the body of the plant is hidden. The colour varies to light brown, gray, and rarely to snow-white. The flowers are pink or red, arranged in a cluster or circle at the top of the plant. This grows all among the lower mountains and foothills, and sometimes on the rolling lands adjoining.

ECHINOCEREUS.—Plants of the Cactus family (from arid regions in N. America), some of which are hardy. All

are beautiful, and some quite splendid when in flower. *E. Fendleri* bears some of the brightest flowers. Other kinds are *E. naphiceus*, *gonacanthus*, *viridiflorus*, and *paucispinus*. Give them soil which is well drained and a sunny,

Echinocereus.

exposed place away from all protection, taking care so to place them in relation to surrounding objects that their stems cannot easily be hurt. A few protecting stones can be grouped so as to keep off the digger and other dangerous animals. A close turf of some dwarf clean alpine will prevent earth-splashings and will improve the effect.

Echinochloa. See PANICUM.

ECHINOPS (*Globe Thistle*).—A fine hardy plant from S. Russia, 3 to 5 ft. high,

Echinops ruthenicus (*Globe Thistle*).

covered with a silvery down, *E. ruthenicus* having the flowers blue, in round heads.

Thrives in ordinary soil. Easily multiplied by division of the tufts, or by cuttings of the roots in spring. It is the most ornamental of its distinct family, and is highly suitable for grouping with the bolder herbaceous plants. It would also look well when isolated on the turf. There are other species, mostly from S. Europe and the Levant, among which are *E. Ritro* and *E. banaticus*; but we have never seen any so good as *E. ruthenicus*, and, as the species are very much alike, it is enough to grow the best. *E. sphærocephalus* is a fine species tall and handsome; *giganteus* is a garden variety of the above, more robust, and with larger heads.

ECHIUM (*Viper's Bugloss*).—Handsome plants of the Forget-me-not Order, the finer kinds of which, though superb in the open gardens of S. Europe, are too tender for our gardens. *E. plantagineum* is one of the handsomest of the annual or biennial species. Its showy flowers, of rich purplish-violet, are in long slender wreaths that rise erect from a tuft of broad leaves. It is handsomer than our indigenous species, *E. pustulatum* and *E. vulgare*. *E. rubrum* is a scarce and handsome species, its habit is similar to those above mentioned, but its colour is a reddish-violet, similar to the attractive *E. creticum*. The Salamanca Viper's Bugloss (*E. salmanticum*) is another fine kind, but difficult to obtain, except from its native locality. These five species are now in cultivation, and are representative of the annual and biennial *Echiums*. They are all showy and of the simplest culture. The seeds should be sown in ordinary garden soil, either in spring for the current year's flowering, or late in autumn for flowering in early summer. Our native *E. vulgare* is good in certain positions; its long racemes of blue flowers are handsomer than those of the Italian *Anchusa*. Against a hot wall, where nothing else would grow, Dr. Acland, of the Grammar School, Colchester, planted some, and they gave a beautiful bloom. It is valuable for such positions, particularly on hot gravelly or chalky soils.

Edraianthus. See WAHLENBERGIA.

Edwardsia. See SOPHORA.

ELÆAGNUS (*Oleaster*).—Several of the Oleasters are beautiful shrubs, and deserve to be much more widely cultivated than they are now.

E. angustifolia, the form which grows wild in South-eastern Europe, is the wild Olive of the old Greek authors, and in some modern books is called Jerusalem Willow. The long silvery-gray fruit is constantly sold in the Constantinople

markets under the name of Ighidé agághi, and is sweet and pleasant to the taste, abounding as it does in a dry, mealy, saccharine substance; it possesses the property of retaining, for a considerable time after being gathered, its usual size and form. The general aspect of this form is much more that of a Willow than an Olive, the long lanceolate leaves being grayish above and silvery-white beneath. Under cultivation I have seen this thrive in a dry, hungry, sandy soil, and attain tree-like proportions with a stem as much as a foot in diameter. This deciduous species is capable of being turned to good account by the landscape gardener; the yellow tubular flowers are produced in profusion.

E. argentea, or **E. canadensis** (the *Silver Berry*, or *Missouri Silver Tree*), has very fragrant tubular yellow flowers, followed by an abundance of nearly globular, dry, mealy, edible fruit. This species gives a characteristic feature to the vegetation of the Upper Missouri valley, and in a wild state grows 8 or 10 ft. in height, and throws up an abundance of suckers, a habit which, at any rate in a young state, does not appear to occur so much under cultivation. The oval leaves are silvery-white. In nearly all British and foreign nurseries this species is confused with the Buffalo Berry (*Shepherdia argentea*), a genus belonging to the same natural order as the Elæagnus, but altogether different from it.

E. hortensis, a somewhat variable plant with a wide geographical distribution, is cultivated in many countries for the sake of its fruit. In Dr. Aitchison's *Botany of the Afghan Delimitation Commission* it is described as a shrub or tree occurring at an elevation of 3,000 ft. and upwards, near running streams, and cultivated largely in orchards for its fruit.

E. longipes, a thoroughly deciduous Japanese species, is one of the most desirable members of the genus. Prof. Sargent thus writes of it in *Garden and Forest*: "The plant may well be grown for the beauty of its fruit alone, which, moreover, is juicy and edible with a sharp, rather pungent, agreeable flavour. Both the size and the flavour can doubtless be improved by careful selection, and it is quite within the range of possibility that it may become a highly esteemed and popular dessert and culinary fruit. To some persons, even in its present state, the flavour is far preferable to that of the Currant or the Gooseberry." The fruit, as implied by the specific name, is borne on long stalks; it is bright red in colour and covered with minute white

dots. The branches are covered with rusty brown scales, and the somewhat leathery leaves are dark green above and silvery-white beneath. Pheasants are said to be very fond of the fruit, and I can vouch for the fact that blackbirds and other fruit-eating birds will soon strip a bush unless it be netted. Some French growers make a preserve of the fruit, and this is said to be very similar to that made from the fruit of the Cornelian Cherry (*Cornus mas*); a spirit, too, with a taste like kirsch, has also been made from the fruit. **E. longipes**, known in some gardens under the names of **E. edulis**, **E. odorata edulis**, and **E. rotundifolia**, is apparently as hardy as the first-named species.

E. macrophylla, an evergreen species from China and Japan, has large roundish leaves, grayish above and silvery beneath. Old plants are said to produce suckers freely, but the species is a somewhat recent introduction to British gardens, and all the specimens which I have seen up to the present have not shown any tendency to sucker. It is quite distinct in appearance from any other hardy cultivated shrub, and is worthy of much more general employment in the ornamental shrubbery. In its native habitats it is said to sometimes attain tree-like dimensions; under cultivation I have only seen it as a dense bush.

E. pungens, **E. glabra**, and **E. reflexa** are beautiful evergreens, which are not very dissimilar in general aspect, and which without long dry scientific descriptions it would be impossible to distinguish. Variegated forms exist of all three, and any of them, as well as the types, are thoroughly well worthy of a place in the garden or pleasure-ground. They are all natives of Japan, &c., but do not appear to be quite as hardy as the species previously mentioned; all could be tried, however, with every prospect of success in the southern counties. Some of them in the south of Europe assume a somewhat climbing habit, and round the North Italian lakes, for example, grow up to the tops of high Fir and Pine trees.

E. Simoni, said to be a native of China, seems quite hardy, but is the least ornamental of those which have been mentioned in these notes. A variegated form of this, with leaves margined with dark green and with the centres constantly variegated with golden-yellow and yellowish-green, originated in the Belgian nurseries a few years ago; it is highly spoken of in some of the Belgian periodicals.

E. umbellata is a beautiful bush. The

leaves are deep green and glabrous on the upper surface ; in a young state earlier in the season they are silvery-gray, and silvery-white beneath. The creamy-white flowers are produced in the greatest profusion in June. In some localities the plant is practically evergreen ; in the neighbourhood of London, however, it is—at any rate during such winters as the two last—to all intents and purposes deciduous. It is probably perfectly hardy

if the flowers were removed. It is frequent on our shores, but more abundant in the north than in the south. *E. condensatus* (Bunch Grass) is a vigorous perennial Grass from British Columbia, forming a dense, compact, column-like growth, and more than 8 ft. high. It is covered from the base almost to the top with long arching leaves, and in the flowering season is crowned with erect rigid spikes $6\frac{1}{2}$ in. long, so that it resembles an elongated ear

Lyme Grass (*Elymus arenarius*).

throughout Britain, as it withstands the much severer winters of Northern Germany without protection. In a wild state it occurs from the Himalayas to China and Japan. *Elæagnus parvifolia* is a name under which this species occurs in some gardens.—G. N.

ELYMUS (*Lyme Grass*).—*E. arenarius* is a wild British Grass, vigorous and distinct, which if planted in deep soil near the margin of a shrubbery, or on a bank on the Grass, makes an effective plant, growing 4 ft. high, and as we should cultivate it for the leaves, there would be no loss

of wheat. It is very ornamental, and may be grown in the same way as the Lyme Grass. Other kinds might be mentioned, but one or two give us the best effect of the race.

EMBOTHRIUM (*Fire Bush*).—*E. coccineum* is a very beautiful S. American evergreen shrub of the Protea family, hardy in warm parts of Britain, even without the protection of a wall. At Coombe Royal, in South Devon, it grows quite 20 ft. high, and is a spectacle of wondrous beauty about the end of April or the beginning of May, when every twig

carries a cluster of fiery flowers. Even on the favoured Devonshire coast a sharp late frost will sometimes injure the flowers. It thrives near the coast in southern Ireland and in Wicklow at Mr. Acton's, but soon perishes in less favoured places.

EMPETRUM (*Crowberry*). — *E. nigrum* is a small evergreen Heath-like bush, of the easiest culture, which may be associated with the dwarfer rock shrubs. It is a native plant, and the badge of the Scotch clan McLean. There are several other varieties, but the plants have less flower beauty than many other mountain shrublets.

ENKIANTHUS. — *E. campanulatus* is a pretty shrub, native of Northern Japan. It has slender branches covered with a light brown bark, and campanulate flowers produced in a pendulous cluster, and of a pale rosy-red colour, with three darker lines on each of the five sections of the corolla.

E. cernuus. — A little-known species only recently introduced from Japan, where it is said to be a bush 6 ft. to 8 ft. high. The reddish flowers are campanulate, and slightly five-lobed. Syn., *Meisteria cernua*.

E. japonicus. — A rare and desirable shrub, first discovered by Sir Rutherford Alcock near Nagasaki, Japan, in 1859, and afterwards introduced by Messrs. Standish. The leaves turn to a beautiful deep orange colour before falling in autumn. The pendent flowers are pure white, globose, and contracted to a much narrower mouth than in *E. campanulatus*. Ericaceæ.

EOMECON (*Cyclamen Poppy*). — *E. chionanthus* is a very charming hardy perennial Poppywort intermediate between *Stylophorum* and *Sanguinaria*. The root-stocks are usually as thick as the finger; they run freely underground, and increase rapidly; leaves resembling those of hardy *Cyclamen*. The flowers, 2 to 3 in. in diameter, are pure white, with a bunch of yellow anthers in the centre; several borne on stems about 1 ft. high. It is a native of China. The pure pearly-white flowers, in a setting of bold yellow-green foliage, give good effect as a "carpet" beneath Tea-roses.

EPHEDRA. — (*Shrubby Horsetail*). Curious greyish, wiry trailing bushes of Southern Europe and Northern Africa, rare in our gardens, but hardy here and there, as in the Cambridge Botanic Gardens, where there is light warm soil.

All these plants resemble to a certain extent the *Equisetums*, and though they

are leafless, or nearly so, the bright green colour of the bark makes them conspicuous at all seasons. *E. distachya* is a native of the southern part of France and Spain, in sandy soils on the seashore, a yard or more high, forming a spreading mass of bright green cylindrical branches, distinct from all hardy shrubs; the berries, which do not always appear in this country, are red. In the front of the shrubbery, where the slender branches can grow at will, this *Ephedra* is seen to advantage, breaking up the outline, and it is a good plant for bold arrangements in the rock garden as it will succeed in dry spots.

It is also known as *E. nebrodensis*. *E. vulgaris* is a smaller plant and one that will resist more cold as it is a native of Siberia, also some of the more southern districts of Asia. Other species are found in different parts of the world, but the nomenclature of the entire genus is confused, and it is probable that the list of names would be reduced if they were grown together, as slight geographical variations would no doubt disappear under cultivation. — T.

EPIGÆA (*Mayflower*). — A small Evergreen found in sandy soil in the shade of

Ephedra.

Epigæa repens (Mayflower).

Pines in many parts of N. America, *E. repens* having pretty rose-tinted flowers

in small clusters, which exhale a rich odour, and appear in spring. Its natural home is under trees, and it would be well to plant some of it in the shade of Pines or shrubs. It was at one time lost to our nurseries and gardens, owing to the habit of planting all things in the same kind of exposed situation. It is a charming plant for the wild garden, in sandy or peaty soil under trees, growing only a few inches high. Ericaceæ.

EPILOBIUM (*French Willow*).—Few of these plants are worthy of cultivation, but some are important, and the best perhaps is the showy crimson native *E. angustifolium*, of which there is a pure white variety. This plant runs in a border so quickly as soon to become a troublesome weed, but is fine when allowed to run wild in a rough shrubbery or copse, where it may bloom with the Foxglove. It is a native of Europe and many parts of Britain. Division. Other kinds somewhat less vigorous are *E. angustissimum*, *E. Dodonæi*, and *E. rosmarinifolium*. The common native *E. hirsutum* is stouter than the French Willow, and is only useful by the margins of streams and ponds, associated with the Loosestrife and such plants. There is a variegated form. The Rocky Mountain Willow Herb (*E. obcordatum*) is a beautiful rock-plant. The Willow Herbs of our own latitudes are very tall and vigorous, but on the dreary summits of the Rocky Mountains and the Californian Sierras one species has succeeded in contending against the elements by reason of its very dwarf stature; it has imitated the Phloxes and Pentstemons of the same region; though not more than 3 in. high, it has retained the size and beauty of flower of the finest species, the colour being rosy-crimson. It is hardy, and thrives in ordinary sandy soil in the rock-garden. Some of the small New Zealand species, such as *glabellum*, *nummulariaefolium*, and *longipes*, are very useful for draping stones on rock-gardens.—D.

EPIMEDIUM (*Barren-wort*).—Interesting and, when well grown, elegant plants of the Barberry Order, but not shrubby. *E. pinnatum* is a hardy dwarf perennial from Asia Minor, 8 in. to 2½ ft. high, with handsome leaves, and bearing long clusters of yellow flowers. The old leaves remain fine until the new ones appear in the ensuing spring. It is not well to remove them, as they shelter the buds of the new leaves during the winter, and the plants flower better when they are allowed to remain. Cool peaty soil and a slightly shaded position are most suitable. Other species

are *alpinum*, *macranthum*, *Musschianum*, *purpureum*, *rubrum*, *niveum*, and *violaceum*, all loving half-shady spots in peat, or in moist sandy soil. None are so valuable for general culture as the first-mentioned.

Known species.—*E. alpinum*, Europe. *concinnum*, Japan. *elatum*, Himal. *macranthum*, Japan. *Musschianum*, do. *Perralderianum*, Algeria. *pinnatum*, Persia. *pteroceas*, Caucas. *pubescens*, China. *pubigerum*, Caucas. *rubrum*, Japan. *sagittatum*, do.

EPIPACTIS (*Marsh E.*).—*E. palustris* is a somewhat showy hardy Orchid, 1 to 1½ ft. high, flowering late in summer, and bearing rather handsome purplish flowers. A native of moist grassy places in all parts of temperate and southern Europe. A good plant for the bog-garden, or for moist spots near a rivulet, in soft peat. In moist districts it thrives very well in ordinary moist soil.

EQUISETUM (*Giant Horse-tail*).—*E. Telmateia* is a tall British plant, of much grace of habit when well developed, and from 3 to 6 ft. high in moist peaty or clay hollows in woods. The stem is furnished from top to bottom with spreading whorls of slender branches, slightly drooping, the whole forming a graceful pyramid. It is fit for the hardy fernery, shady peat borders, near cascades, or among shrubs, and grows in any moist soil. Division. *E. sylvaticum* is another native Horse-tail, much dwarfer, but graceful when well grown, 8 to 15 in. high, and being covered with slender branches, but usually these plants are not fit for garden culture.

ERAGROSTIS (*Love Grass*).—Grasses, some of which are worth cultivating for their elegant feathery panicles. *E. ægyptiaca*, with silvery-white plumes, *maxima*, *elegans*, *pilosa*, *amabilis*, *pellucida*, *capillaris*, *plumosa*, are all elegant annuals. They are useful for cutting for the house during summer. Seed may be sown in autumn or spring in the open air, on or in a slightly heated frame. For preserving, the stems should be gathered before the seeds are too ripe.

ERANTHIS (*Winter Aconite*).—*E. hyemalis* is a pretty early plant with yellow flowers surrounded by a whorl of shining green. It is 3 to 8 in. high, and flowers from January to March. It is seen best in a half-wild state, under trees or on banks in woody places, though it is occasionally worthy of a place among the earliest border flowers. It often naturalises itself freely in Grass, and is very beautiful when the little yellow flowers peep out in early spring. We may therefore enjoy it without giving it positions suited for more delicate plants, or taking any trouble

about it, but it is more vigorous on chalky or warm soils, and dwindles on some cold soils.

E. cilicicus is a recent introduction of like stature and character, though distinct as a species, and seems to be of like value and hardiness.

EREMURUS.—Noble bulbous plants from Northern India, Persia, and Central Asia, as yet little seen in our gardens, and not free to grow in all soils. Most of the kinds are handsome, and well suited for the warm sheltered glades of gardens where hardy flowers and plants are grown in a natural and informal way. In such a home they can be associated in bold groups with some of the finest hardy plants, with a background of shrubs. In planting, however, care should be taken to place the roots where they would not be overgrown or shaded by other plants, so that the crowns should receive the greatest amount of sunshine during the ripening period previous to going to rest. They thrive admirably in deep, rich, sandy loam, with the addition of some decayed cow manure. My own plants were grown in a bed filled in 3 ft. deep with a compost of good fibrous loam, sharp river-sand, peat, decayed cow manure, and charcoal, with a well-drained sheltered situation facing due south. Once well planted, they should never be disturbed, as the roots are extremely brittle and very liable to injury. The surface soil above the roots should be kept clean by hand weeding and enriched by occasional surfacings of old manure, leaf-soil, and a little grit, thoroughly broken up and mixed together. Autumn is the best period for planting, which should take place as soon as the young plants have ripened their growth, the sites being well and deeply prepared some little time beforehand, so as to allow the soil to thoroughly settle before the plants are placed in it. As the whole family dislike stagnant moisture, care should be taken to avoid this at the time of planting, and in any favourable situation this can be managed by spreading out the roots of the young plants upon the prepared surface of the bed and covering them with soil so as to form a mound. This can be afterwards surfaced with Cocoa-nut fibre refuse to exclude frost. In any case it is a great advantage to keep the crown of the plant slightly above the soil. It is better to begin with three-year-old plants, and care should be taken to obtain the plants from a trustworthy source.

A most interesting account of this family, with a list of the species and varieties known to cultivation, may be

found in vol. xxix. (p. 96) of *The Garden*, which cannot fail to assist those who contemplate the introduction of these beautiful plants into their gardens.—W. J. G.

Eremurus robustus.

The Rev. F. Page-Roberts writes from Scole Rectory :—

“With a little trouble Eremuri may be grown successfully by every lover of beautiful flowers. All that is necessary

for their well-being is protection from slugs, which soon scent them from afar. I keep a perforated zinc collar round the crown and protect from spring frosts. The plant early forces its way up even through the frost-bound earth, but the tender flower-spike, tender only in infancy, is nipped in the bud if rain fall on it and freeze. Protection also from cutting winds which destroy the foliage is needed. With such precautions and planted in loam, deep, but not too stiff, in a well-drained sunny border, and with an occasional dose of weak liquid manure, they will repay one for all the care given to them."

E. Aitchisonii.—A fine kind from Afghanistan, where it grows on ridges of the hills nearly 12,000 ft. above sea-level, bearing in June dense spikes of pale reddish flowers, robust, and on stems from 3 to 5 ft. high.

E. aurantiacus.—A dwarf plant, hardy, flowering in April, the numerous spikes of bright citron-yellow flowers giving quite a character to part of the Hariab district, where it is one of the commonest plants on rough ground. It is the vegetable of the Hariab district, upon which the inhabitants depend for at least two months of the year. The leaves are cut from the root-stock, as close to the ground as possible, and cooked.

E. Bungei.—A beautiful plant with wand-like spikes of yellow flowers 2 to 3 ft. high. Native of Persia, flowering in July.

E. himalaicus is a beautiful white-flowered kind. The flower-stems are 4 to 8 ft. high, the dense raceme taking up quite 2 ft. of the upper portion, with flowers as large as a florin. It is one of the hardiest and best of the known kinds. It flowers in May and June and is a native of the temperate Himalayas.

E. Olgae.—A dwarf kind, and one of the latest to flower. The flower-stem is nearly 4 ft. high, and is densely set with handsome lilac flowers as large as a five-shilling piece. It is certainly one of the handsomest species. A native of Turkestan, flowering in June and July.

E. robustus.—One of the best known in gardens with a huge flower-stem 6 to 10 ft. high, bearing a dense raceme of peach-shaded lilac flowers nearly 2 in. in diameter. It is hardy, and may often be seen forcing its shoots through frozen ground. Native of Turkestan, flowering in June.—D.

Known species.—They are Asiatic plants coming chiefly from Asia Minor, Persia, Afghanistan, India, and Turkestan. *E. Aitchi-*

soni, Afghan. *Alberti*, *albo-citrinus*, *altaicus*, *angustifolius*, *anisopterus*, *Aucherianus*, *bachtiaricus*, *bucharicus*, *Bungei*, *cappadocicus*, *Capusi*, *Griffithii*, *himalaicus*, *indensis*, *Kaufmanni*, *Korolkowi*, *luteus*, *Olgae*, *persicus*, *robustus*, *spectabilis*, *stenophyllus*, *Stocksii*, *Suworowi*, *tauricus*, *turkestanicus*.

ERIANTHUS.—A fine Grass from S. Europe, *E. Ravennæ* is somewhat like the Pampas Grass in habit, but smaller in size, having violet-tinged leaves. The flowering stems grow from 5 to 6½ ft. high, but as it only flowers with us in a very warm season, it must be valued for its foliage alone. Its dense tufts are strongest with us in light or warm soil, in positions with a south aspect. It is poor on cold soils, and will probably not grow well north of London. It is fitted for association with such Grasses as *Arundo conspicua*. Division of the tufts in spring or autumn. *E. strictus* is another species, but is not so good as *E. Ravennæ*.

ERICA (Heath).—Beautiful shrubs, of which the kinds that are wild in Europe are very precious for gardens. We should take more hints from our own wild plants and bring the hardy Heaths of Britain into the garden. Why should we have such things as the *Alternanthera* grown with care and cost in hothouses, and then put out in summer to make our flower gardens ridiculous, while neglecting such lovely hardy things as our own Heaths and their many pretty varieties? But very many people do not know how happy these Heaths are as garden plants, and how well they mark the seasons, and for the most part at a time when people go into the country. Where, as in many country places, the Heaths abound, there is less need to cultivate them, although we cultivate nothing prettier. In places large enough for bold Heath gardens it would be well to plant them, but a small place is often large enough for a few beds of hardy Heaths. Once established, they need very little attention. The varieties are often quite as free as the wild sorts, and give delightful colour in a Heath garden, which need not by any means be a pretentious affair, but quite simple; for Heaths are best on the nearly level ground. This group of plants has as yet had but scant care, and, if grown at all, is grown in a poor way and more for its "botanical interest" than from any just sense of its great beauty. That can only be fairly judged of by those who see Heaths on mountains and moors, where they are among the most beautiful of plants in effect in broad masses. This can hardly

ever be shown in small gardens, but why should it not be in large ones? We need not even have a garden to cultivate Heaths in a picturesque way, as almost any rough open ground will do, and some kinds will do among bushes and in woody places. The larger Heaths, where grown, should be massed in visible groups, and the dwarf ones seen in masses also, and not treated as mere "specks" on rockeries. They are all of easy culture and all the dwarf kind of easy increase by pulling in pieces and replanting at once any time from October to April.

E. ARBOREA (*Tree Heath*).—A tall and graceful shrub of Southern Europe and N. Africa; white flowered, and covering vast areas in the upland woods of Oak or other trees, attaining a height of 12 feet or more in N. Africa, and in the Canaries becoming a tree. This Heath is tender in Britain generally, but may be grown in southern and warm districts and on warm soil in sheltered valleys near the sea with its friendly warmth.

E. AUSTRALIS (*Southern Heath*).—A pretty bushy Heath of the sandy hills and wastes of Spain and Portugal, 2 feet to 3 feet high, flowering in spring in Britain. The flowers are rosy purple and fragrant. It deserves a place in heathy soils.

E. CARNEA (*Alpine Forest Heath*).—A jewel among mountain Heaths and hardy as the rock Lichen. On many ranges of Central Europe at rest in the snow in winter, in our mild winters it flowers in January in the south, and in all districts is in bloom in the dawn of spring—deep rosy flowers, carpeting the ground, the leaves and all good in colour. There are one or two varieties, one white. This Heath is not averse to loamy soils, and often thrives on them as well as on peat soil. Syn., *E. herbacea*.

E. CINEREA (*Scotch Heath*).—A dwarf and pretty Heath common in many parts of Britain, and particularly Scotland, very easily grown, and having good varieties. Among them are *alba*, *bicolor*, *coccinea*, *pallida*, *purpurea*, and *rosea*; flowering in summer, and very pretty for rock-gardens.

E. CILIARIS (*Dorset Heath*).—A lovely plant, and as pretty as any Heath of Europe. A native of Western France and Spain in heaths and sandy woods it also comes into Southern England, and is hardy further north than the districts it inhabits naturally. The flowers are of a purple-crimson, and fade away into a pretty brown. It is excellent in every way, thriving in loamy as well as in peaty soils, and flowering in summer and into late autumn.

E. HYBRIDA (*Hybrid Heath*).—A cross between *E. carnea* and *E. mediterranea*. It is a good plant and flowers through the winter and far into the spring, thriving in loamy soil almost as well as in peat, and is excellent as a groundwork below Azaleas.

E. HIBERNICA (*Irish Heath*).—Mr. Boswell Syme, whose knowledge of British plants was profound, considered this Irish plant distinct from the Mediterranean Heath, "the flowering not taking place in the Irish plant till three or four months after the Mediterranean Heath;" a fine shrub in Mayo and Galway, growing from 2 to 5 feet high.

E. LUSITANICA (*Portuguese Heath*).—This is for Britain the most precious of the taller Heaths, 2 to 4 feet high, and, hardier than the Tree Heath, it may be grown over a larger

Erigeron speciosus.

area. Even in a cool district I have had it in a loamy soil ten years, and almost every year it bears lovely wreaths of flowers in mid-winter, white flowers with a little touch of pink, in fine long Foxbrush-like shoots. This would probably perish in the north, but is a shrub of rare beauty for sea coast and mild districts. Syn., *E. codonodes*.

E. MEDITERRANEA (*Mediterranean Heath*).—A bushy kind, 3 to 5 feet high, best in peat, and flowering prettily in spring. Although a native of Southern Europe, it is hardier in our country than the Tree Heaths of Southern Europe. Of this species there are several varieties.

E. STRICTA (*Corsican Heath*).—A wiry-

looking shrub, compact in habit, about 4 feet high, and a handsome plant. A native of the mountains of Corsica, flowering in summer.

E. SCOPARIA (*Broom Heath*).—A tall and wiry-looking Heath, reaching 8 feet or more in our country, flowering in summer, not showy. I have seen this in cold parts of France (Sologne), and it is hardier than most of the larger Heaths: it is often naked at the bottom and bushy and close at the top.

E. TETRALIX (*Marsh or Bell Heather*).—This beautiful Heath is frequent throughout the northern, as well as western, regions, thriving in moist or boggy places but also in ordinary soil in gardens. This Heath has several varieties, differing in colour mainly. *E. Mackaiana* is thought to be a variety of the Bell Heather. There is also a supposed hybrid between this and the Dorset Heath. *E. Watsoni* is a hybrid between the Bell Heather and Dorset Heath. Flowering summer and early autumn.

E. VAGANS (*Cornish Heath*) is a vigorous bush Heath thriving in almost any soil, 3 to 4 feet high. A native of Southern Britain and Ireland, and better fitted for bold groups in the pleasure ground or covert than the garden. There are several varieties, but they do not differ much from the wild plant.

E. VULGARIS (*Heather: Ling*).—As precious as any Heath is the common Heather and its many varieties, none of them prettier than the common form, but worth having, excluding only the very dwarf and monstrous ones, which are useless except in the rock garden, and not of much good there. Heathers are excellent for forming low covert, and, of all the plants, none so quickly clothes a bare slope of shaly soil, not taking any notice of the hottest summer in such situations. Among the best varieties are *alba*, *Alporti*, *coccinea*, *decumbens*, *Hammondi*, *pumila*, *rigida*, *Searlei*, and *tomentosa*. Syn., *Calluna*.

E. DABECII (*Dabæcs Heath*).—The name of this fine plant has been so often changed by botanists that it is difficult to find it by name in books, and I give it by the Linnean name here. It is a beautiful shrub 18 inches to 30 inches high, bearing crimson-purple blooms in drooping racemes. There is a white variety even more beautiful, and one with purple and white flowers, called *bicolor*. I have had the white form in flower throughout the summer and autumn on a slope fully exposed to the sun, and in very hot years too. Syn., *Menziesia polifolia*, also *Dabæcia* and *Boretta*. West of Ireland.

E. MAWEANA (*Maw's Heath*).—Of this Heath, Mr. Robert Lindsay writes as follows: "This is one of the handsomest of all the hardy Heaths and was discovered by Mr. George Maw in Portugal in 1872. It may be best described as a very vigorous-growing *Erica ciliaris*, which it resembles, but is more robust in all its parts; the flowers also, besides being larger than those of *E. ciliaris*, are darker in colour. It flowers from July to December."

E. MULTIFLORA (*Many-flowered Heath*).—Somewhat like a white Cornish Heath but dwarf and close-set; flowers, in the form usually grown, white; many in close racemes. Southern Europe and North Africa on calcareous soil, thriving in ordinary soil in gardens. W. R.

ERIGERON (*Fleabane*).—Michaelmas Daisy-like plants of dwarf growth, somewhat alike in general appearance, and having pink or purple flowers with yellow centres. They flourish in any garden soil, and some are of a weedy nature; one or two are best suited for the rock-garden. Of these, *E. alpinum*

Erigeron multiradiatus.

grandiflorum is the finest. It is similar to the alpine Aster, having large heads of purplish flowers in late summer, and remaining in beauty a long time. Suitable for the rock-garden and well-drained borders. Division or seed. *E. Roylei*, a Himalayan plant, is another good alpine, of very dwarf, tufted growth, having large blossoms of a bluish-purple with yellow eye. By far the best of the taller kinds is *E. (Stenactis) speciosus*, a vigorous species, with erect stems that grow about 2½ ft. high, and bear during June and July many large purplish-lilac Aster-like flowers with conspicuous orange centres. *E. macranthus*, another showy species, is of a neat habit and

about 1 ft. high. It bears an abundance of large, purple, yellow-eyed blossoms in summer, and, like *E. speciosus*, will grow in any soil. *E. mucronatus*, known also as *Vittadenia triloba*, is a valuable border flower, neat and compact, and for several weeks in summer is a dense rounded mass of bloom about 9 in. high. The flowers are pink when first expanded, and afterwards change to white, and the plant therefore presents every intermediate shade. Other kinds in gardens are *E. multiradiatus*, *glabellus*, *glaucus*, *bellidifolius*, *strigosus*, and *phildelphicus*—the last two being the prettiest. All are easily increased by division in autumn or spring. The most effective and useful of the genus is *E. speciosus*, which is excellent for groups or borders.

ERINUS (*Wall E.*).—*E. alpinus* is a pretty alpine plant, with racemes of violet-purple flowers, abundant on dwarf tufts of leaves in early summer. In winter it perishes on the level ground in most gardens, but it is permanent when allowed to run wild on old walls or ruins, and it is easily established on old ruins by sowing seeds in mossy or earthy chinks. It is well suited for the rock-garden, where it grows in any position, and often flowers bravely on earthless mossy rocks and stones. *E. hirsutus* is a variety covered with down. There is a white variety. Pyrenees.

ERIOBOTRYA (*E. japonica* : *Loquat*).—A large-leaved shrub from Japan; in our country tender, and only suitable for walls in warm and sheltered places. Its large evergreen leaves are handsome, and in warm districts it flowers, the blossoms white, but it does not fruit in the open air in England.

ERIOGONUM.—North American alpine plants which, on the mountains of California, are of much beauty, but are rarely good in cultivation, with few exceptions. From a dense tuft of leaves *E. umbellatum* throws up numerous stems, 6 to 8 in. high, on which golden-yellow blooms, in umbels 4 in. or more across, form a neat and conspicuous tuft. In light sandy soil of the rock-garden it has never failed to bloom profusely. Other kinds are *E. compositum*, *flavum*, *Jamesi*, *racemosum*, *ursinum*.

ERIOPHORUM (*Cotton Grass*).—Sedge-like plants, whose heads of white cottony seeds make them interesting in the bog-garden or in wet places in grass. *E. polystachyon* is the best for a garden; it is plentiful in some marshy districts.

ERITRICHIMUM (*Fairy Forget-me-not*).—*E. nanum* is an alpine gem, closely

allied to the Forget-me-nots, which, however, it excels in intensity of azure-blue. Though reputed to be difficult to cultivate, a fair amount of success may be ensured by planting it in broken limestone or sandstone, mixed with a small quantity of rich fibry loam and peat, in a spot in the rock-garden where it will be fully exposed and where the roots will be near half-buried rock. The chief enemy of this little plant, and indeed of all alpine plants with silky or cottony foliage, is moisture in winter, which soon causes it to damp off. In its native habitat it is covered with dry snow during that period. Some, therefore recommend an overhanging ledge, but if such protection be not removed during summer, it causes too much shade and dryness. A better plan is to place two pieces of glass in a ridge over the plant, thus keeping it dry and allowing a free access of air, but these should be removed early in spring. Alps, at high elevations. A stone or slate over the plant for the worst months (Nov. to end February) is a good way.—G.

ERODIUM (*Stork's-bill*).—Like hardy Geraniums, but usually smaller and more southern in origin. Suited for chalky banks or the rock-garden, and some are suited for borders, while others may be naturalised in the Grass in warm soil. Among the best species are—

E. macradenium.—A dwarf Pyrenean plant, 6 to 10 in. high, with the blooms of French white delicately tinged with purple, and veined with purplish-rose; the lower petals are larger than the others; the two upper ones have each a dark spot. This plant should be exposed to the full sun, in crevices situated between two rocks, and where the roots can penetrate gritty or stony soil to the depth of 3 ft. The flowers come in abundance during the summer months, and the plant has an aromatic fragrance.

E. Manescavi is a vigorous herbaceous plant, and the most showy kind. It grows 1 to 1½ ft. high, and throws up strong flower-stalks above the foliage, each with seven to fifteen purplish flowers, 1 to 1½ in. across. It is not fastidious as to soil or situation, but its best place is in dry soil, fully exposed. If the soil be too rich, the plant bears so many leaves that the flowers are hidden. Seed, or careful division.

E. petræum (now *Moltkia petræa*).—This has three to five purplish-rose flowers on each stalk, which are 4 to 6 in. high. The leaves and flower-stalks are densely clothed with minute hairs.

It thrives best among the dwarfer alpine plants, in warm positions, in deep sandy or gravelly soil.

E. Reichardi.—A miniature species 2 to 3 in. high when in flower. The small heart-shaped leaves lie close to the ground, and form little tufts from which arise slender stalks, each bearing a solitary white flower, marked with delicate pink veins; flowering for many weeks. It should be grown in gritty peat mixed with a small portion of loam.

To the foregoing may be added: *E. caruifolium*, 6 to 10 in. high; flowers red, about $\frac{1}{2}$ in. in diameter, and in umbels of nine or ten blossoms. *E. romanum*, 6 to 9 in. high; flowers purplish, in spring and early summer. *E. trichomanifolium*, a pretty kind, 4 to 6 in. high, with leaves deeply cut; flowers flesh-coloured, marked with darker veins. *E. chrysanthum* with lemon-yellow flowers and *E. guttatum*, these being mostly fitted for the warmer parts of the rock-garden. *E. daucoides*. *E. supracanum*.

Erpetion. See VIOLA.

ERYNGIUM (*Sea Holly*).—Handsome perennials or biennials of the Parsley order, but so unlike that class of plants in general appearance as to be often mistaken for Thistles. For the garden, whether the decoration of the border, or rock-garden, or the lawn, few plants yield a greater charm from the size and colour of involucres and stems. The stems are so singularly beautiful with their vivid steel-blue tints, surmounted with an involucre even more brilliant, that the effect of good large groups is hardly excelled by that of any plants that live in our climate. The great diversity in the form of the leaves is very interesting, ranging from the great Pandanus-like foliage of *E. pandanifolium* to the very small thistle-like leaves of *E. dichotomum*. Those belonging to the Pandanus set, such as *E. Lasseauxi*, *eburneum*, *bromeliæfolium*, and others, are useful among fine-leaved plants; their leaves being mostly of a thick succulent nature, are not liable to be damaged by the cold nights in early autumn; indeed, in all but very damp places or heavy soils they continue effective as regards foliage all through the winter season. *E. alpinum*, *Oliverianum*, *giganteum*, and the finer herbaceous species are very useful for borders, and all are the more valuable for this purpose owing to the length of time they continue in bloom, and for the long time they retain their handsome blue tints. A good rich and well-drained soil suits most of the species;

damp carries off more of the tender species during winter than cold. Protection is not needed, as the Sea Hollies will stand any exposure so long as the drainage is good. *E. alpinum* may be made an exception to the above directions, as in the south of England at any rate it prefers a shady spot in a good stiff soil. Much the same treatment will also answer in the case of *E. Oliverianum*.

The best way of increasing these Sea Hollies is by seed. Some few sorts may be increased by division or root cuttings, but they take such a long time to root, that a vigorous batch may be raised from seed in about the same time. Sow the seed in pans as soon as gathered, and place in a cold frame. The seeds will germinate in the spring, and if properly managed will be ready to plant out the following year. These plants often "sow themselves," and seedlings come up in all sorts of places.

The under-mentioned are a few of the best kinds:—

E. alpinum (*Alpine Sea Holly*).—This is found in the alpine pastures of Switzer-

The Amethyst Sea Holly (*E. amethystinum*).

land, and, when well grown, is not surpassed in beauty by any plant. The involucre, as well as the stems, are of a fine blue, and its flower-stems, about 2 ft. high, arise during July and August.

E. amethystinum (*Amethyst Sea Holly*).—This has been confounded with the much more robust *E. Oliverianum*, although they have little in common. *E. amethystinum* rarely exceeds 1 ft. to 1½ ft. in height, is of a somewhat straggling habit, and has flower heads and stems of the finest amethyst-blue. It can be increased by division, and easily raised from seed. Dalmatia and Croatia.

E. giganteum (*Giant Sea Holly*).—This is an excellent plant for grouping, and a picturesque object, growing from 3 ft. to 4 ft. high, with stout stems and deeply-lobed, spiny, glaucous leaves. The involucre, of eight to nine large, oval, spiny leaves, pale grey or glaucous, is very effective. Caucasian Alps and Armenia.

E. maritimum (*Common Sea Holly*).—This native plant (*Mertensia maritima*) is a very pretty kind, requiring no

The common Sea Holly (*E. maritimum*).

special culture. It is one of the most glaucous of the species, flowering from July to October, and grows from 6 inches to 1½ feet high.

E. Oliverianum (*Oliver's Sea Holly*).—This is of easy cultivation, and the abundance of its highly coloured flower-heads makes it attractive in the flower border. It grows 2 feet to 3 feet and often 4 feet in height. The ten to twelve bracts composing the involucre are longer than the head of flowers and have about half a dozen teeth on each side. It ripens seed freely and in this way it may be readily increased. S. Europe.

Other attractive kinds are *E. Bourgati*,

campestre, *cæruleum*, *planum*, of which there is a very beautiful variety, *dichotomum*, *triquetrum*, *creticum*, *glaciale*, *spina-album*.

THE PANDANUS GROUP.—To this group, chiefly natives of Mexico and Brazil, belong some of the extraordinary forms in this genus. Beginning with *Serra*, we have a large broad-leaved species with curious double spines; *Carrierei*, said to be the finest of all, having a compact habit combined with large, beautiful leaves. *E. bromeliæ-folium* is a charming plant, striking and distinct in habit and forming elegant Yucca-like tufts, with its graceful leaves surmounted with whitish flower-heads. *E. pandanifolium* is a noble plant, very effective when grown as an isolated plant on a lawn. *E. Lasseauxi* is nearly allied and quite hardy in the open air. *E. eburneum*, *aquaticum*, *virginianum*, *Leavenworthi*, and others are all worthy of attention for their fine foliage, but not so beautiful in colour as the European Sea Hollies. —D. D.

ERYSIMUM.—Wallflower-like perennials, biennials, and annuals, mostly of dwarf growth. Of the perennials the following are the finest:—

E. ochroleucum (*Alpine Wallflower*).—This handsome plant forms, under cultivation, neat rich green tufts, 6 to 12 in. high, and in spring is covered with sulphur flowers. The rock-garden is most congenial to it; but it does very well on good level ground, though it is apt to get naked about the base, and may perish on heavy soils. Division and cuttings. Alps and Pyrenees. There are several varieties. Syn., *Cheiranthus alpinus*.

E. pumilum (*Fairy Wallflower*).—A very small plant, rare in cultivation, resembling the alpine Wallflower in the size and colour of its flowers, but lacking its vigorous and rich green foliage. It is often only 1 in. high, and it bears very large flowers for its size. They appear above a few narrow sparsely toothed leaves which barely rise from the ground. High bare places in the Alps and Pyrenees. It requires an exposed spot of very sandy or gritty loam in the rock-garden, where it must be surrounded by a few small stones to guard it from drought, and it must be associated with alpine plants.

E. rhæticum.—A pretty mountain flower which, though rare in cultivation, is a common alpine in Rhætia and the neighbouring districts, where in early summer its broad dense-tufted masses are aglow with pretty clear yellow blos-

soms. *E. canescens*, a South European species with scentless yellow flowers, is also a neat alpine, and so is *E. rupestre*, which is desirable for the rock-garden. All of them are easy to grow, and delight in gritty soil and a well-drained and sunny position on the rock-garden. Among the biennial and annual kinds the best is *E. Perofskianum*, 1 to 1½ ft. high, with dense racemes of orange-yellow flowers. For early flowering it should be sown in autumn, and again in March and April for later bloom. *E. arkansanum* and *pachycarpum* are similar to *E. Perofskianum*.

ERYTHRÆA (*Centaury*). — Pretty dwarf biennials belonging to the Gentian family. *E. littoralis*, common in some shore districts, is worth cultivating. It is 4 to 6 in. high, and bears an abundance of rich pink flowers, which last a considerable time in beauty. The very beautiful *E. diffusa* is a similar species. It is a rapid grower, with a profusion of pink blossoms in summer.

E. Muhlenbergi is a beautiful plant about 8 in. high, putting out many slender branches. It bears many flowers, the blossoms 3½ in. across, of a deep pink, with a greenish-white star in the centre. Seeds should be sown in autumn, and well grown till the spring; the plants will then flower earlier and produce finer flowers than spring-sown plants. They are excellent for the rock-garden and the margins of a loamy border. The soil must be moist.

The native kind and its forms are pretty in the fields and shores, and the plants so far rarely have a place in gardens.

ERYTHRINA (*Coral Tree*).—These beautiful trees are pretty general through the tropics. Some attain great dimensions, while others are dwarf bushes with woody root-stocks. Many produce beautiful large Pea flowers, usually of a blood-red or scarlet colour, in terminal racemes. The varieties have proved very hardy and useful in the summer garden, flowering freely and showing considerable beauty of foliage. *E. ornata*, *Marie Belanger*, *laurifolia*, *Crista-galli*, *profusa*, *Madame Belanger*, *ruberrima*, and *Hendersoni*, have stood out with slight protection. *E. Crista-galli* will thrive for years against a warm south wall in a light soil, if protected about the roots in winter.

ERYTHRONIUM (*Dog's-tooth Violet*). —Liliaceous bulbs, among the loveliest of our hardy flowers, with many species and varieties of interest and high garden value on soils that suit them. These

belong to N. America, with the exception of

E. Dens-canis, a beautiful plant found in various parts of Europe. It has handsome oval leaves, with patches of reddish-brown; the rosy-purple or lilac flowers are borne singly on stems 4 to 6 in. high, and droop gracefully. One variety has white flowers, one rose-coloured, and one flesh-coloured. *E. longifolium* has longer and narrower leaves and larger flowers, and the sorts enumerated in catalogues under the name of *majus* are apparently derived from this variety. *E. Dens-canis* thrives in moist sandy or peaty soil, when fully exposed to the sun. It is most valuable for the spring or rock-garden, or for a border of choice hardy bulbs, and,

Eryngium Oliverianum.

where it is sufficiently plentiful, for edgings to American plants in peat soil. The bulbs are white and oblong, resembling a dog's tooth, hence its name. It is increased by dividing the bulbs every two or three years, and replanting rather deeply. Central Europe. There are now many varieties, white, purple, rose, and violet.

E. americanum (*Yellow Adder's-tongue*) is common in the woods of the E. States of N. America. Its pale green leaves are mottled, and commonly dotted with purple and white. Flowers 1 in. across, pale yellow, and spotted near the base; on slender stalks 6 to 9 in. high in May. A variety (*E. bractea-*

tum) differs in having a bract developed, as *E. grandiflorum* sometimes has. It is very pretty, but, being a somewhat shy flowerer, is seldom seen in cultivation. In poor, sandy soil, this little plant blooms better than in compact or cold soil.

E. giganteum.—A variety of *E. grandiflorum*. Its showy flowers of pure white have a ring of bright orange-red, and measure 3 in. in diameter. It is found in California at an elevation of six to ten thousand feet, and also in Vancouver's Island.

E. grandiflorum.—The only cultivated kind with more than one flower on a stem. In a peat bed, with Lilies and other peat-loving plants, it is very fine, and produces as many as five flowers on a stem.

I have planted them largely in Grass, and find they thrive in every soil in that way, and are very early and pretty both in leaf and flower, scattered in groups and colonies in turf.

Other kinds are *E. revolutum*, *Var. Johnsoni*, *albidum*, *purpurascens*, *propullans*, *Hartwegi*, *californicum*, *citrinum*, *Nuttalli*, *Hendersonii*, *Howelli*, *Watsoni*—any are worth a place in half shady and sheltered places. For a full account of the western Erythroniums, see *Flora and Sylva*, p. 250, Vol. I.

ESCALLONIA.—The Escallonias in cultivation are often beautiful shrubs, unfortunately sometimes perishing in hard winters save in favoured districts. In mild places the common *E. macrantha* succeeds in the open, but, as a rule, it must be regarded as a wall shrub. Even in the mild districts it is cut down during severe winters, but it usually shoots up again strongly in the returning spring. There is a variety called *sanguinea* with deeper-coloured flowers. Somewhat similar to *E. macrantha* is *E. rubra*, but the foliage is less handsome and the flowers are paler. *E. Philippiana* is very beautiful and hardy, as it may be grown as a bush in the neighbourhood of London. It is an Evergreen with small leaves, and bears a profusion of large panicles of small white flowers. It is a first-rate shrub, and one of the best of the Escallonias. *E. pterocladon* is very free-flowering, the small flowers being white and pink, while *E. punctata* has dark red flowers somewhat similar to those of *E. rubra*. Another species, *E. montevidensis*, also known as *E. floribunda*, bears large loose clusters of white flowers, and there are varieties—usually seedling forms—known under different names, especially in seaside gardens. Among these, that called *E.*

Ingrami is one of the best, being hardier than *E. macrantha*, though not so handsome. Escallonias are mostly natives of S. America, chiefly Chili, Brazil, and Peru.

ESCHSCHOLTZIA (*Californian Poppy*).—Brilliant annual flowers, of easy culture in ordinary soil. To have them in all their beauty, they should be sown in August and September for early summer bloom. They may be sown later—and should then be allowed to bloom where they are sown. They get deeply and firmly rooted, and flower much longer than if sown in spring. They are very hardy, and snails and slugs do not molest them. There are some half a dozen kinds, well worth growing, viz. *E. californica*; *E. crocea*, saffron colour; *E. c. alba*, white; *E. c. Mandarin*, orange and crimson, very fine; *E. c. fl.-pl.*, double; *E. c. rosea*, and *E. tenuifolia*; and new forms are raised from time to time and given in the seed lists. They are plants that should not be used to any great extent in the select flower-garden.

Known species.—Nearly all natives of California. *E. Austine*, *californica*, *elegans*, *glyptosperma*, *mexicana*, *minutiflora*, *Parishii*, *peninsularis*, *rhombipetala*.

EUCALYPTUS (*Gum Tree*).—Large and handsome Australian trees and shrubs, of which a number of species grow to a great height. The leaves are thick and leathery, and vary much in shape. In the south of England and Ireland a few of the species live in the open air. About London some grow them for their aspect in the open air after a single year's growth, and in that case they should be put out about the middle of May. Some letters in the *Times*, by persons unaware of the results of planting the tree in this country, induced many to plant the common Gum tree, which perished with the first severe frost. Only in the more favoured districts have these trees any chance, and they never present the graceful and stately port which they show in countries that really suit them, such as parts of Italy and California. What the higher mountain species may do remains to be seen, and the common Gum tree is sometimes made fair use of in the London parks among the larger plants put out for summer. I think these trees are unfitted for our climate, and even in Algeria, where many species were planted by the French Government, the result, as I saw it some years ago, was anything but good. Among the hardier kinds are *E. globulus*, *Gunnii*, *citriodora*, *amygdalina*, *cordata*.

EUCHARIDIUM.—Pretty hardy annuals of the Evening Primrose family, thriving under the same treatment as all annuals from California. They may be sown in autumn for early summer flowering, or from March to June for late summer and autumn bloom. They flower about eight weeks after sowing, and remain in bloom a long time. Three species are cultivated—*E. concinnum*, about 9 in. high, with many rosy purple blooms; *E. grandiflorum*, larger rosy-purple flowers, streaked with white, which has a white variety (*album*), and a variety with pink flowers (*roseum*); and *E. Breweri*, an elegant new annual, more robust, and with red flowers of a deeper, richer colour than *E. grandiflorum*. These species are of secondary importance in the flower garden, but may occasionally be used as surface plants or in bold masses. Like many other annuals, they suffer in general estimation through being judged by spring-sown plants, with poor and short-lived bloom.

EUCNIDE.—*E. bartonioides* is a half-hardy annual of the Loasa family, from Mexico. The stems are about 1 ft. high, and bear sulphur-yellow flowers, $1\frac{1}{2}$ in. across, showy in August and September when several are expanded. Seeds should be sown in heated frames in early spring, but the seedlings should be very carefully transplanted to the open border in May, as they are then very liable to injury. Syn., *Microsperma*.

EUCOMIS.—Cape bulbs, not very showy, though deserving of cultivation in the outdoor garden, on account of their broad handsome foliage, more or less spotted with purple at the base, from which rise tall cylindrical spikes of blossoms surmounted by a crown of leaves. Like many Cape plants, they are hardy on light and dry soils. There are four species, all of which are in cultivation. *E. undulata* has leaves 18 in. long, wavy at the margins, and profusely marked on the under surface with dark purple blotches which, in the variety *striata*, assume the form of stripes. The flower spike is 2 to 4 ft. high. On the upper half are densely arranged, in a cylindrical manner, numerous greenish-white blossoms, with purplish centre, crowned by a tuft of narrow green leaves. *E. punctata* is the largest kind, having leaves about 3 ft. long. *E. regia* is dwarfer than either of the preceding. The raceme of flowers is about 1 ft. high, and the tuft of leaves at the top is larger than in other kinds. *E. nana* is the smallest. The spreading leaves lie horizontally, while in the others they are more

erect. They thrive best in light sandy soil, with the roots protected by a covering during winter. The foot of a south wall suits them if they are associated with the larger hardy bulbs, but they are not the most effective or graceful of the Lily family.

EUCRYPHIA (*The Brush Bush*).—A distinct shrub, *E. pinnatifolia* being hardy, though a native of South America. It belongs to the Rose family, but the flowers remind one in size and form of those of St. John's Wort, except that they are white, and the central tuft of stamens is very conspicuous. The flowers, borne plentifully, are very pretty, among foliage resembling that of some of the Roses.

It is one of the most beautiful shrubs of recent introduction, and valuable on account of producing its flowers about the end of the summer, when blooming shrubs are getting scarce. It is deciduous, somewhat upright, and has pinnate leaves, and large white flowers about 3 in. in diameter. It is of rather slow growth, but has withstood severe winters in the neighbourhood of London; and may therefore fairly be classed as hardy. It can only be satisfactorily propagated by layers, which will, to a certain extent, account for its scarcity. Till more plentiful, it should be placed in warm positions and in good free soil. Chili. There is another species in cultivation, *E. cordifolia*, but it is rarer.

EULALIA.—This Japanese Grass, *E. gracillima*, is less vigorous in growth than either of the better known kinds, the leaves being more narrow and more gracefully recurved. They are bright green in colour, with a comparatively broad stripe of white down the centre of each. So pronounced is this white stripe, that this form is sometimes called *E. gracillima univittata*. Plants of it in pots are pretty.

E. japonica.—A hardy and ornamental perennial Grass of robust growth, 6 to 7 ft. high. Established plants form clumps 17 to 18 ft. in circumference. The brownish-violet flower-panicles have at first erect branches, but as the flowers open, these branches curve over gracefully, and resemble a Prince of Wales' Feather. Each of the numerous flowers has at its base a tuft of long silky hairs, which contribute greatly to the feathery lightness of the whole. For isolated positions on lawns it is excellent; or it might be used in groups, or on the margin of the shrubbery. Even more valuable than the type are the two variegated forms, *varie-*

gata, with leaves longitudinally striped with white and green; and *zebrina*, with distinct cross bars of yellow on the green, which render it singularly attractive. These variegated forms, particularly *zebrina*, are not quite so

vegetable matter, and, as a rule, they prefer open sunny situations, particularly the evergreen sorts, and all thrive near the sea. The following are among the most distinct of the kinds at present in cultivation:—

Eulalia japonica.

hardy as the type. Division or seed. Japan.

EUONYMUS (*Spindle Tree*).—Low trees with little beauty of flower, but this defect is compensated for by their foliage, habit, and the bright fruit which some of the sorts bear. They grow well in almost every variety of soil, but are most luxuriant in such as are rich in

E. europæus (*Common Spindle Tree*).—This is a native of England, and is a bushy tree, from 10 to 25 ft. high; the leaves are of a warm green colour, changing as they decay to a reddish tint. Its small greenish-white flowers expand in May, and are followed almost always by an abundant crop of fruit, in bright pink capsules, which, opening up in the

autumn, reveal the orange-coloured sac which envelops the seeds, producing a beautiful effect. Of several varieties, the most interesting are the white fruited kind, which differs from the species in producing white instead of pink capsules; the variety with scarlet leaves; and *nanus* or *pumilus*, a neat little plant, very bushy, and one which never grows higher than about 2 ft. and is admirably suited for the rock-garden, or any situation where a dwarf plant is desirable.

E. latifolius (*Broad-leaved Spindle Tree*).—Wild in the south of France and in some parts of Germany, and a tree of from 10 to 20 ft. high, the leaves shining green, larger than those of the common *Euonymus*; the flowers, which expand in June, are of a purplish-white; the capsules large, and deep red, contrasting, as they open, most effectively with the bright orange sacs with which the seed is enveloped. It is quite hardy, and forms an ornamental tree, well fitted for a lawn.

E. americanus (*American Spindle Tree*).—This is a small deciduous, or, in mild winters and sheltered situations, sub-evergreen shrub, of about 6 ft. in height, found wild over a wide area in Canada and the United States. It has an erect habit of growth, with numerous long slender branches covered with a smooth light green bark; the flowers open in June, succeeded by rough warted brilliant crimson capsules, which in its native habitats are so showy and abundant that it is named the Burning Bush. In this country it is generally cultivated as a wall plant, and as such it is ornamental. It succeeds best on the shady side, and prefers a moist rather than a dry porous soil.

E. angustifolius (*Narrow-leaved Spindle Tree*).—A twiggy or sub-evergreen shrub about 4 ft. in height, with long wiry branches, abundantly clothed with remarkably narrow oblong leaves, of a deep green colour in summer, changing in autumn to a dull red tint. The flowers are very small, of a greenish-white colour, followed by red fruit capsules. It is a very distinct and interesting shrub for a low wall, and has a pretty effect on raised banks, growing freely in shady sheltered aspects, and in damp heavy soils.

E. japonicus (*Japan Spindle Tree*).—An evergreen species 4 to 6 ft. in height, of bushy habit, the branches clothed with numerous leaves of a dark glossy green colour. Though hardy in sheltered districts, it seldom flowers in this country. Few evergreens thrive better near the sea;

and either it or some of its varieties are frequently met with on the west and south coasts of England, and west coast of Scotland, forming handsome specimen shrubs on lawns and shrubberies. In the inland districts it suffers from frosts, and can only be depended upon on walls or in favoured situations. During recent years a number of varieties have been sent home from Japan; several of these, and particularly the variegated forms, are favourites.

All the varieties thrive best in warm sunny exposure, and in well-drained soils. The kind called *argenteus variegatus* has leaves clothed with silver; *aureus variegatus*, leaves margined with deep yellow; *latifolius argenteus* and *latifolius aureus*, leaves with white and yellow variegations respectively.

E. radicans variegatus is a dwarf creeping variety, its leaves are variegated with white; it is hardy, and useful for planting as an edging. On rockeries or low walls it has a pretty effect; and as it forms roots similar to those of the Ivy, it requires little care to keep it to the wall or other support.

EUPATORIUM (*Thorough-wort*).—Coarse Composite perennials, most of which are better suited for the wild garden than for borders, though two or three kinds are worth a place for supplying cut flowers in autumn. The most suitable are *E. ageratoides*, *altissimum*, and *aromaticum*, which are 3 to 5 ft. high, and bear a profusion of white blossoms in dense flat heads, *E. cannabinum* (Hemp Agrimony), *E. perfoliatum*, and *E. purpureum* (Trumpet-weed), which is a fine object in the rougher parts of a garden, being 12 ft. high, with stems terminated by huge clusters of purple flowers. All grow in any kind of soil.

EUPHORBIA (*Spurge*).—Perennials and dwarf bushy plants, including few hardy species of value for the flower garden. The foliage of some, such as *E. cyparissus* (Cypress Spurge), is elegant. In spring *E. pilosa* and *amygdaloides* are attractive by their yellow flowers when little else is in bloom, but they are scarcely worth growing in a general way. Some of the dwarf kinds, such as *E. Myrsinites*, *portlandica*, *capitata*, and *triflora*, are neat and distinct in habit and grow in any soil. There are a few variegated forms. The well-known Caper Spurge (*E. Lathyris*) is often seen in cottage gardens, and in habit is a distinct plant, with a certain beauty of foliage and habit. A few plants of it on a bank or rough place are not amiss. They are all horribly

poisonous, and are for the most part kept in botanical collections.

Eurybia. See OLEARIA.

Eutoca. See PHACELIA.

EXOCHORDA (*Pearl Bush*).—Beautiful summer-leaving, hardy shrubs with pearl-like flower buds; of easy culture. *E. grandiflora* is one of the loveliest of hardy shrubs allied to the Spiræas, but with larger flowers, forming when full grown a rounded bush of about 10 ft. high and as much through. It flowers about the middle of May, just after the foliage unfolds, and affords a charming contrast between tender green leaves and snow-white flowers as large as florins. It likes shelter, and grows best in warm loam, though hardy anywhere.

E. Alberti has larger leaves borne upon stems of stouter and more rigid habit, and of a brighter reddish-brown. The flowers are clustered in erect spikes, are sessile, of a greenish-white, with the petals rather far apart. Coming from Central Asia it is hardier than the Chinese plant, but does not bloom freely in cold soils. A cross between these two species, known as *Alberti macrantha*, has great vigour, and is more profuse in its snow-white flowers than either of the parents.

EXOGONIUM (*Jalap Plant*).—A graceful perennial trailing plant, none more beautiful among climbing plants than *E. purga*, and of its hardiness there can be little doubt. It has lived for years at Bitton, Gloucestershire, without any protection, and each year it has flowered well. It has also grown well at Kew, Fulham, and in the Edinburgh Botanic Gardens. Mr. Ellacombe grows it in a sheltered corner, and provides a tall wire trellis with a spreading top for it to grow up. It does not flower in the lower parts, but the entire top and the pendent shoots become a mass of lovely bloom. If not checked by late spring frosts at Bitton, it comes into blossom early in September, and continues to flower till cut down by frost. It has roundish tubers of variable size, those of mature growth being about as large as an orange and of a dark colour. These are the true Jalap tubers. The plant gets its name from Xalapa, in Mexico, its native region, and is increased by division of tubers.

FABIANA (*False Heath*).—*F. imbricata* is a pretty shrub of the Potato family, but so much resembling a Heath, that it might well be mistaken for one. It is slender, with evergreen leaves, and in early summer every shoot is wreathed with small white trumpet-shaped flowers. A native of Chili, it is not perfectly

hardy as a bush except in the southern and western counties, in which it is often a very distinct and beautiful shrub.

FAGUS (*Beech*).—Not a very large family of trees, but including one of the noblest of all our native beech. It is a great tree in all the countries of Europe, from Northern Greece to Denmark, thriving admirably in soils useless for the oak and other trees, and beautiful in many of our poor chalky soils. It is so often seen in our woodlands that there is no need to advocate its use elsewhere; a wild tree common in the woodlands and forests in Europe everywhere can have little place in gardens. The varieties of the beech, however, are of the highest garden value as lawn trees, and some of the most beautiful weeping trees in England are those of the weeping form of the beech. The fine character of the pendent beech is that it is not only graceful in a young state, but improves every year of its life, very old trees being picturesque in a high degree. The varieties are almost without end; every state or chance variegation is given a Latin name, though many of them are worthless. Merely curious and variegated varieties are not worth a place. The fern-leaved variety is one of the best, and the purple beech is the most striking of our coloured trees, and will come true from seed, which is a gain. Even if all the seeds do not come true it does not matter in the least as long as we get some plants of the colour we seek, and in raising trees from seed we always obtain some slight variation. The copper beech is a little paler and more coppery than the old purple beech, and there is a weeping form as well as a dark purple. These dark coloured forms should not be used too freely—one to three purple beeches in each parish are ample. Among the best varieties of the European beech are the following: *Miltonensis*, *pendula*, *heterophylla*, *macrophylla*, *purpurea*, *purpurea pendula*, *purpurea tricolor*, *Zlatia*, and *Svat-Magret*, a very dark-leaved form.

Fagus americana (the American beech) is in its own country a forest tree well above 100 ft. high, inhabiting the northern regions, as well as westwards and southwards, but the European beech is a so much greater tree, for our climate at least, that less importance is attached to the American sort. As to other species of which there are birch-like evergreen ones as well as summer leaving kinds, such as those inhabiting the antarctic regions and Terra del Fuego, little is known of

them in this country. *F. Betuloides*, an evergreen one, is a very graceful, low tree, and so is *F. Cunninghami*. *F. Sieboldi* is a Japanese kind with willow-like leaves, and others probably will be found in antarctic regions.

If they will only thrive in our climate their distinct habit will be a great gain to us.

FARFUGIUM.—A vigorous perennial, *F. grande* having fleshy stems 1 to 2 ft. high, and with broad leaves of light green variously streaked, spotted with yellow in one variety, and having white and rose in another. It does best in a half-shady position in free moist soil. During the heats of summer it requires frequent watering, and at the approach of winter it should be moved to the greenhouse, except in mild districts. In colder parts it is scarcely worth planting out, as it grows slowly; but where it thrives it is handsome in borders, or on the margins of beds. Multiplied by division in spring; the offsets being potted and kept in a frame until they are well rooted.

FERULA (*Giant Fennel*).—Very-graceful umbelliferous plants long known in our botanic gardens, their charm consisting in large tufts of the freshest green leaves in early spring. The foliage is apt to fade in summer. Where bold spring flowers are naturalised, a group of Giant Fennels will be effective, with their fine plumes in early spring. They are among the true hardy plants of the northern world, never suffering from cold. Their fine forms in summer or autumn, when they throw up flowering-shoots to a height of 10 ft. or so, are remarkable enough; but their appearance when breaking up in spring charms us most. A good way is to place them in small groups, just outside a shrubbery, or isolated on a rough Grass bank, where their verdure may be seen in early spring. Ferulas are readily raised from seed, which as soon as gathered should be sown in a nursery bed in the open air. The plants do not bear division well, though with care they may be transplanted. One of the most valuable is *F. tingitana*; it takes several years to form strong plants, that look like massive plumes of filmy Ferns. *F. communis* is also a good species, and others, including *F. glauca*, *neapolitana*, *Ferulago*, and *persica*, may be added where variety is sought. The flower-stems developed the second or third year from seed are 6 to 10 ft. high, are branched, and bear numbers of small inconspicuous flowers. S. Europe and N. Africa.

FESTUCA (*Fescue Grass*).—Annual and perennial Grasses, containing few

species for the garden. A variety of Sheep's Fescue (*F. ovina*), named *glauca*, is a pretty dwarf hardy Grass, forming dense tufts of leaves of a glaucous hue or soft blue, and on this account sometimes called "blue" Grass. It makes good edgings, and when it is used for this purpose the flower-spikes should be cut away. *F. ovina viridis* is also a pretty edging plant, and, being of slow growth, does not require renewal for years.

FICARIA (*Pilewort*).—Plants of the Crowfoot family, much resembling some kinds of Buttercup: *F. ranunculoides* (Lesser Celandine) is a common British plant, 3 to 6 in. high, bearing glossy yellow flowers in early spring. It is so common that it would not be mentioned but for its pretty double and white varieties. A good plant for growing under trees, in moist borders, in any soil. Division.

F. grandiflora (*Great Pilewort*).—A large-flowered kind, about twice the size of our native kind. It is easily grown and showy, and could be naturalised, especially on sandy and free soils. S. Europe.

FICUS (*India-rubber Plant*).—*F. elastica* is not only in fair health in the open air in summer, but sometimes makes a fair growth under our northern sun. It is best suited for select mixed groups, and must have stove treatment in winter. It should be put out at the end of May. In all cases it is best to use plants with single stems. The trailing *F. repens* and *F. stipulata* also thrive in the open air in summer, and have a pretty effect, trailing up stems of trees in the sub-tropical garden. In mild districts they are hardy against walls or rocks. Cuttings.

FITZROYA PATAGONICA (*Fitzroy's Cypress*).—A graceful, and in its own country stately evergreen forest tree, with some claim to hardiness in Devon, Cornwall, and the south and sea-coast of Ireland. There are beautiful examples of it at Fota, Killerton, and other southern gardens, but its use is limited to these and sheltered coast gardens, and there it will thrive best on open free soils. Elsewhere we must seek such effects as such Cypress-like trees afford from hardy trees. Andes of S. America.

FORSYTHIA (*Golden Bell*).—Beautiful spring-flowering shrubs, especially *F. suspensa*, whose long, slender, wand-like shoots are studded for a considerable distance with bright golden blossoms. Being of a rather loose habit, it is suited for training on wall or banks; indeed, few subjects are superior to it for a sunny spot, where the wood will thoroughly

ripen. When rambling about in a free state, or when hanging over a bank or a cutting, this Forsythia is seen to very great advantage. *F. viridissima*, another species, is quite a shrub. It needs a spot fully exposed to the sun, so that a good display of bloom may be ensured. A certain Forsythia was

flowered under glass in the greenhouse or the conservatory during the early months of the year, and, if so treated, they will bloom well. Owing to the time the blossoms expand when in the open ground, very little forcing is necessary to have them in bloom quite early. *Fortunei* and *Sieboldi* are names often used ; but

Francoa ramosa (Maiden's Wreath).

sent here [from the Continent two or three years since under the name of *F. intermedia*, and was announced as a hybrid between *F. suspensa* and *F. viridissima*. Though at first very little disposed in its favour, I have recently seen it in a better light. Its general appearance is about midway between its alleged parents. Forsythias may be

these represent only vigorous forms of *F. suspensa*. Shoots of the rambling kinds root from the points almost as readily as a bramble, and cuttings strike freely. A new kind has recently been found in Europe—*S. europæa*, but of its merits we have as yet no experience.

FOTHERGILLA.—*F. alnifolia* is a North American dwarf shrub, desirable on

account of its flowering early in spring, its feathery tufts of fragrant white flowers appearing before the leaves, which resemble those of the common Alder. Suitable for a moist peat border or the low part of the rock-garden.

FRAGARIA (*Strawberry*). — The Strawberry is much more useful in the fruit garden than in the flower garden, yet some kinds are pretty in the rock-garden. The wild Strawberry is pretty on banks, and on old mossy garden walls where it establishes itself. *F. monophylla* is a beautiful rock-garden plant, with large white flowers. The Indian strawberry, *F. indica*, is a pretty trailer, bearing many red berries and flowering late. All are of the easiest culture in any not too wet soil, and of facile increase by division.

FRANCOA (*Maiden's Wreath*). — Chilian plants of the Saxifrage family, somewhat tender, and best for dry sheltered positions on warm borders in light loam. They are good for cutting, as the long branching stems 18 in. to 2 ft. high bear many white or pink blossoms on stalks. *F. ramosa*, bearing white or pink flowers, and having a short stem, differs from *F. appendiculata*, which is stemless, and has flowers deeper in colour than the others. *F. sonchifolia* has also a short stem, but its leaves are sessile and not stalked, and its flowers are rose-coloured. They are often grown as window plants, and are best as such where they do not thrive in the open air.

FRANKENIA LÆVIS (*Sea Heath*). — A very small Evergreen plant with crowded leaves like a Heath, common in marshes by the sea in many parts of Europe and on the east coast of England. Best for the rock-garden in ordinary soil among very dwarf herbs, but mainly of botanical interest.

FRAXINUS (*Ash*). Trees of some distinction and value for their timber; natives of cold and northern regions, and one of them our precious native Ash. Important as the foreign trees of this race are our native kind is so much better known to us, and so fine, that we cannot be surprised at the neglect of the other kinds. The British Ash is a variable tree, and its varieties are more valuable than those of many other trees, the best of them not depending on mere variegation, but sometimes on habit, as in the pendulous variety, so well known, and used for bowers and on lawns. There is a form of this with yellow shoots, and certain kinds with singular leaves—mere monstrosities without value, for this fine tree has not escaped the variegation hunter. There

is a variety of *F. Lentiscifolia*, a native of Asia Minor, which is pendulous in habit.

The Ash is never more beautiful than when fully exposed in the cool and

Fraxinus.

northern parts of the country, and in Ireland and Scotland. America is rich in species, and in past times, before the conifers mania arose, they were planted, but of late very little attention has been given to them, and few of these reach the size and fine form of our native Ash, at least as we know them.

Occasionally very picturesque effects arise from grafting the Weeping Ash on a very tall stem of the ordinary kind, of which there is a good example at Elvas-ton.

F. ornus is the celebrated Manna Ash, a native of the East and Mediterranean regions, which has several varieties. It is an effective and hardy tree in England, and even in London gardens is vigorous and handsome. It is grafted on the Common Ash, so what it would be if on its own roots we have no knowledge. Its place is among the larger flowering trees. *Syn. Ornus.*

FREMONTIA (*F. californica*). — A handsome Californian shrub, not hardy enough for the open air without protection. It has large yellow bowl-shaped flowers, 2 in. or more across, the deep green leaves being lobed. In favourable places it reaches 10 or 12 ft. in height, and flowers in early summer. It succeeds best against a north, west, or east wall, a southern exposure being usually too hot and dry, but even in the southern counties it perishes in severe winters.

FRITILLARIA (*Fritillary*).—Bulbs of the Lily family, several of which are valuable, some, such as the Crown Imperial, being stately, others such as *F. recurva*, being delicate and pretty, but most have dull-tinted curiously interesting flowers. They may be put to many uses: the Crown Imperial is a fine plant for the mixed border or the shrubbery, and, being vigorous, is able to take care of itself in the wild garden. Its early spring growth makes it valuable. The Snake's-head (*F. Meleagris*) and others, such as *F. latifolia*, *pyrenaica*, together with the choicer kinds, are fitted for the bulb border and for grassy places. Only one or two require special treatment; all the others thrive in ordinary garden soil. They may all be readily increased by offsets from the old bulbs, which should be lifted every three or four years and planted in fresh soil—a process very beneficial to the plants. The lifting should be done in autumn, and the bulbs replanted without delay. The following

White Fritillary.

are among the most desirable for general cultivation:—

F. aurea, one of the prettiest of the genus, is quite hardy, is about 5 in. high, and has a stem of four to six in. thick, fleshy, deep green leaves, with a nodding

flower, which is pale yellow spotted, or chequered with brown. Silesia.

F. Burneti, a handsome hardy plant about 9 in. high, with solitary drooping blossoms, 2 in. long, which are of a plum colour chequered with yellowish-green. Alps. Flowers with the Snowdrop, and is as easy to grow.

F. imperialis (*Crown Imperial*).—A showy and stately plant, from 3 to 4 ft. high, with stout bright green shoots,

Crown Imperial (*Fritillaria imperialis*).

crested by large dense whorls of drooping bell-like flowers and a crown of foliage. There are several varieties, differing chiefly in the colour of the flowers. The principal are—*lutea* (yellow), *rubra* (red), double red and double yellow, *rubra maxima* (very large red flowers), Aurora (bronzy orange), sulphurine (large sulphur-yellow), Orange Crown (orange-red), Stagzwaard (a fasciated stem form, with very large deep red blossoms), and *aurea marginata* (gold-striped foliage); every lead being margined with a broad golden-yellow band, blending with the rest of the foliage. This plant thrives best in a rich deep loam, especially if the bulbs remain undisturbed for years. Its best place, perhaps, is in a group on the fringe of the shrubbery or a group of American plants. For artistic effects it is not so valuable as the common Snake's-head; and its odour is against it when gathered.

F. Karelini.—An interesting kind, 4 to 5 in. high, with two or three broad leaves clasping its stem, and having a terminal raceme of slightly-drooping bell-like flowers. These flowers, about 1 in. across, are of a pale purple, with darker veins, a few darker spots, and a distinct yellowish-green pit at the base of each reflexed segment. It is a native of Central Asia, and, flowering in late autumn or early winter, is valuable for a collection of winter-flowering outdoor plants. According to Dr. Regel it must be kept in dry sand until November, and should not grow or show bloom before spring. If planted in November, growth is retarded, and it does not bloom in spring, which it ought to do; while those flowering in autumn invariably dwindle away, and do not produce any new bulbs. It should be planted in light soil in well-drained borders with a warm exposure.

F. latifolia.—A most variable species as regards the colour of the flowers, which are larger than those of our native *F. Meleagris*. They are borne on stems about 1 ft. high, are pendulous, and vary in colour through various shades of purple, black, lilac, and yellow. The principal named varieties are—Black Knight, Captain Marryat, Caroline Chisholm, Cooper, Dandy, Jerome, Maria Goldsmith, Marianne, Mellina, Pharaoh, Rembrandt, Shakespeare, Van Speyk, each representing a different shade of colour. They grow freely in an open situation in any soil, and are excellent for naturalising. Caucasus.

F. Meleagris (*Snake's-head*) is an elegant native species, of which there are numerous varieties. It is 9 to 18 in. high, and in early summer bears a solitary drooping flower, beautifully tessellated with purple or purplish-maroon on a pale ground. The chief varieties are—the white (*alba*), which has scarcely any dark markings; *nigra*, a deep purplish-black; *pallida*, light purple; *angustifolia*, with long narrow leaves; major, with flowers larger than the type; *præcox*, which flowers about a week earlier than the other forms; *flavida* yellowish; and the rare double variety. All forms of this beautiful plant may be used with excellent effect. It grows freely in grass not mown early, and is therefore admirable for the wild garden; its various forms are among the most beautiful inhabitants of the hardy bulb garden, and tufts of the chequered or white-flowered variety are among the most graceful plants in cottage gardens.

F. Moggridgei (*Golden Snake's-head*).—A beautiful plant with pendulous blossoms, 2 in. long, which are of fine golden-yellow, chequered with brownish-crimson on the inner surface of the bell. It may be seen on its native Alps, at an elevation of five to seven thousand feet, among the short stunted Grass, accompanied by alpine plants, and giving the slopes the appearance of a sheet of golden bloom. It is hardy, and flowers early in spring. It is a lovely flower for planting in the choice bulb portions of the rock-garden, and, when plentiful, for dotting in groups in Grass where it may escape the mower.

F. pudica is one of the most charming of hardy bulbs, and takes a place among yellow flowers similar to that of the Snow-drop among white ones. It is a native of the Rocky Mountains and the Sierra Nevada of California, where it grows in a dry barren soil. It is one of the principal spring ornaments of the flora, being nearly 6 in. high, and having bright golden-yellow flowers, graceful in form and drooping like a Snowflake. It thrives in warm sunny borders of loamy soil.

F. recurva.—The showiest of the Fritillaries, its red colour being as bright as some Lilies, and mixed with bright yellow especially on the inside of the flower. It flowers early in May or towards the end of April. The bulbs consist of a slightly flattened tuberous stock, covered by articulated scales, somewhat widely placed, which at first sight resemble those of *Lilium philadelphicum*. A tuft of bright green linear leaves appears above the soil, and from this rises a slender purplish stem, 6 in. to 2½ ft. high, with several pendent Lily-like flowers. It is not robust, and has succeeded only under careful cultivation, growing best in fibry loam, on a warm sunny border, near a wall. In winter it is advisable to cover the bulbs with some protective material or with a hand-light. California.

F. Sewerzowi.—A singular-looking plant, growing from 1 to 1½ ft. high, having broad glaucous leaves and nodding flowers that are greenish outside and vinous-purple within. A native of the mountains of Turcomania, quite hardy in our climate. Propagated by bulblets or seed.

Many others are in cultivation, but the majority are unattractive, though some are useful for naturalising among Grass in the wild garden; the most suitable are—*F. delphinensis*, a robust plant with stems 1 ft. or more high, bearing brownish-

purple flowers, more or less chequered with greenish-yellow; *F. pyrenaica*, a similar species, but more robust; *F. liliacea*, *liliorhiza*, *lanceolata*, *lusitanica*, *pallidiflora*, *tulipifolia*, *ruthenica*, and *tristis*, all with dull brownish-purple or greenish flowers.

Fritillaria species.—*F. acmopetala*, Syria. *alba*, N. Amer. *armena*, Armenia. *assyriaca*, Mesopotamia. *atropurpurea*, N.W. Amer. *biflora*, Calif. *bithynica*, Bithyn. *Boissieri*, Spain. *bucharica*, Bokhara. *camschatcensis*, E. Asia. *cirrhusa*, Himal. *conica*, Greece. *cornuta*. *Cornuti*. *crassifolia*, As. Min. *cuprea*, Mexico. *dagana*, Siberia. *dasyphylla*, Lycea. *Eduardi*, Bokhara. *Ehrharti*, Greece. *Elwesii*, Lycea. *Fleischeriana*, Asia Min. *Forbesii*, Lycea. *Gardneriana*, Himal. *gibbosa*, Persia, Afghan. *græca*, Greece. *impèrialis*, Persia, Himal. *involuta*, Italy. *japonica*, Japan. *kurdica*, Kurdistan. *lanceolata*, N. W. Amer. *latifolia*, Caucas. *libanotica*, Syria. *liliacea*, Calif. *lusitanica*, Portugal. *Intea*, Caucas. *Meleagris*, Europe, Caucas. *meleagroides*, Siberia. *mesanensis*, Mediterr. region. *minuta*, Kurdistan. *Minbyi*, Algeria. *obliqua*, Greece. *Olivieri*, Persia. *oranensis*, Algeria. *oxypetala*, India. *pallidiflora*, Siberia. *parviflora*, Calif. *persica*, Armenia. *Pinardi*, As. Min. *plantaginifolia*, East. *pluriflora*, Calif. *pontica*, Greece. *præcox*, S. Europe. *Przewalskii*, E. Asia. *pubica*, N. W. Amer. *pyrenaica*, Pyrenees. *racemosa*, do. *recurva*, N. W. Amer. *Reuteri*, Persia. *rhodocanakis*, Grec. Archip. *Roylei*, Himal. *ruthenica*, Caucas. *Schliemanni*, Asia Min. *Sewerzowi*, Cent. Asia. *Sibthorpiana*, Greece. *tenella*, Europe, Caucas. *tubæformis*, S. Europe. *tulipifolia*, Caucas. *usuriensis*, Amoor. *verticillata*, Siberia. *Walujewi*, Turkestan.

FUCHSIA.—Graceful and distinct shrubs, too seldom seen in our flower gardens near the coasts, and especially in southern and western parts; some are hardy and beautiful in gardens. In other districts Fuchsias are cut down by frost, but spring up again, and, in fact, live the life of herbaceous plants; but in mild districts they often escape for years, and become handsome bushes. Not showy, in mass of flower they are of the highest beauty; and when we use plants with rather tall stems or pyramids. In mild districts, where it is a hardy shrub, we see it to perfection; in others, the most effective pyramidal plants have to be placed out in summer. The right way to manage Fuchsias put out for the summer only is to induce them, as far as possible, to make all their growth in the open air; for if we start them and make them full of leaves and strong young growth in the spring, they will be disappointing; but if kept back and not let burst into leaf until put in the open air in

May, they will go on and retain all the strength they gather. They should then be taken up and put in a dry cave, cellar, or shed for the winter. In many places refuse plants may be turned to good account in this way. Nothing is simpler than to make of these standards for the flower garden by cutting away the lower and middle side-shoots and leaving the head. All may be freely propagated from cuttings in spring or autumn. There are about a dozen more or less hardy kinds that succeed in the open air in the southern and western counties, and many more in warm seaside localities. The following are among the hardiest kinds:—

F. coccinea.—A bushy plant, graceful, hardy, and free in growth and bloom, unless the soil be of the coldest description, and even then a slight covering of coal ashes after the stems are cut down in autumn will protect the roots in winter. In favourable situations it is often 6 ft. high, and from the axils of the leaves, which are a fine green, veined with red, the flowers, which before they fully open are not unlike crimson drops, are borne in profusion during the greater part of the summer. Chili.

F. conica.—A vigorous compact species 3 to 6 ft. high, but not such a free flowerer as some of the others. The flowers have scarlet sepals and dark purple petals. Chili.

F. corallina.—A beautiful tall plant, and therefore suited for walls and houses. The flowers are large and of a showy red colour, and the plant is a vigorous grower and free bloomer.

F. discolor is a dwarf variety with numerous small scarlet flowers. It is the hardiest of all, not being injured by the winters in the milder parts of Scotland if treated as a herbaceous plant. *F. pumila* is similar, but more slender, and equally desirable.

F. globosa.—One of the best of the hardy Fuchsias. The flowers are globose in bud, and retain their shape for some time after they begin to expand, on account of the petals adhering at the tips. It forms a sturdy and often a large shrub in sea-shore districts. There is no reason why it should not be grown in drier districts, even if cut down by frost every year.

F. gracilis.—A distinct slender plant, with flowers on long slender stalks. The young shoots are a purplish-red, the calyx is a brighter scarlet, and the corolla has a greater infusion of red than other hardy kinds. In warm districts it is nearly 7 ft. high, from 12 to 15 ft. in circumference.

and is of rapid growth. In some winters it is not cut down by frost. There is a variety called *multiflora*, which is very free-flowering, and which has shorter flowers and of darker crimson. *F. tenella* is a seedling variety. Chili.

F. Riccartoni.—One of the prettiest and hardiest sorts, growing well without protection even in parts of Scotland. It is compact and twiggy, and in summer bears many bright red blossoms. A garden hybrid.

Besides these, other kinds are in cultivation, such as *procumbens*—a curious

Kirkii, *procumbens*—from N. Zealand, and one, *racemosa*, from the Island of San Domingo. The known species are:—

F. alpestris, *ampliata*, *apetala*, *arborescens*, *ayaovacensis*, *bacillaris*, *boliviana*, *canescens*, *caracasana*, *chonotica*, *coccinea*, *Colensoi*, *confertifolia*, *cordifolia*, *corymbiflora*, *curviflora*, *decussata*, *denticulata*, *dependens*, *Eucliandra*, *excorticata*, *fulgens*, *globosa*, *Hartwegii*, *hirsuta*, *hirtella*, *insignis*, *integrifolia* *intermedia*, *Kirkii*, *Lenneana*, *longiflora*, *loxensis*, *macrantha*, *macropetala*, *macrostemma*, *macrostigma*, *membranacea*, *microphylla*, *miniata*, *minimiflora*, *minutiflora*, *mixta*, *montana*, *nigricans*, *Notarisii*, *ovalis*, *parviflora*, *petio-*

Plantain Lily (*Funkia Sieboldi*).

little New Zealand species—*serratifolia*, *magellanica*, *thymifolia*, and *microphylla*, and nearly all the hybrid kinds do out-of-doors in summer, and bloom well, though they may be cut down in winter. Among the most distinct and pretty are the dwarf and fragile kinds, such as *F. microphylla*, *F. pumila*, and several hardy hybrids of the *globosa* section, all of which seem to flourish unusually well near the sea, and to grow almost anywhere.

Fuchsias are mostly S. American plants, chiefly from Brazil, Bolivia, Chili, Ecuador, Peru, New Grenada, and Venezuela, but some from Mexico, some—viz. *Colensoi*, *Eucliandra*,

laris, *procumbens*, *pubescens*, *quinduenensis*, *racemosa*, *rosea*, *salicifolia*, *scabriuscula*, *serratifolia*, *sessilifolia*, *simplicicaulis*, *spectabilis*, *spinosa*, *splendens*, *sylvatica*, *thymifolia*, *triphylla*, *umbrosa*, *venusta*, *verrucosa*, *virgata*.

FUNKIA (*Plantain Lily*).—Valuable Japanese plants of the Lily Order, of which there are about half-a-dozen species and numerous varieties. The different species are free-flowering herbaceous plants, with spikes of bell-shaped flowers, but the chief value is in the foliage. They are noble plants, most useful for many positions in the garden, while few lend such a fine effect as *F. Sieboldi* when finely developed. They are highly suit-

able for grouping, and few plants thrive better in open places in shrubberies. The bold striking foliage of some of the strongest plain-leaved section renders them very effective for edging large beds, while the kinds with variegated foliage, such as *F. undulata variegata*, make good groups, or are suitable for edgings. They are best seen in well-drained deep soil. All are easily multiplied by division in spring or autumn. The best are—

F. Fortunei.—This strong species has smaller and more leathery leaves than *F. Sieboldi*, and they are of a much more bluish or glaucous tint. The flowers are pure white or pale mauve.

F. grandiflora (*Corfu Lily*) is 12 to 18 in. high, producing in August and September numerous large, pure white, sweet-scented flowers. It is best in groups, beds, or borders, in a well-drained sandy loam. About Paris it is grown as a flower-garden plant, but with us it does not flower regularly unless in sunny spots and warm, well-drained, and very sandy loam. The young leaves are a favourite prey of slugs and snails. *Syn. F. subcordata*.

F. lancifolia is a small species, with tufts of lance-shaped leaves, narrowing from the middle towards both ends. There are some interesting varieties, chief among which are the white-flowered variety, a beautiful plant, *spathulata*, and *plantaginifolia*, with long narrow leaves. There are some varieties with leaves of different variegation, all well worth growing; notably *albo-marginata*, with a narrow white line along the margin of the leaf; *undulata variegata*, in which the leaves are undulated on the margin and variegated on the greater part of the surface; and *univittata*, with a broad white midrib to the leaf.

F. ovata has large tufts of broad, deep, shining green leaves. Flower-stems 12 or 18 in. high, terminating in a short raceme of lilac-blue flowers, which appear in late summer and autumn. One of the strongest species, and when in flower is very handsome. There is a variegated-leaved form.

F. Sieboldi is the finest for foliage. It is 18 in. to 3 ft. high, and has large glaucous leaves, somewhat heart-shaped. The flowers are in tall one-sided racemes well above the foliage, and are a creamy-lilac. There is a variety with yellow-margined foliage. Admirable plants for picturesque groups, very hardy, easy of increase by division, thriving in any soil, but the foliage effect is finer on deep rich soil.

GAILLARDIA (*Blanket Flower*).—Handsome perennial and biennial herbs including some of the showiest flowers, valuable for their long duration both on the plants and in a cut state. The genus numbers some half-a-dozen species from N. America, and many garden varieties. The numerous kinds now in gardens appear to fall under three species, but there is a strong family likeness throughout the series. The kinds are

G. aristata, a perennial, 1 to 1½ ft. high, with narrow leaves, sometimes deeply cut. The flowers are 1½ to 4 in. across, the ray florets having an outer zone of orange-yellow and an inner one of brownish-red, while the centre is deep bluish-purple. It is the commonest kind, and having been raised largely from seed, has many varieties, differing more or less widely from the type, with various names. *G. picta* somewhat resembles *G. aristata*, but has smaller flowers, and is a biennial. It is dwarfer, and its flowers are brighter. *G. amblyodon* is a beautiful Texan annual, introduced a few years ago. Its flowers are even smaller than those of *G. picta*, and are of a deep cinnabar red. On strong plants they are borne plentifully towards the close of the summer for several weeks. *G. pulchella* is the oldest form cultivated, and was introduced about a century ago. It is 1 to 1½ ft. high, and bears bright yellow and purplish-red flowers, 2 in. across. An annual. *G. bicolor* and *pinnatifida* are seldom seen in gardens, probably owing to their being somewhat tender. The garden varieties, as has been stated, are numerous, but the most distinct of those named are—

G. grandiflora, said to be a hybrid, presumably between *G. picta* and *G. aristata*. It is a beautiful and vigorous plant with large brightly-coloured flowers, which are only surpassed by its variety *maxima*. It is by far the finest of all.

G. hybrida is another garden cross, much resembling *G. grandiflora*; the variety *splendens* has brighter flowers. *G. Telemachi*, *Drummondii*, *Loiselli*, and *Bosselari* appear to be synonymous with some of the preceding, and *G. Richardsoni* scarcely differs from them.

All thrive in good friable garden soil, but not on a cold stiff soil or on one that is too light or dry. Where possible they should be grown in bold groups, for they thrive better if so placed than as solitary plants in a parched border, and no plants have a finer effect in a bed by themselves. Where apt to die in winter, they may be used in mixed borders, if treated as half-hardy annuals; for if sown in a mild hotbed

at the end of February or the beginning of March, they may be grown into good plants, and give a full display of their fine flower-heads as early as those that have withstood the winter in the borders. It is well to note that these in many soils are not nearly so hardy or enduring as many of the perennials we have from N. Amer-

The Garden on January 27, 1887, mentions that a collection planted in this manner bore the drought of the last five years better than any other herbaceous perennial grown at Langport, and stood the winter so well that not 3 per cent. suffered. Some commend the Gaillardia for bedding, though it is seldom grown in this way,

Gaillardia.

ica, and therefore cannot in cold soils be depended on.

The culture of the perennial Gaillardia is not beset with difficulties, and the plant is seen best in bold groups, rather than small clumps here and there in the border. If established plants in pots are obtained in April and put out in the places they are to occupy about 2 ft. apart each way, a good bloom may be expected the same season if the soil is well dug and mixed with well-decayed manure. Mr. W. Kelway, of Langport, Somerset, in a note to

but a pretty effect is obtained when plants of one distinct variety, or shades of the same colour, are put about 1 ft. apart with the stems pegged down. The situation, however, where the Gaillardias remain out winter after winter must be warm, the soil not too heavy, but light and dry. In very cold and wet seasons in Midland counties the plants often succumb; but it is very easy in the autumn to strike cuttings, which may be taken off and treated similarly to the Pelargonium, or seeds raised in March, and the plants hardened

off before putting out, will also give a quick return in the shape of flowers. Increased by cuttings in autumn or spring, and division in spring.

Species of *Gaillardia*—*acaulis*, N. Amer. *amblyodon*, Texas. *aristata*, N. Amer. *arizonica*, Arizona. *comosa*, Mexico. *lanceolata*, N. Amer. *megapotamica*, Braz. *mexicana*, Mex. *odorata*, N. West Amer. *pinnatifida*, N. W. Amer. *pulchella*, N. Amer. *Roezli*, Calif. *simplex*, N. W. Amer. *spathulata*, N. W. Amer. *tontalensis*, Argent.

GALANTHUS (*Snowdrop*).—Always loved in English gardens, the old Snowdrop is now known to be only one member of a large family most of which have merits for garden culture. The Snowdrop never looks better than when naturalised in turf in orchards, on the margins of lawns, or beside woodland walks. Almost any soil suits the Snowdrop, but peaty and warm open soils are best. All the Snowdrops are hardy, and may be naturalised, grown on the rock-garden, or in the wild garden, where they may be associated with Anemone, early Crocuses, Winter Aconites. As cut flowers, Snowdrops are most attractive, but to cull the flowers in bud is, however, essential, as they can be carried better and open fresher in water than if cut when fully open. Buds so gathered will remain beautiful for ten days or longer, while flowers cut after expansion will fade in about a week.

The present growing state of our knowledge of Snowdrops may best be gleaned from a paper read by Mr. Jas. Allen before the Royal Horticultural Society, of which the following is an abstract:—

In speaking of Snowdrops we must not forget that, besides the division into species and sub-species, we have the arrangements into classes, according to colours and other peculiarities. Consequently we hear of white Snowdrops and yellow Snowdrops, and also green Snowdrops.

G. IMPERATI.—I think no botanist would be able to say where *nivalis* ended and *Imperati* commenced. In the section to which *G. nivalis* and *G. Imperati* belong there are some most lovely Snowdrops, amongst which I would mention first Mr. Melville's Dunrobin form. *G. n. Atkinsi* is second to none in size, form, quality, and freedom in growth. It is the plant known to some as *Imperati* of Atkins.

G. PLICATUS is very distinct and its best forms possess great beauty. The foremost place in this section belongs to *G. f. maximus*. *G. plicatus* usually

flowers late, but I have a selected form, *G. f. præcox*, which flowers with the early varieties of *G. nivalis*. Another selected form, *G. f. Omega*, flowers with the very latest.

G. ELWESI.—The best forms of this are large and handsome, but it wants the most sheltered spots in the garden to thrive. Many find *G. Elwesi* difficult to manage, but with me it grows very freely, especially in one bed of very light soil, where the seedlings are almost a nuisance.

G. LATIFOLIUS.—This is the most distinct of all Snowdrops, with its broad grass-green foliage and small pure white flowers, and it has a delicate beauty all its own, more especially just before the bud expands, when the two leaves curve so lovingly round the flower-stem.

G. FOSTERI.—The markings on the inner petals are very similar to those of *G. Elwesi*, but the foliage is quite different, being broad and somewhat blunt, and in shape and colour much like the leaves of *Scilla sibirica*. M. Max Leichtlin thinks very highly of *G. Fosteri*, and considers it to be the "king of Snowdrops."

G. ALLENI.—Mr. Barker thinks this is probably a hybrid between *G. latifolius* and *G. caucasicus*, as it has some of the features of each species. The flower is of much the same character as that of *G. latifolius*, but nearly twice as large, and the foliage corresponds in size with the blossoms.

AUTUMNAL SNOWDROPS.—In Greece and the adjacent countries several Snowdrops have been found which flower in the autumn or early winter. They seem to belong to the *nivalis* section. One peculiarity I have noticed in them is that they have a glaucous line running down the centre of each leaf, and by this they can be at once distinguished from the spring-flowering forms of *nivalis*. So far as I can learn, all these Snowdrops grow on high ground, mostly on mountains. I understand that the Snowdrops on the lower grounds do not flower until early in the year.

G. OLGÆ.—From the descriptions given of it, *G. Olgæ* must be a fine variety, and it is very unfortunate that it is lost to cultivation. M. Tanka, the Hungarian botanist, asserts that this and *G. octobrensis* are identical, but I do not think so; and the difference between *G. octobrensis* and *G. Rachelæ* confirms my opinion.

G. OCTOBRENSIS.—Lord Walsingham, when travelling in Albania about the year 1875, collected some bulbs on one of the mountains and sent them to the late Rev. H. Harpur-Crewe. Amongst these was

a bulb which proved to be a Snowdrop flowering in the autumn, usually in October. I am sorry to say that it is somewhat delicate and increases very slowly with me.

G. RACHELÆ.—This is of the same type as *G. octobrensis*, but the flower is a little larger, and the leaves are quite a third broader, and it seems to have a stronger constitution than that variety. It also differs in being a week or ten days later in flowering.

THE YELLOW SNOWDROPS form but a small class, two varieties only being known at present, *G. lutescens*, and *G. flavescens*. It must not be supposed that the petals of the flower are yellow; the name is given because of the rich yellow colour of the ovary, and the markings on the inner petals are also of that colour, instead of the usual green, and even the flower-stalks are more yellow than green.

THE WHITE SNOWDROPS also consist, at present, of two varieties only. *G. poculiformis* was first brought into notice by Mr. D. Melville, who found it in the grounds at Dunrobin Castle. It has since been found in Wales by Mr. A. D. Webster, and I have also received bulbs of a very similar form from a lady near Ayr, in whose garden it grew with several other peculiar forms.

GREEN SNOWDROPS form quite a large class, but none of the blossoms are entirely, or even mostly, green in colour. They come into this class in consequence of having more or less green on the outer petals. *G. Scharloki* was so named in 1868 by Professor Caspary in honour of its discoverer, Herr Julius Scharlok, who found it in the valley of the Nahe, a tributary of the Rhine. This variety, in addition to large pale-green spots towards the tips of the outer petals, has the peculiarity of a twin or divided spathe, which curves down on the two sides much like a pair of wings. This variety grows and increases very freely. *G. virescens* is a very singular-looking Snowdrop, reminding one somewhat of an Ornithogalum. The outer petals are pale green, shading off to pure white at the edges, and especially at the tips; the inner petals are entirely green. *G. Fosteri* *Leopard* is a great curiosity, having flowers of quite unusual shape, and at the tip of each outer petal a large dark-green spot. M. Max Leichtlin kindly sent me ten collected bulbs of *G. Fosteri* in January 1890, and one of these flowered as described, and has kept true this season. *G. Fosteri* *Spot* is quite distinct from

Leopard. It has long outer petals, somewhat pear-shaped, and at the tip of each is a small pale-green spot. The spots are not sufficiently prominent to give a decided character to the flower, but it is valuable as a variety.

SOIL FOR SNOWDROPS.—With me *G. nivalis* grows freely in all soils and situations. *G. plicatus* is not very particular, but still some of its varieties require extra care, as they have an unpleasant way of disappearing. *G. Elwesi* does not do well in close retentive soil. *C. latifolius* and *G. caucasicus*, I believe, prefer gritty loam, and I should say that *G. Fosteri* would also like it. Mr. A. D. Webster tells me that peat has quite a magical effect on Snowdrops, but I have not tried it. My ideal soil for Snowdrops in general would be half good sweet yellow loam and almost half unsifted river-grit and a little leaf-mould. The situation I should choose would be a gently sloping bank, more or less shaded by trees whose roots were allowed to wander freely among the Snowdrops. I believe that all bulbs are healthier when planted amongst active roots than in ordinary beds. When the bulbs are at rest it is very essential that the soil should be kept sweet by the activity of other roots. We too often lose sight of this fact. I think the autumnal-flowering Snowdrops should be treated as alpine plants. All my best Snowdrops are grown under trees, the soil being quite full of their roots. I do not use manure for them. The only drawback to my situation for these spring gems is the soiling of the flowers from the drippings of the trees. I should mention that the climate is so trying that I cannot grow such hardy plants as Primroses, Pinks, Daisies, etc. All these disappear after a season or two. I move most of my Snowdrops when in full flower, and do not find they are injured by it. I have noticed that the more green colour there is in any Snowdrop the more freely it grows and the more rapidly it increases, while the absence of green, or the substitution of yellow for the green, makes the plant delicate and slow of increase.

Galatella. See *Aster*.

GALAX (*Wand Plant*).—*G. aphylla* is one of the neatest little plants for the rock-garden; its white wand-like flowers must have suggested its common name; its round evergreen leaves are beautifully toothed and tinted, on slender stems 6 or 8 in. high. Of easy culture in moist peat or leaf-soil, in the bog-garden, or on the margins of beds of dwarf shrubs in

peat. America. There is a larger form, *G. macrophylla*.

GALEGA (*Goat's Rue*). — Graceful perennials of the Pea family flourishing in any soil. On account of their free growth they are useful for the wild garden, and are effective in groups. They are herbaceous perennials, growing from 2 to 5 ft. in height. The best kinds are—*G. officinalis*, or Common Goat's Rue, a native

Garrya elliptica.

of Southern Europe, and 3 to 5 ft. high, in summer bearing dense clusters of Pea-shaped blossoms of a pretty pink. There is a white variety (*alba*) useful for cutting. A variety called *africana* has longer racemes and blossoms of a purple tinge. *G. orientalis* is from the Caucasus, 3 to 4 ft. high, with bluish-purple flowers. *G. persica* is a later-flowering kind, from 2 to 4 ft. high, with white flowers in dense racemes on slender stalks. *G. biloba* has pretty bluish-lilac flowers, and *G. patula* *Hartlandi*, with pale blue and white flowers.

GALTONIA (*Cape Hyacinth*).—A noble bulb from the Cape, *G. candicans* having spires of waxy, white bell-like blossoms, 1½ in. long, on stems 4 to 6 ft. high, in late summer and autumn. It is of easy culture, hardy in light soils, and valuable for bold groups in the mixed border, in the flower garden, or between choice

shrubs and among hardy Fuchsias. Increased by offsets from the bulbs, or from seeds, which flower about the fourth year. The distinct habit of this plant makes it one of the most valuable. *Syn. Hyacinthus candicans*.

GARRYA.—*G. Elliptica* is a fine Californian Evergreen, and beautiful winter-flowering shrub. In mild winters it begins to flower as early as December, and bears among handsome deep-green leaves gracefully - drooping tufts of pale-green catkins, which if cut with the twigs endure a long time in vases, and are welcome in winter. Though often grown on walls, it is hardy and makes a dense bush, 5 to 8 ft. high. In cold districts it is well to give it shelter, but in the south and west it does not require this. Other kinds are *G. flavescens* *Fadyenii*, *Fremontii*, *Thureti*, and *macrophylla*. There are male and female forms, the most elegant being the pollen-bearing plant.

Garrya elliptica.

GAULTHERIA (*Partridge Berry*).—Dwarf evergreen shrubs, *G. procumbens* having berries which give it a charm in winter, when it is one of the brightest plants on the rock-garden. Its drooping white flowers are also pretty. A native of sandy places and cool damp woods from Canada to Virginia, and often found in the shade of evergreens, it does best in moist peat, and forms edgings to beds where the soil is of that nature, but it will also grow in loam. Easily increased by division

Gaultheria procumbens.

or seeds. Suitable for the rock-garden, for the front margins of borders, and for edgings to beds of dwarf American plants, and it is best where well exposed. *G. Shallon* is too large for all but the rougher flanks of the rock-garden, being a vigorous shrub.

Other kinds in cultivation are :—*G. adenothryx*, *antipoda*, *Myrsinites*, *nummularioides*, *ovalifolia*, *pyrolaeifolia*, *rupestris*, *acutifolia*, *trichophylla*. These are mostly fitted for the rock-garden.

GAURA.—*G. Lindheimeri* is a graceful perennial, 3 to 4½ ft. high, flowering in summer and autumn, on long slender spikes bearing numerous white and rose flowers. It thrives in borders, in sandy loam, and plants for the flower garden may be used with the larger bedding plants. Increased by division and seed. N. America. *G. coccinea*, a Colorado plant, has recently been introduced.

GAZANIA (*Treasure Flower*).—Handsome and distinct dwarf plants; of much value, though only hardy enough for our summers. They are most useful on warm soils, and should always be placed in open sunny spots and among dwarf plants. They strike freely in a cold frame in August, but later require bottom-heat.

Gazania nivea.

Unless struck very early, spring-struck plants are almost worthless, so that it is best to put in the stock in August and let them stand in cutting-pots till potting-off time in spring. They will then come well into flower when put out in May; whereas, if they are topped for spring cuttings, both lots will be small and late. Short young tops should be used for cuttings, and may be inserted pretty thickly in the cutting-pots. When established, they must be just protected from frost, and kept in dry airy quarters. If kept warm, they grow too much, and are in spring poor lanky plants that can hardly be handled; but cool airy treatment keeps them short and sturdy. *G. rigens* is the best known. It has long deep-green leaves, silvery beneath, and bears flowers 2 in. across, which are of bright orange-yellow, with a dark centre. *G. splendens* is a fine variety,

and there is also one with variegated leaves. Some kinds are offered in the seed catalogues and may be raised in heat in spring. There is a very full description of these plants in *Flora and Sylva*, p. 139, 1905.

The known species (from S. Africa) are:—*G. arctoides*, *arminioides*, *Burchellii*, *caespitosa*, *canescens*, *coronopifolia*, *heterochaeta*, *Jurineaefolia*, *Kraussii*, *Krebsiana*, *Lichtensteinii*, *lineariloba*, *longifolia*, *longiscapa*, *micronata*, *multijuga*, *nivea*, *othonnites*, *oxyloba*, *Pavonia*, *pinnata*, *pygmaea*, *rigens*, *serrulata*, *subbipinnata*, *subulata*, *tenuifolia*, *uniflora*, *varians*.

GENISTA (*Rock Broom*).—Some of these are good garden and rock-garden shrubs, thriving in almost any soil which is not too wet, and readily raised from seeds.

G. ætnensis, a native of Sicily, is one of the best kinds. In a young state the twigs are sparsely clothed with linear silky leaves, but when old no leaves are developed, and the green slender twigs perform the functions of leaves. An old tree—for this species attains a height of 12 ft. or more—is a beautiful sight in July or August when in full flower.

G. anglica (*Needle Furze*) is a prostrate spiny shrub, sometimes growing to a height of 2 ft., widely distributed throughout Western Europe, and in Britain occurring on moist moors from Ross southwards. The short leafy racemes of yellow flowers appear in May and June.

G. aspalathoides, a native of South-western Europe, makes a densely-branched, compact, spiny bush from 1 ft. to 2 ft. in height. It flowers in July and August, and is a good shrub for the rock-garden.

G. anxantica, found wild in the neighbourhood of Naples, is very nearly allied to our native Dyer's Greenweed. It is dwarf in habit, and its racemes of yellow flowers are borne in great profusion in late summer. A beautiful rock-garden plant.

G. ephedroides, a native of Sardinia, is a much-branched shrub, 2 ft. in height, bearing yellow flowers from June to August.

G. germanica, a species widely distributed throughout Europe, makes a bright rock-garden shrub not more than a couple of feet in height. It flowers very freely during the summer and autumn months, and the stems are inclined to arch when 1 ft. or more high.

G. hispanica, a native of South-western Europe, is a compact undershrub, evergreen from the colour of its shoots. It scarcely attains more than 1 ft. or 18 in.

in height, and the crowded racemes of yellow flowers are borne at the tips of the spiny twigs from May onwards.

G. pilosa is a dense, prostrate bush and a delightful rock-garden plant. In Britain it is rare and local, being confined to gravelly heaths in the south and south-

Genista pilosa.

west of England. It grows freely and flowers abundantly in May and June. Like the rest of the British species of the genus, it has bright yellow blossoms.

G. radiata is a native of Central and Southern Europe, 3 ft. or 4 ft. in height, evergreen from the colour of its much-branched spiny twigs. The terminal heads of bright yellow flowers are throughout the summer months. It is hardy in the South of England."

Genista radiata.

G. ramosissima.—A native of Southern Spain, and one of the best garden plants in the genus, growing about 3 ft. high, the slender twigs laden in July with bright yellow flowers. This also passes under the name of *G. cinerea*.

G. sagittalis is a frequent plant on the alpine meadows of Europe. In habit it differs widely from any of the other kinds, the leaves being replaced by a winged stem. It scarcely grows a foot high, and forms a mass of branches bearing racemes of yellow flowers in May and June.

G. tinctoria (*Dyer's Greenweed*).—Occurring in a wild state in Britain, it rarely exceeds 18 in. in height, and is a spineless shrub bearing a profusion of bright yellow flowers from July until September. A double-flowered variety of this makes a pretty rock-plant.

G. tinctoria var. elatior is a tall-growing form from the Caucasus, which under cultivation frequently grows from 4 ft. to 5 ft. high, and bears huge panicle inflorescences.

G. virgata.—A native of Madeira and one of the most beautiful species of the

genus. At Kew there are many old plants from 6 ft. to 10 ft. high, and as much through, which in July are one mass of colour, every one of the slender branchlets terminating in a raceme of yellow blossoms.

GENTIANA (*Gentian*). — Dwarf evergreen alpine plants, some of them difficult to cultivate, but others easily grown (on the rock-garden and in borders). The most precious are the perennial alpine kinds, which are such a beautiful feature on the mountains of Europe, and with care in our gardens spread into healthy tufts and flower as well as on the mountains. Of these plants there are two sections—the first, strong easily-grown kinds, suitable for borders; and the second, dwarfer kinds, which should be grown in the rock-garden, or in borders or beds of choice dwarf plants. The Willow Gentian, some of the American perennials, and those with herbaceous shoots generally grow freely in borders, in good moist soil. So does the Gentianella (*G. acaulis*). The dwarfer

Gentiana affinis.

Gentians are represented most familiarly by the Vernal Gentian (*G. verna*).

G. acaulis (*Gentianella*).—An old inhabitant of English gardens, among the most beautiful of the Gentians, and easily cultivated, except on very dry soils. In some places edgings are made of it, and where it does well it should be used in every garden, as, when in flower, edgings of it are of great beauty, and, when not in flower, the masses of little leaves gathered into compact rosettes, form a good edging. It is at home on the rock-garden, where there

are good masses of moist loam in which it can root. It is also good for forming carpets in the rock-garden or on raised borders. With us the flowers open in spring and in early summer, but on its native hills they open according to position, like the Vernal Gentian. *G. alpina* is a marked variety with small broad leaves, and there are several other varieties. Their colours vary from the deepest blue to white, and in one white flower the tips of the corolla are a rich blue. In all the forms except the white the throat of the corolla is spotted with blue on a greenish ground, and all have greenish marks on the outside. Alps and Pyrenees.

***G. asclepiadea* (Willow Gentian).**—A good herbaceous kind; this gives no trouble, but dies down out of harm's way in winter. Well grown, it will spring up to 2 ft. and freely produce good-sized flowers of a purple-blue along nearly the whole stem in late summer and autumn. This Gentian will grow in open woods. It may therefore be naturalised, and its effect among the Grass in a wood is charming. There is a white form. Division. Europe.

***G. bavarica* (Bavarian Gentian).**—In size this resembles the Vernal Gentian, but it has smaller Box-like leaves of yellowish-green, and its tiny stems are thickly clothed with dense little tufts of foliage, from which arise flowers of lovely iridescent blue. While *G. verna* is found on dry ground, or on ground not overflowed by water, *G. bavarica* is in perfection in boggy spots, by some little rill. We must imitate these conditions if we desire to succeed, and a moist peat or bog bed, and with no coarse plants near, will enable us to grow this lovely plant. Alps.

***G. septemfida* (Crested Gentian).**—A lovely plant, bearing on stems 6 to 12 in. high clusters of cylindrical flowers widening towards the mouth, and a beautiful blue-white inside, and greenish-brown outside, having between each of the larger segments one smaller and finely cut. In the variety *cordifolia* leaves are more cordate, but it grows about only half the height of the type, with a much neater habit, and there is a dwarf form. Best in moist sandy peat. Division. Caucasus.

***G. verna* (Vernal Gentian).**—One of the most beautiful of alpine flowers, thriving in deep sandy loam, with abundance of water during the warm and dry months, and perfect exposure to the sun. The absence of these conditions is a frequent cause of failure. It thrives wild in cool pastures

and uplands, where it is rarely subjected to such drought as it is in a parched border. Grit or broken limestone may be mingled with the soil; if there be plenty of sand this is not essential; a few pieces half buried in the ground will tend to prevent evaporation and guard the plant till it has taken root. It is so dwarf, that if weeds be allowed to grow round it they soon injure it, and tall plants overshadow or overrun it. In moist districts

Gentiana verna.

it may be grown in a deep sandy loam, on the front edge of a border carefully surrounded by half-plunged stones. Well-rooted plants should be secured to begin with, as failure often occurs from imperfectly-rooted, half-dead plants. It is abundant in mountain pastures on the Alps, in Asia, and also in Britain.

Mr. Correvon, of Geneva, who knows these plants well, classifies them as follows for cultivation :—

Acaulis Group :—*Alpina*, *angustifolia*, *Clusii*, and *Kochiana*, which thrive best in calcareous soils, except the last, which requires a soil free of it. In our country they thrive in a way on moist soils, but flower best in the limestone soils of Ireland. They will not flower well in shade.

Tall kinds, with large roots, *G. Burseri*, *lutea*, *pannonica*, *punctata*, *purpurea*. [These are only worth growing in Botanic gardens.]

Dwarf tufted kinds requiring care on the bog or rock-garden, those marked * thriving in moist open soil in turf or sphagnum in full sun : the others dryer spots and pebbly soil ; calcareous soil to be preferred for *verna* and its forms. *G. angulosa*, **bavarica*, *brachyphylla*, *Favrati*, *imbricata*, *pyrenaica*, **Rostani*, **septemfida*, *verna*.

Kinds for marshy ground :—*G. Andrewsii*.

angustifolia, *asclepiadæa*, *Pneumonanthe*. [Most of these seem of easy culture, but the American kinds gradually perish on heavy, compact soils.]

Kinds thriving in leaf soil and sandy peat, with broken bits of sandstone :—*G. alba*, *Bigelowi*, *ciliata*, *frigida*, *Freyniana*, *Frellichii*, *Kiurroo*, *Parryi*, *pumila*, *Wallichiana*, *Weschniakowi*.

Kinds of easy culture :—*G. brevidens*, *cruciata*, *dahurica*, *decumbens*, *Fetisowi*, *Kesselringii*, *macrophylla*, *Olivieri*, *phlogifolia*, *Przewalskii*, *Saponaria*, *scabra*, *straminea*, *tibetica*, *Tianschanica*, *Walujewi*, *Weschniakowi*.

Annual kinds :—*G. amarella*, *campestris*, *Germanica*, *nivalis*, *tenella*.

These groupings are, like so many others, arbitrary if convenient. Many of the rarer kinds of gentian come from countries little known to us, and even if we did know them the cultivation of plants is often only learned through experience, and it is common to see them thriving in conditions wholly different from those in which they grow naturally. Certain things, however, are to be borne in mind by those who aspire to cultivate gentians, viz., that these are alpine or high mountain plants, or plants of the open breezy marsh, and that in such conditions they rarely have to do with compact heavy soils. Gritty, sandy, or peaty soils therefore suit them best—even marsh land, though saturated, is free in texture.

They grow also very often above the tree and shrub line of life, and are therefore fully exposed to the sun, and any planting of them on stuffy, half-shady conditions common in many gardens is against them, as also is the unfortunate and common practice of putting rock-gardens in hollow places instead of places fully exposed to the sun. Lastly, any association with ferns or taller or more vigorous plants is a mistake ; and, above all things, the printed lists or any other lists must not be taken to mean that the great beauty of some kinds is typical of all, as not a few gentians are unworthy of garden cultivation. I have grown them in the most unlikely place of all, a battered wall with earth behind, and they flowered very well. The plan may be worth trying in certain soils with *G. acaulis*, where it fails to flower in borders.

GERANIUM (*Cranesbill*).—The hardy Geraniums are usually stout perennials and natives of the fields and woods of Europe and Britain, though some are dainty alpine flowers. The handsomest of them is probably *G. armenum*. It is

sometimes 3 ft. in height, flowering in midsummer abundantly, and sometimes till late in autumn to a less degree. Its flowers are large and handsome. It requires only ordinary garden soil, and is well suited for the mixed border, or for grouping with the finer perennials in beds or on the margins of shrubberies. Some other kinds are showy, and the best of these are : the dwarf *G. sanguineum* ; its beautiful Lancashire variety, with rose-

A group of hardy Geraniums.

coloured blossoms finely marked with dark lines ; *G. pratense*, a tall kind, with large purple flowers ; and its pure white variety. There is also an intermediate form with white and purple flowers. The Caucasian species, *G. gymnocaulon* and *G. ibericum*, are beautiful, with their rich purple blossoms, 2 in. across, delicately pencilled with black. *G. platypetalum*, *striatum*, *ibericum*, and *Lamberti* are suited for shrubbery borders, and most of them are free and vigorous enough for naturalisation. *G. Endressi*, with light rose-coloured blossoms, is also very attractive. All the above-mentioned Geraniums are hardy, easily cultivated, and grow in ordinary soil. The pretty rock-garden kinds, *G. cinereum* and *G. argenteum* are alpine plants, and, unlike stout perennials, they must be associated with very dwarf rock-plants. All the Geraniums are increased by seed, and with the exception perhaps of the *G. cinereum*, and *G. argenteum*, all are freely multiplied by division.

GERARDIA.—I have never, either in gardens, or in the wild land, or in the Alpine mountains, where beauty of plant life is at its highest, seen anything that struck me more than a *Gerardia* I once

met with in the roadside in New Jersey, growing abundantly here and there, like a little tree in habit, 15 in. to 18 in. high, bearing most graceful miniature Pentstemon-like flowers, but far more refined in colour and distinct in form than any Pentstemon. Naturally I asked why such a plant was not in cultivation, and learnt that the Gerardias are mostly parasites on the roots of other plants. In spite of this, I brought home some seed of one or two kinds and sowed it where I thought it would have some chance, but nothing ever came of it. There are a number of kinds in America, and some of the plants are pretty, but hitherto they seem to have resisted all attempts at cultivation. Gerardia is a genus called after John Gerard, who wrote the famous Herbal in the time of Queen Elizabeth, and is, as a group, of the highest interest. I hope that some of them may be introduced. *G. tenuifolia* is a species long known, which thrives in the open, and forms charming tufts covered with pretty flowers in summer. It is dwarf and bushy in habit, light and graceful in effect with its numerous pale blue flowers.

GERBERA (*Transvaal Daisy*).—Perennials from South Africa, of which few are yet in cultivation. *G. Jamesoni* is a handsome plant, nearly hardy in the southern counties, but too tender for the midlands and the north. Its leathery dark-green leaves are shaped like those of a Dandelion and arranged in a rosette, and the flowers are glowing scarlet, four inches across, borne singly on tall bare stems. Where the plant cannot be grown in the border it will bloom in a sunny, airy greenhouse, potted in a mixture of loam, peat, and sand, and treated as one would a Cineraria. In some gardens it is well grown upon such parts of the rock-garden as are devoted to hardy Cacti, where it can be sheltered by a glass roof in winter and kept dry while freely exposed to the air on all sides. *G. viridifolia*, a dwarfer plant with smaller flowers, white flushed with lilac, is also grown, and between this and *G. Jamesoni* beautiful hybrids have been raised in which the flowers vary in colour from nearly white to salmon-pink, coral-red, orange, and yellow.

GEUM.—Dwarf handsome perennial herbs, *G. montanum* being one of the best of the dwarf kinds for the rock-garden, and very beautiful when well established in early spring. It has a compact habit, the leaves lying close on the ground, the erect stems of solitary clear yellow flowers being abundant. It likes plenty of

moisture. *G. reptans* is also a pretty rock-plant, differing from *G. montanum* in its finely cut leaves, large flowers, and in producing stolons, which are absent in *G. montanum*. There is a variety, however, of the latter which is by far the most ornamental plant of the European kinds. It is of a very vigorous habit, with large, fine leaves, and bears freely deep yellow flowers on each stem. This form has been cultivated in the Liverpool Botanic Garden for over twenty years, and is said to be of garden origin.

G. chiloense.—A double-flowered form of this was figured in *The Garden*, December 21st, 1878, under the name of *G. coccineum fl.-pl.*, an erroneous name, under which it is known in many gardens. A very large-flowered variety, under the name of *G. chiloense grandiflorum*, was figured in the *Botanical Register*, vol. xvi., t. 1348. This I think is one of the best single-flowered forms in the genus, and does not seem to have altered much since the above-mentioned plate was drawn. At t. 1088 of the same work another plant is figured as *G. coccineum*, but this does not at all agree with the original figure in Sibthorp's *Flora Græca*, t. 485, and may be taken to represent as nearly as possible the typical *G. chiloense*. A native of Chiloe, introduced to cultivation somewhere about 1826.

G. chiloense var. grandiflorum (syn., *coccineum grandiflorum*) is a magnificent border plant, its dazzling scarlet flowers and bold habit making it a favourite with all who love brilliant patches in their mixed borders. The double-flowered form of this, however, seems to be a more general favourite, the blooms lasting longer, though I think they lack the elegance of those of the simpler form. They begin to expand soon after May and continue until October.

G. chiloense var. miniatum.—This plant, figured in *The Garden* in 1890, is said to have originated in the nursery of Robert Parker at Tooting, and was named by him *G. miniatum*. Another plant known as the Altrincham variety, or *G. hybridum*, was raised about the same time, but, unless in the flowers being brighter, I see no difference. But there can be no question as to the value of this plant, its robust constitution standing it in good stead in almost every kind of soil, and enabling it to be propagated with the greatest facility by cutting the tufts in pieces. It flowers from April until the end of July, and when doing well often attains a height of from 2 ft. to 3 ft.

G. coccineum is a rare and entirely

different plant. A native of Mount Olympus.—D. K.

GILIA.—Hardy Californian annuals, 1 to 2 ft. high, and bearing for a long time a succession of blossoms either blue, white, lavender, or rose-coloured. Seed may be sown in autumn for spring-blooming, and in April for summer and autumn blooming; and the soil should be light and rich; the blossoms are useful for bouquets or vases, and last for some time in water. The best are *G. achilleæfolia major* (blue), *G. a. alba* (white), *G. capitata* (lavender), *G. tricolor* (white and purple), *G. rosea splendens* (rose), *G. nivalis* (white), *G. liniflora*, *G. dianthoides*, and *G. laciniata*. A mixed packet of seed will give a fine variety of colours. They may occasionally be made of graceful use as carpet plants, or used effectively among annuals.

GILLENIA.—*G. trifoliata* is a Spiræa-like plant with numerous erect slender stems, about 2 ft. high, and branching in the upper part into a loose panicle of white flowers. Distinct and graceful; is of value for the garden, growing in peat or free loamy soil, and may be given a place in the shrubbery or in the wild garden. North America. Division.

G. stipulacea.—This is a rather taller plant and not quite so compact in habit, but it is graceful, and no more charming plant could be introduced to parts of the garden where there chance to be an extra amount of moisture and a little shade from mid-day sun.

Ginko.—See SALISBURIA.

GLADIOLUS (*Sword Lily*).—Beautiful bulbs, for the most part natives of S. Africa. Every species introduced is of ornamental value, is easily grown, and is suitable for many garden uses. The chief charm of the Gladiolus is derived from the beautiful hybrid varieties now in cultivation. *G. gandavensis* and *brenchleyensis* are the principal kinds from which these hybrids come, and are by far the most important class, though the earlier-flowering kinds (descendants of *G. ramosus*, *Colvillei*, *trimaculatus*, and others) are valuable for early summer-flowering. The *gandavensis* section suffers from cold autumn rains, and the bulbs must be lifted in autumn.

In growing Gladioli it is necessary to prepare soil where they will be most effective. They are happy in clumps between Dahlias, Phloxes, Roses, and subjects of a somewhat similar character, and are very effective in clumps alternating with Tritomas, and also when associated with masses of Cannas; while they are suitable for intermixing with American plants, whose dark foliage shows off rich

flowers to good advantage. The position should be marked out in the autumn or winter, and a few spadefuls of manure should be dug in. As a rule, the space of each clump should be 18 in. in diameter, and the soil should be turned up to a depth of 18 to 24 in. March and April are the best months for planting, as Gladioli planted then are at their best during August and the early part of September. A succession of planting is desirable to secure a late bloom. Those who desire their gardens to be beautiful late in the autumn should not fail to employ the Gladiolus largely, as it is the handsomest of late-blooming garden plants and its spikes are seen to great

Gladiolus: The Bride.

advantage about the time of heavy autumn rains. When spikes of extra fine bloom are required it is necessary to give special treatment, and an open situation is of the utmost importance. A deep loamy soil, not too heavy, is the most suitable for spikes for exhibition, but very satisfactory results even may be obtained by deep digging and liberal manuring in soils of an uncongenial character. Early in autumn the soil should be liberally dressed with manure from an old hotbed. After it is spread regularly over the surface, trench the soil up to a depth of 2 ft., and leave the surface as rough as possible, so

as to expose a large body of it to winter frost and rain ; this is of special importance in the case of heavy soils, which should be thoroughly pulverised by the weather. If this is done, the soil will be fit for working in spring, and a pricking over with the fork will reduce it to a fine tilth, and will admit of the bulbs being planted, even in wet seasons, without unnecessary delay. Planting should com-

Hybrid Gladiolus (Lemoine's).

mence in March, and be continued until June, at intervals of a fortnight. By this means will be obtained a succession of bloom, from the earliest moment at which the show varieties may be had in flower until the end of the season. The beds should be 4 ft. in width, with rows 18 in. apart. They will then admit of a row down the centre, and one on each side, these outside rows being 6 in. from the edge of the bed. As soon as the plants have made sufficient progress to require support, stout stakes should be put to them.

The top of the stake must not be higher than the first bloom, and the stem should have one tie only, a strong one of bast. After staking, the bed should be covered with partly-decayed manure, to a uniform depth of 2 to 3 in. This dressing materially assists during hot weather in keeping the soil cool and moist about the roots. As soon as the plants show bloom, liquid manure promotes full development of the flowers. For exhibition the spikes should be cut when about two-thirds of the blooms are expanded, as the lower flowers are generally finer than those towards the top.

To ensure a given number of spikes at a particular date, a number of different sorts should be planted. For example, instead of six to twelve bulbs of a sort, it is preferable to plant one to three, and to increase the number of sorts ; and, in purchasing a hundred bulbs, to select fifty to seventy varieties. For decoration it is also better to have a large number of sorts, because of the greater variety of colour they afford. The improvements of the last few years have been so rapid, that many sorts which a few years ago occupied a foremost position are now surpassed, and for exhibition purposes are comparatively worthless. Most large nurseries and seed houses supply the finest exhibition bulbs, as well as bulbs for ordinary planting.

EARLY-FLOWERING KINDS.—During the past few years these beautiful flowers have rapidly become popular on account of their great value for cutting. They have been obtained by hybridising several South African species, particularly *G. ramosus* (the branching kinds which are a distinct group), *G. trimaculatus*, *G. blandus*, *G. venustus*, and *G. Colvillei* forming what is known as the nanus section. Of *G. ramosus* a great number of varieties are dwarfer in habit, more graceful in appearance, earlier in flower, than those of *G. gandavensis*, and almost as variable in colour ; they are, moreover, much hardier, and beds of them may be left unprotected during winter, so as to afford early flowers for cutting, for, unless the weather is very severe, these beds never require any covering. This remark applies only to bulbs established in the ground, for fresh bulbs are as tender as other Gladioli, and must be protected from frost. Amateurs often make a mistake in this matter. Many plants are hardy only after they are well established. The nanus section has a great many varieties of almost every shade of colour, 1 to 2 ft. high, and invariably having the

three characteristic blotches of *G. trimaculatus* on the lower segments of the flower. *G. Colvillei* is one of the prettiest and hardiest of all, and is most valuable for cutting, particularly the white variety, which has many beautiful white flowers in early summer. The time of flowering depends upon the time of planting, but the dwarf sections are the earliest. If the varieties of *G. ramosus* are planted at the same time as the dwarfs, the dwarfs are in flower a fortnight before the others.

These early-flowering kinds are of simple culture, and succeed best in well-drained raised beds of good loamy soil, in a sunny position. Some varieties, such as *Colvillei*, are safe if undisturbed, but some persons prefer to take the bulbs up and thoroughly dry them, and then to plant them again about November; in which case they will flower early in June. If the bulbs remain in the ground through the winter, care must be taken to protect them in severe cold. Propagation may be effected rapidly by seeds and offsets. By seeds, flowering bulbs are produced the second season, and can be left in the ground during the winter, provided the soil is light and dry and the bulbs are protected from frost. These Gladioli are extremely useful for pot culture, and, by gentle forcing, can be had in flower at mid-winter, and, for securing bloom between the flowering of the forced plants and of the plants in the open beds, they may be grown in cold frames. For this purpose a bed of loam, leaf-mould, and sand in nearly equal proportions should be made up in October. It should be about 1 ft. deep and well drained, and in it the bulbs may be planted thickly 4 in. in depth. The lights should then be replaced, and air left on always, except during severe frosts. No water should be given until the leaves appear (which will be about February, or earlier if the season be mild), and then only enough to keep the soil moist. The lights should be removed during mild weather, and altogether in April. During the latter part of May and in June plenty of bloom may be cut for decoration. Besides those named, the following are some of the best kinds: The Bride, Groot-voorst, Rubens, Maori Chief, The Fairy, Elvira, Rembrandt, Philip Miller, Beatrice, Baron von Humboldt, Sir Walter Raleigh, and Rose Distinctive.

Another interesting race of hybrids has lately been obtained between *G. gandavensis* and *G. purpureo-auratus*, a Cape species, with yellow and purple flowers. These hybrids have large flowers of a creamy-white and a deep

purplish-crimson. The named kinds are *G. hybridus Fræbeli*, *G. h. Lemoinei*, and Marie Lemoine. Although by no means so showy as many others, they are most graceful and distinct in port, and in the shape and colour of their flowers. In deep sandy soil they attain a height of nearly 5 ft., and the gradual development of the flowers renders them effective for at least five weeks after the first and lowermost blossom. As graceful plants they well deserve culture, being hardier than many home-raised hybrids; but a warm deep soil and a sheltered position near the foot of a south or west wall are the most congenial to their strong growth.

G. princeps is the latest gain amongst the hybrids of garden value. Its flowers of crimson-scarlet are intense in colour, of great size and fine form. The brightness of the flower is relieved by touches of white, or frequently by a white stripe across the centre of the lower petals, which are very full and rounded. It flowers late in August and September when other kinds are on the wane. Though expanding in slow succession, and never having more than three or four blooms open at the same time, the size and quality of its flowers do much to make up for this.

A few of the wild species almost equal the hybrids in beauty. One of the finest is *G. Saundersi*, about 2 ft. high, with large flowers of a brilliant scarlet and a conspicuous pure white centre. It is not often grown, though hardy and of very easy culture, and only requiring a sunny position in a light rich soil. It is from this kind that a number of good hybrids have been raised, such as Childsi, Ben Hur, Columbia, Hoboken, Splendour, William Falconer, and Yolande.

The European Gladioli are pretty plants for the mixed border. There is a strong similarity among them, being from 1 to 1½ ft. high, and all bearing rather small rosy-purple flowers. The best-known are *G. byzantinus*, *communis*, *segetus*, *illyricus*, *neglectus*, *serotinus*. They like warm dry soil and a sunny situation. They are of particular interest from their free and hardy habit, which makes them as easy to grow as native plants. They are admirable for the wild garden as they thrive in copses, open warm woods, in snug spots in broken hedgerow banks, and on fringes of shrubbery in the garden.

DISEASE.—This is frequently, if not always, accompanied by some condition of the fungus known as Copper-web, the

Rhizoctonia crocorum of De Candolle, which is known in France under the name of Tacon. The fungus attacks also the Narcissus, the Crocus, Asparagus, Potatoes, and other bulbs, roots, etc. A good deal of attention was paid to it in 1876, when Mr. G. W. Smith detected in abundance the curious fungus named by him *Urocystis Gladioli*. The *Urocystis* and *Rhizoctonia* are probably two conditions of the same thing, the *Rhizoctonia* being possibly the spawn and the *Urocystis* the fruit. The latter *Urocystis* is capable of remaining in a resting state for a year or more, and is frequently found in the decayed red-brown portions of the diseased corm. The disease is confined to certain localities and to certain gardens, and is unknown in some districts.

GLAUCIUM (*Horned Poppy*).—Plants of the Poppy family, usually biennials. *G. luteum* is quite hardy and has handsome silver foliage, almost as white as the silvery *Centaurea*. The leaves are much more deeply cut, and, planted close, are effective either in masses or lines. To ensure strong plants for winter borders or beds, seed should be sown about May, as the plant is a biennial. When in bloom it makes a striking border plant, the flowers being large and orange-red. *G. Fischeri* is a handsome plant; its snow-white woolly foliage is very telling, and its blossom is of an unusual flame colour. *G. corniculatum* is similar, but not so handsome. Both require the same treatment as *G. luteum*.

GLOBULARIA (*Globe Daisy*).—Interesting and dwarf alpine plants, good on the rock-garden in light and peaty soils. *G. Alypum* is among the best; it inhabits dry rocks. Other kinds are *G. cordifolia*, *G. nana*, *G. nudicaulis*, and *G. trichosantha*.

GOODYERA (*Rattlesnake Plantain*).—A beautiful little Orchid, *G. pubescens* having leaves close to the ground, delicately veined with silver; hardy, distinct, and charming, though its flowers are not showy. It has long been grown in botanic and choice collections, thriving in a shady position such as may be found in a good rock-garden, in moist peaty soil, with here and there a soft sandstone for its roots to run among. Eastern United States. *G. repens* and *Menziesi* are less desirable and much rarer.

GRAMMANTHES.—A pretty half-hardy annual, *G. gentianoides* being a capital plant for the dry parts of a rock-garden, about 2 in. high, forming a dense

tuft, with fleshy leaves about $\frac{1}{2}$ in. long, and many flowers about $\frac{2}{3}$ in. across: orange when first expanded, with a distinct V-shaped mark at the base of each petal, but finally assuming a deep red. *G. gentianoides* is sometimes used with good effect in the flower-garden, and succeeds in dry warm soil. Seeds should be sown in heat in February and March, and the seedlings planted out in May. Stonecrop family. Cape of Good Hope.

GREVILLEA.—Australian shrubs, generally grown in the greenhouse, but a few are quite hardy enough for wall culture; and *G. sulphurea*, the hardiest in cultivation, lives against walls about London. Its pale yellow flowers, of curious shape, as in all *Grevilleas*, come throughout the summer. *G. rosmarinifolia* is another hardy kind with Rosemary-like leaves and clusters of red flowers. The *Grevilleas* do best against a warm wall in a sheltered situation.

GUNNERA (*Prickly Rhubarb*).—South American plants remarkable for large and handsome foliage, somewhat resembling that of gigantic Rhubarb. They are hardy if slightly protected during the severest cold, for instance by a layer of dry leaves placed among the stems, and having their own leaves bent down upon them. In spring these dry leaves should be removed, and the tender growth slightly protected by a piece of canvas-shading or by an ordinary mat. In mild winters this precaution is scarcely necessary, especially in the south and other favoured localities. Where there is any diversity of surface it will be easy to select a spot well open to the sun and yet sheltered by shrubs. A large hole, about 6 by 4 ft. deep, should be dug out, a good layer of drainage material put at the bottom, and the hole filled with a rich compost of loam and manure. In summer the plants ought to have plenty of water, and a ridge of turf should be placed round them, to compel the water to sink down about their roots. They should also have a mulching of well-rotted manure early in every spring. They thrive on the margins of ponds where their roots can penetrate the moist soil, and if judiciously placed in such a position, they have a fine effect. Though the two kinds *G. scabra* and *G. manicata* greatly resemble each other, they have well-marked characteristics. The leaves of *G. manicata* are more kidney-shaped and attain a much larger size, often measuring 4 to 6 ft. across. The spikes of fruit are also much longer, and the secondary spikes are long and

flexuose, whereas in *G. scabra* they are short and stiff. Propagated by seed or division of established plants.

G. manicata.—Writing from Trellisick, Truro, Mr. W. Sangwin says: "It never attains the extraordinary dimensions it is capable of, unless planted in deep rich soil with its roots in the water by the side of a pond or stream. Our plant covers a space fully 30 ft. across, and consists of from twenty-five to thirty leaves, some of them over 9 ft. in diameter, upon clear stems 8 ft. high. The crowns are as large as a man's body, of a delicate pink colour. Flower-spikes are produced freely, which should be cut as soon as seen, or they will check the growth of the leaves. When they die down in autumn, the

Magellans. *manicata*, Brazil. *monoica*, N. Zeal. *pellata*, J. Fernand. *perpensa*, E. Africa. *petaloides*, Sandwich Isles. *prorepens*, N. Zeal. *strigosa*, do.

GYNERIUM (*Pampas Grass*).—This noble Grass, *G. argenteum*, 6 to 14 ft. high, according to soil or district, is most precious for our gardens, but in many districts suffers from our severe winters, and we seldom now see the fine plants of it that were not uncommon soon after its introduction. Some varieties are better in habit than others, and flower earlier, and it would be better to patiently divide such than to trust to seedlings. There are a number of varieties, some of a delicate rosy colour, and one variegated. The soils of many gardens are insufficient

Gunnera manicata at Narrow Water Park. Engraved from a photograph sent by Mr. F. W. Burbidge.

leaves should be placed loosely over the crowns, with their stems on top to prevent them being blown away by the wind. Protected in this way the plants have stood the winter with a thermometer ranging on several occasions below zero. It grows freely from seed, but it can be divided as easily as Rhubarb. The individual flowers are very minute, more curious than beautiful, the chief attraction being in the truly magnificent leaves."

The known species of *Gunnera* are: *G. Berteroï*, Chili. *bracteata*, do. *brephogea*, N. Granada. *chilensis*, Chili. *commutata*, do. *cordifolia*, Tasman. *densiflora*, N. Zeal. *scabra*, J. Fernand. *Hamiltoni*, N. Zeal. *insignis*, Chili. *lobata*, Magellans. *macrophylla*, Java. *magellanica*,

to give it the highest vigour. No plant better repays a thorough preparation, and we rarely see such fine specimens as in quiet nooks where it is sheltered by the surrounding vegetation. It should be planted about the beginning of April in deep open soil mulched with rotten manure, and watered copiously in hot dry weather. *G. jubatum* is very well spoken of, but as yet has not been tried much except in favoured spots. The leaves resemble those of *G. argenteum*, but are of deeper green, and droop elegantly at the extremities. From the centre of the tuft, and exceeding it by 2 or 3 ft., arise numerous stems, each bearing an immense loose panicle of long filamentous silvery flowers, of a rosy tint

with silvery sheen. It is a native of Ecuador, and is earlier in bloom than *G. argenteum*. The sexes are borne on separate plants in all the species, and the plumes of male flowers are neither so handsome nor so durable as the plumes of female flowers.

GYPSOPHILA.—Plants of the Stitchwort family, the larger kinds usually very elegant, and bearing myriads of tiny white blossoms on slender spreading panicles. One of the best is *G. paniculata*, which forms a dense compact bush, 3 ft. or more high, the numerous flowers small white, on thread-like stalks on much-branched stems, with the light, airy effect of certain Grasses, and very useful for cutting. It thrives in any soil, and is suitable for borders and for naturalisation. There is a double variety. *G. acutifolia*, *altissima*, *fastigiata*, *glauca*, *mangini*, *perfoliata*, *Rokejeka*, *Steveni*, *transylvania* are very similar. *G. prostrata*

Gypsophila cerastioides.

is a pretty species for the rock-garden or the mixed border. It grows in spreading masses, and from midsummer to September has loose graceful panicles of small white or pink flowers, on slender stems. *G. cerastioides* is about 2 in. high, and has a spreading habit; the leaves are about 1½ in. long, and small clusters of blossoms ½ in. across, white with violet streaks. It is from Northern India, and quite unlike any of the group now in our gardens, being dwarfer and having larger flowers. It is a rapid grower, and in good soil and an open position on the rock-garden soon spreads into a broad tuft. Division, seeds, or cuttings in spring. *G. repens* is a pretty dwarf rock-plant, thriving also in borders; flowering long in summer and autumn, and with foliage of a pleasant glaucous colour. *G. elegans* is a graceful feathery annual much used for bouquets.

HABENARIA (*Rein Orchis*).—Terrestrial Orchids from N. America, 1 to 2 ft. high, some of which are pretty. For outdoor culture, a partially-shaded spot should be prepared with about equal parts of leaf-mould or peat and sand, and well mulched with leaves, grass, or other material, to keep it moist. *H. blephariglottis* bears in July spikes of white flowers beautifully fringed. *H. ciliaris* has bright orange-yellow flowers with a conspicuous fringe, which appear from July to September. *H. fimbriata* has a long spike of lilac-purple flowers beautifully fringed. *H. psycodes* bears spikes 4 to 10 in. long of handsome and fragrant purple flowers. They are charming plants for the bog-garden.

HABERLEA.—*H. rhodopensis* is a pretty little rock-plant resembling a Gloxinia in miniature, forming dense tufts of small rosettes of leaves, which somewhat resemble those of the Pyrenean Ramondia (*R. pyrenaica*), every rosette bearing in spring one to five slender flower-stalks, each with two to four blossoms nearly 1 in. long, of a bluish-lilac colour with a yellowish throat. Messrs. Frœbel, of Zurich, who grow it well, write of it: "We have treated this plant in the same manner as the Pyrenean Ramondia, *i.e.* we have planted it on the north side of the rock-garden, so that the sun never directly reaches it. We grow it in fibrous peat, and fix the plants, if possible, in the fissures of the rock-garden, so that its rosettes hang in an oblique position, just as they do in their native country. It succeeds well in this way; but if no rock-garden be at hand, it may be grown equally well on the north side of a Rhododendron bed. We have it thus situated quite close to a stone edging—a way in which we also grow the Ramondia,—and the Haberlea flowers profusely every year in May and June. The plant is very hardy, having withstood our often very hard winters, without any protection." It is a native of the Balkan Mountains, where it is found among moss and leaves on damp, shady, steep declivities at high elevations.

HABRANTHUS.—A brilliant bulb of the Amaryllis family, hardy, at least in the southern and eastern parts of the country. *H. pratensis* has stout and erect flower-stems, about 1 ft. high, and the brightest scarlet flowers, feathered here and there at the base with yellow. The variety *fulgens* is the finest form. It blooms freely in the open border of the Rev. Mr. Nelson's garden at Aldborough, in Norfolk, flowering at the end of May

or beginning of June. It grows very freely in strong loam improved by the addition of a little leaf-mould and sand. Its propagation is too easy, for in many soils it is said to split up into offsets instead of growing to a flowering size. At Aldborough it made numerous offsets. A choice plant for the select bulb-garden or rock-garden. Chili. *H. Andersoni* is much inferior.

HALESIA (*Snowdrop Tree*).—Beautiful North American trees, hardy in this country. The commonest is *H. tetraptera*, one of the prettiest of flowering trees. It grows in England from 20 to 30 ft. high, has a rounded head, with sharply-toothed leaves, in May bearing many white blossoms, in form like the Snowdrop, hence its popular name. It is of moderately rapid growth, and flourishes in any good free soil. In some parts it ripens its seed. A similar species, distinguished in having but two wings to the seed-vessel (*tetraptera* having four), is *H. diptera*, of smaller growth, and not such a suitable tree for this climate; neither is *H. parviflora*, which, like the others, has small bell-like flowers.

The Snowdrop is very slow, and grows and flowers badly on heavy, cold soils; on free, sandy loams it grows freely and flowers abundantly, and in that case is the most beautiful of flowering trees. There are several varieties of the common Snowdrop Tree—*Meehiani* and *lævigata* and *parviflora*—as yet rare in gardens though deserving a place.

HALIMONDENDRON (*Salt Tree*).—*H. argenteum* is a small shrub belonging to the Pea family, with elegant leaves, silky and whitish, the flowers purplish in early summer: a native of Asiatic Russia, it is hardy, grows from 5 to 6 ft. high, and sometimes is grafted on to the tall stems of the Laburnum.

HAMAMELIS (*Witch Hazel*).—Hardy shrubs with singular blossoms flowering in winter. They have a peculiar value as ornamental shrubs, and one species at least is worth planting in all good gardens. This is *H. arborea*, or Tree Witch Hazel, though in this country it does not rise generally above 8 ft. high. In January, and sometimes before, its leafless branches are covered with flowers, which have twisted, bright yellow petals and crimson calyces, so that a well-flowered plant is very pretty. It is a hardy Japanese shrub, and thrives in most kinds of soil, but must have an open situation. Another Japanese species is *H. japonica*, a smaller and dwarfer plant than *H. arborea*, and bearing flowers of a lighter

yellow colour, while that called *H. Zuccariniana* is very similar to it. Of less value perhaps is the American Witch Hazel, which has small yellowish flowers in winter, and sometimes in autumn. Though not so showy when in flower as the Japanese species, it is a pretty shrub, and, like the others, thrives in any soil.

HEBENSTRETIA.—Interesting little plants allied to the Sage family, mainly suitable for botanical collections.

H. Comosa, a recent introduction from South Africa, has curiously formed small white flowers which are disposed in a long slender spike, and the bright orange-scarlet blotches make them interesting when closely examined. It succeeds well as a half-hardy annual, sown outdoors in April. Height 18 in. It is fragrant in the evening.

HEDERA (*Ivy*).—*H. helix* is the most beautiful evergreen climber of our northern and temperate world, and is a noble garden plant that may be used in many ways. The common Ivy of the woods is familiar to all, but its many beautiful varieties are not so common as this. All are not of the same vigorous habit, as will easily be seen by cultivating a collection; but the rich self green-leaved kinds are usually as free and as hardy as the wild plant. Although there are many varieties, there are only two accepted species—the Australian, that is confined to the continent of Australia; and *Hedera helix*, which is found wild in the British Isles, and spreads over Europe, reaching into N. Africa and Central Asia. It is under our English Ivy that the large number of forms in cultivation are classed. Although there are only two species, we can classify the Ivies in several groups, after the variation in the leaves. If we want Ivies in their fullest beauty, it is necessary to pay some attention to position, soil, and training. This applies to all kinds, but especially to the more delicate varieties. Ordinary garden soil will grow the Ivy well, and the strong growers, as Emerald Gem, *Rægnieriana algeriensis*, *canariensis* or the Irish Ivy, *sagittifolia*, *lucida*, *palmata*, *gracilis*, *dentata*, *digitata*, *pedata*, and *angularis*, will need no special position; but in the case of kinds like *madeirensis variegata*, a showy form, some little care is needed. It is better to plant these kinds as edgings to a bed of shrubs or permit them to clamber over a root-stump, arbour, or form a pyramid of them, where they will be less exposed to the full force of wind than if they were stiffly trained on walls. Cuttings may be struck in the

latter part of the summer, and quickly root if put in a shady border where the soil is fairly good. It is sometimes well to cut the plants down to the ground after the first year, as often the shoots are very weak; but this severe pruning induces a stronger growth later on. As regards the best time to plant, the spring months are the most suitable; but the Ivy may be planted any time if it is in a pot, and during the first summer, if the weather is hot, give plenty of water. In the case of variegated sorts, it is advisable to plant in a poor soil, so as to bring out the variegation. A word should be said for Tree Ivies, which make fine bushes in the garden, and may be associated with other shrubs in beds. Healthy plants make dense rounded heads of foliage, relieved during the blooming season with many flowers. By far the most important Ivies, however, are the green-leaved forms, —many, various, and nearly all beautiful in form. Whatever kinds among these we may prefer, a fuller and more graceful use of the Ivy in or near the flower-garden and its surroundings is desirable.

HEDYCHUM. — Tall and graceful tropical plants. *H. Gardnerianum*, though usually grown in the greenhouse, will flower out-of-doors, and live through an ordinary winter with a little protection. It should be planted out in May, in a loose, sandy loam enriched with manure. While the plant is making its growth a mulching should be given, and in dry weather an occasional watering of liquid manure. It is excellent for choice groups in the sub-tropical garden, in warm sheltered spots. A heap of cinders or half-rotten leaves laid over the crowns in winter will ensure their safety; or the roots may be lifted in autumn and wintered in any dry place with Dahlias and Cannas. It is increased by dividing the roots in spring, but each piece must have a young crown attached.

HEDYSARUM (*French Honeysuckle*). —Plants of the Pea order, mostly weedy, only a few perennials being ornamental.

Pyramid of large-leaved Ivy, 7 ft. high.

H. coronarium is a showy plant, 3 or 4 ft. high, bearing in summer dense spikes of red flowers. It grows in any ordinary soil, but is not a perennial, though it usually sows itself where it is established. There is a white variety. Among the dwarfer kinds the two following are desirable: *H. obscurum*, a brilliant and compact perennial; 6 to 12 in. high, with racemes of showy purple flowers. It is suitable for the rock-garden, for borders, and for naturalisation amongst vegetation not more than 1 ft. high, chiefly on banks and slopes in sandy loam, and is increased by division or seed. *H. Mackenzii* is said to be the handsomest of the genus. It grows about 2 ft. high, and has long racemes of from seven to thirty rather large rosy-purple Pea-like flowers. It is perfectly hardy in any situation, and flowers in June and July. It is rather too

tall for the rock-garden, and is more suited for the mixed border.

HELENIUM (*Sneeze-weed*).—Vigorous Composites from North America, flowering in autumn, and thriving in any soil, and, where rightly used, excellent plants. There are two or three species, the most useful being *H. autumnale*, about 6 ft. high, bearing yellow flower-heads. The varieties *grandiceps* and *pumilum* are very distinct: *grandiceps* being of gigantic growth with a fasciated head of bloom, which makes it very showy; *pumilum* being much dwarfer and better than the type. *H. atropurpureum* grows 3 or 4 ft. high, and has reddish-brown flower-heads. *H. Hoopesi* is desirable, as it flowers in early summer, but is a rather coarse grower, with large yellow flowers. The first-mentioned species and its varieties are excellent border plants, and, though vigorous, remain long in bloom. They are very useful for cutting, as they remain a long time fresh.

HELIANTHEMUM (*Sun Rose*). — Though strictly shrubby plants for the most part, these dwarf evergreens possess so much the aspect of rock-plants, that they cannot well be separated from them. There are few more brilliant sights than masses of them when in full beauty, and they are of the easiest possible culture, dwarf and compact, bearing in great profusion flowers with fine diversity of colour. The common Sun Rose (*H. vulgare*) is variable in colour, and from it have sprung the many varieties enumerated in trade lists; indeed, we need only this species to represent, for garden purposes, the

Helianthemum sabrosum.

variation in all the dwarf shrubby species of the family. The colours range from white and yellow to deep crimson. There are also double-flowered kinds and one with variegated foliage. Other pretty, dwarf, shrubby species, similar to *H. vulgare*, are *H. rosmarinifolium*, *pilosum*, and *croceum*. There is also a herbaceous perennial species, *H. Tuberaria* (Truffle Sun Rose), which in aspect differs completely from the shrubby species, and is second to none in beauty. It grows 6 to 12 in. high, with flowers 2 in. across resembling a single yellow Rose, with

dark centre, and drooping when in bud. It is suited for warm ledges on the rock-garden in well-drained sandy or calcareous soil. When sufficiently plentiful it should be used in the mixed border. It is propagated by either seed or division. When a full collection is required there are other species introduced, but the above fairly represent the beauty of the family.

HELIANTHUS (*Sunflower*).—PERENNIAL SUNFLOWERS. — Usually stout, vigorous, and showy plants, typical of the coarse yellow Composites abounding in North America, of which not a few have found their way into English gardens. All the perennials are vigorous growers, and generally attain a great height, being most precious for the autumnal garden

Double Perennial Sunflower.

when well placed. Sunflowers may be cultivated with the greatest ease; they are gross feeders, and the richer the soil the better the result. It is true that not a few of this genus are coarse and weedy, unfitted for the flower-garden, but a good many, some of which are not yet in general cultivation, could be utilised with striking effect in the best-kept flower-garden; and for mixed borders, etc., they are valuable. The Sunflowers, like the Michaelmas Daisies, could ill be spared from the autumn garden, where, when most other hardy perennials are beginning to show the sere and yellow leaf, they are

generally at their best and in their greatest numbers. Although the flowers are somewhat restricted in their range of colouring, the plants vary considerably in their seasons of blooming, in habit, and also in the positions in which the most may be made of them. From their robust growth, the majority of them are essentially suitable for borders where plenty of scope may be had, and where attention may be given to the proper grouping of the different species and varieties. Some few of the species which may not be considered showy enough for the flower border proper could be planted in the woods, in isolated beds, or among shrubs, where their particular and characteristic habits could be seen to advantage.

It would hardly be policy to grow the whole genus in any one garden unless shrubberies abound on a large scale. *H. multiflorus* and its varieties, *H. rigidus* and its varieties, *H. decapetalus* and a few others are essentially border plants, where, when doing well and in full flower, they form a feature of no mean beauty. *H. latiflorus*, *H. orgyalis*, *H. laevigatus*, and *H. divaricatus* would make handsome groups in open shrubberies, and *giganteus*, *doronicoides*, *grosse-serratus* and others might with advantage be relegated to the wood, where, in open exposed positions, they would form interesting groups. They increase so rapidly as a whole that it will be needless to say anything about propagation, which may be done in autumn or spring with good results. Other species not mentioned, but which may be of interest to many, are *H. angustifolius*, *Maximiliani*, *mollis*, and *occidentalis*, the two last being early-flowering species rare in gardens.

H. DECAPETALUS is one of the most charming species in the whole genus as a background to mixed borders or as a feature in open shrubberies. It forms large, bushy, well-balanced plants 4 to 6 ft. in height, with strong, much-branched stems, rough on the upper half and usually quite smooth on the lower. The leaves are broadly oval, pointed, and thin in texture; flowers 2 to 3 in. in diameter, of a rich sulphur-yellow, produced in great abundance, and very showy. It is found plentifully on the banks of streams in Canada and Georgia.

H. GIGANTEUS is a very tall, elegant plant. The stems often exceed 10 to 12 ft. high, the leaves narrow, tapering to both ends; the flowers deep yellow, 2 to 3 in. in diameter. It is one of the latest to flower, and has been found variable under cultivation, giving rise to several garden

names. Moist ground, in Canada and Louisiana.

H. LÆTIFLORUS is a handsome species, very little known in gardens, although the name was freely used for forms of *H. rigidus*. It is, as a rule, rather later in flowering than the *H. rigidus* forms, and unfortunately in cold wet seasons or early winters does not bear good flowers. It is a much taller and stronger plant than *H. rigidus*, the flowers, 4 to 5 in. across, of a bright yellow with yellow disc. The leaves are thin, entire, or coarsely toothed, and the bracts of the involucre always acute, a very distinctive character in this genus. The roots are somewhat similar to those of *H. rigidus*, perhaps larger, and they certainly travel further. It is a native of prairies and barrens, Illinois, Wisconsin.

H. MULTIFLORUS.—The late Dr. Asa Gray always considered this plant a garden variety of *H. decapetalus*. There is strong evidence, however, of its being a hybrid, the parents of which it would be difficult now to ascertain with accuracy. It is so very distinct from all the other species so well known in gardens under its present name, and such a good all-round plant, that it well deserves specific rank. It rarely exceeds 3 to 5 ft. in height, producing numerous large fine rich yellow flowers, remaining a considerable time in good form. The *var. maximus* has larger flowers with more pointed rays, and the varieties *plenus* and *Soleil d'Or* are both very desirable double-flowered forms. All the varieties of *H. multiflorus* should find a place in collections, however small.

H. ORGYALIS, though a small-flowered plant, is yet one of the best of the genus for the picturesque garden in southern counties. It is one of the late-flowering species, and is often damaged by early frosts. It grows from 6 to 10 ft. high, having numerous linear leaves and bunches of deep golden-yellow flowers. It should be grown in sheltered spots, otherwise it requires a great deal of staking. It is a native of dry plains of Nebraska and Texas.

H. RIGIDUS.—This distinct though variable species is perhaps the best known of all the Perennial Sunflowers. It is still found labelled *Harpalum rigidum* in some gardens, and is often confounded with *H. missuricus* and *H. atro-rubens*, the latter of which, so far as I know, is not now in cultivation. Typical *H. rigidus* is figured in the *Botanical Register*, t. 508, and *Botanical Magazine*, t. 2668, as *H. atro-rubens*. *H. rigidus* grows from 4 to 5 ft. in height, with a rough hispid stem,

the upper leaves always alternate, distinctly three-nerved and veined. The lower ones are opposite, broader, thinner, often serrated, and rarely pointed. All the leaves narrow to a winged petiole, and are easily distinguished from those of any other species. The flowers, bright yellow and very showy, are produced very freely. It is a native of the plains and prairies of Georgia and Texas. The varieties of this species, most of which have undoubtedly originated in gardens, are superior to the type as garden plants.

H. grandiflorus, *semi-plenus*, *elegans*, and *æstivus* are all worth a place in the flower border. All should, however, be grouped by themselves, as they form underground tubers, which spread a considerable distance from the parent plant in the course of a year. Some of these varieties have been tried at Kew and elsewhere grouped singly in beds, and are always much admired in the autumn months when the members of this genus are so much in evidence.—D. D.

ANNUAL SUNFLOWERS.—All the larger kinds are noble plants, requiring plenty of space, a sheltered position, and a good background. They are all easily raised

Annual Sunflowers.

from seed, which may be sown in pans in early March or in the open air in April where they are intended to flower, and thinned out to from a foot to a yard apart according to the vigour of the plant. The regulation row of Sunflowers along a choice mixed border often ruins its effect, but there are various ways of arranging the Annual Sunflowers with excellent effect—among large beds of fine-leaved plants being one of them.

H. ANNUUS (*Common Sunflower*).—Although often regarded only as a cottagers' flower, the Annual Sunflower is one of the noblest plants we have, and one of the most effective for various positions. In order to dispense with support, it should be planted in a sheltered place, as among tall shrubs. Here it assumes a dense branching tree-like habit, and often produces flowers each over a foot in diameter. It requires a strong rich soil, to which may be added a quantity of old cow-manure just before planting. There are many varieties in gardens, the most notable being one called *californicus*, a more robust and darker-flowered form. *Macrocarpus*, *lenticularis*, and *ovatus* are synonyms or slight varieties of the cultivated Annual Sunflower; *sulphureus*, *multiflorus*, *globosus*, *grandiflorus*, and *fistulosus* are garden variations. The sulphur-coloured variety is charming, and less strong in growth than the richer yellow forms. North America. *H. argophyllus*, little more than a variety of *H. annuus*, is a charming plant from Texas, for the back of mixed borders, open borders, and in thin shrubberies. The whole plant is white, being covered with soft and silky wool, the flowers large with very broad ray florets. *H. Dammanni* and *H. D. var. sulphureus* are said to be garden hybrids between *H. argophyllus* and *H. annuus*. *H. cucumerifolius*, the Miniature Sunflower, is a good annual, growing from 2 to 3 ft. high, usually with purple mottling on the stems, the leaves thin, and bright apple-green. The stems are much branched, and when allowed plenty of room the plants form perfect symmetrical specimens. The flowers are yellow, about 3 in. in diameter, nicely set off with the almost black disc. Sandy soil in woods from Texas westwards.

H. EXILIS.—A very slender species, rarely more than a couple of feet in height, with lance-shaped leaves and yellow flowers about 2 in. in diameter. N. California.

H. PETIOLARIS.—A fine kind rarely seen in gardens, though from its neat habit and profusion of flowers it should be a welcome addition to the mixed border. It grows about a yard high, loosely branched, the stem as well as the leaves being covered with stiff hairs; flowers yellow, 3 to 4 in. in diameter. The variety *canescens* is covered with white pubescence. Texas.

H. SCABERRIMUS.—A very distinct plant with large deep yellow flowers stout branching stems, and broad, oval, coarsely-toothed leaves. California.—D.

HELICHRYSUM (*Everlasting Flower*).—Composites, mostly natives of the Cape of Good Hope, of which a few are cultivated. The most important garden plants are *H. macranthum* and *H. bracteatum*. They are generally treated as annuals, and, unless exceptionally well managed by being sown early under glass, they commence flowering so late that the best period for laying on the brightest colours is lost, and early frosts find them just approaching their best. They are particularly suited for background plants on dry borders. If they are sown in pans or boxes where they can be slightly protected during winter, and are planted out early in April, they have a chance of producing a good crop of flowers for drying. The colours vary from deep crimson to yellow and white. The hardy perennials are not important, and seldom succeed. *H. orientale*, which furnishes the Immortelle of the French, flowers poorly except in very hot seasons. None of the other hardy kinds are worth growing, except perhaps *H. arenarium*, which has bright yellow flowers. *H. rupestre* has silvery foliage, retaining it in winter.

HELIOPHILA.—Small and pretty Californian annuals. *H. araboides* is a pretty blue plant, of which occasional use might be made, being dwarf, and free in growth and flower. Another kind is *H. pilosa*.

HELIOTROPIMUM (*Cherry Pie*).—A great favourite for flower gardens on account of its delicate fragrance. For the flower garden spring-struck plants are the best. It is a good plan to lift a few plants from the beds in September, winter them in a warm greenhouse, and in spring to put them in a warm place, where they will soon produce plenty of cuttings. These cuttings may be struck on slight heat like Verbenas, potted on, made to grow rapidly, so as to be fit to plant out at the end of May when danger of frost is past. Heliotropes may be raised from seed and flowered the same year—in fact, treated as annuals. Sown early—in February or the beginning of March—they become sturdy little plants before planting time. When bedded out they should be placed in good dry soil. The following are good varieties, and new varieties are raised from time to time: Anna Turrell, General Garfield, Roi des Noirs, Triomphe de Liège, and the old *H. peruvianum*, which many like from its associations if for no other reason. Heliotropes, though quiet in colour, are charming flower-garden plants, either when grown for their own sakes as simple masses or when

associated with tall plants which grow above them.

HELIPTERUM.—*H. Sanfordi* is a pretty, bright yellow, half-hardy annual “everlasting,” of dwarf, branched habit of growth. Its merits are not remarkable, and the short season of bloom of spring-raised everlasting annuals leads to a poor result.

HELLEBORUS (*Christmas Rose*).—One of the most valuable classes of hardy perennials we have, as they flower in the open air when there is little else in bloom. They appear in succession from October till April, beginning with the Christmas Rose (*H. niger*), and ending with the handsome crimson kinds. The old white Christmas Rose is well known and much admired, but the handsome kinds with coloured flowers have, hitherto, not been much known. Recently too there have appeared some really beautiful hybrids, which add a great deal of beauty to our winter and spring garden, for their flowers withstand the winter, and their verdure and the vigorous growth of their leaves distinguish them throughout the year.

The Hellebores, besides being excellent border flowers, are suited for naturalising. There are a few kinds—those with inconspicuous flowers, but handsome foliage—whose only place is the wild garden, such as the native *H. fatidus*, *H. lividus*, *viridus*, and *H. Bocconi*, which have elegant foliage when well developed in a shady place in rich soil, like that usually found in woods. The Hellebores may be classed in three groups, according to the colour of the flowers—those with white flowers, those with red, and those with green, which last will get little place in the garden. The white-flowered group is the most important, as it contains the beautiful old Christmas Rose.

H. niger is a well-known kind, scarcely needing description. It may be recognised at once by its pale green smooth leathery leaves, divided into seven or nine segments, 3 to 6 in. long and 1 to 2 in. broad. The flowers, which are usually borne singly on stems 6 in. long, are about 3 in. across, and vary from a waxy-white to a delicate blush tint. The variety *minor* is smaller in every part, and is also known as *H. angustifolius*. *H. altifolius*, though sometimes considered a variety of *H. niger*, is a distinct kind, and much larger than *H. niger*. It has leaf-stalks over 1 ft. long, and blossoms 3 to 5 in. across which are borne on branching stems, each stem bearing from two to seven flowers, which have a stronger tendency to assume a rosy hue than the ordinary kind. Another

characteristic is that the leaf and flower stems are beautifully mottled with purple and green, while in *H. niger* they are of a pale green. *H. altifolius* also flowers much earlier—in some seasons in the beginning of October. The Riverston, St. Bridgids, Madame Fourcade and Bath varieties are all good.

Other white kinds are *H. olympicus*—a tall slender species with cup-shaped blos-

other, and may be readily recognised by its thick, dark green leaves, with five to seven broad and coarsely-toothed divisions, the veins of which are raised on the under sides and are of a dark purple when young. The blossoms, borne on forked stems rising considerably above the foliage, are dark purple. Under good cultivation the leaves attain the length of $1\frac{1}{2}$ and 2 ft., forming fine specimens, and flowers are

Christmas Rose.

soms that appear in early spring and vary from pure white to greenish-white. *H. guttatus* is like it, but has the inside of the blossoms spotted with purple. There are several forms; in some the markings assume the form of small dots, in others of thin streaks. It is one of the parents of the many beautiful hybrids.

The finest of the red or crimson kinds is *H. colchicus*, which is larger than any

produced from the end of January to the end of March. A fine hybrid has been obtained by crossing it with *H. guttatus*, the result being a form with large spreading flowers lighter than in *H. colchicus*, and profusely marked with dark carmine streaks. Another hybrid between this and *H. altifolius* resulted in a form with larger flowers of a lighter purple. *H. atro-rubens* has leaves much thinner and

flowers much smaller than *H. colchicus*, the latter dull purple on the outside and greenish-purple within. It is a native of Hungary, and is common in gardens, but is often confused with *H. abchasicus*, a taller and more slender plant, the flower-stems of which are longer, and the blossoms nodding and smaller. *H. abchasicus* is much superior to *atro-rubens*, the colour of the blossoms—a deep ruby-crimson—making them very attractive. Other fine varieties of the red-flowered group are Gretchen Heinemann, James Atkins, and Apotheker Bogren, all worthy of culture. Other reddish kinds, such as *H. purpurascens* and *H. cupreus*, are not worth growing.

All the kinds will thrive in ordinary garden soil, but for the choicer kinds a prepared soil is preferable. This should consist of equal parts of good fibry loam and well-decomposed manure, half fibry peat and half coarse sand. Thorough drainage should always be given, as stagnant moisture is very injurious. A moist and sheltered situation, where they will obtain partial shade, such as the margins of shrubberies, is best, but care should be taken to keep the roots of shrubs from exhausting the border. In the flowering season a thin mulching of moss or similar material should be placed on the soil round the plants, as this prevents the blossoms from being spattered by heavy rains, etc. Any one beginning to grow these useful plants should give the soil a good preparation. If well trenched and manured, they will not require replanting for at least seven years; but a top-dressing of well-decayed manure and a little liquid manure might be given during the growing season when the plants are making their foliage, as upon the size and substance of the leaves will depend the size of the flowers. The common white Christmas Rose is a favourite pot-plant, and if required for potting its foliage should be protected from injury; when the blooming season is over it should be protected by a frame until genial weather permits it to be plunged in the open air. Hardy subjects like the Christmas Rose frequently suffer when removed from under glass, for although hardy enough to withstand our severest winters when continuously exposed, their growth, when made under more exciting circumstances, will not withstand sudden variations of temperature. For this reason it is advisable to keep them in as cool a position as possible when in flower, so that the growth of young foliage may not be excited before its natural season.

Propagation may be effected by division or by seeds, which, in favourable seasons, are plentiful; as soon as thoroughly ripened they should be sown in pans under glass, for they soon lose their vitality. As soon as the seedlings are large enough they should be pricked off thickly into a shady border, in a light rich soil; the second year they should be transplanted to their permanent place, and in the third season most of them will bloom. In division the clumps must be well established, with root-stocks large enough to cut up. The divided plants, if placed in a bed of good light soil, and undisturbed, will be good flowering plants in a couple of years, but four years are required to bring a Christmas Rose to perfection. By July the Hellebore is in its strongest vigour, and lifting and dividing the plants should then be carried out.

HELONIAS (*Stud Flower*).—A distinct and handsome bog perennial, *H. bulbata* being 12 to 16 in. high, with handsome purplish-rose flowers in an oval spike. It is suitable for the bog-garden or for moist ground near a rivulet. In fine sandy and very moist soil it thrives as a border plant. N. America. *Syn.*, *H. latifolia*.

HEMEROCALLIS (*Day Lily*).—The Day Lilies, though not numbering many distinct species, are varied both in habit and flower, and are very useful in the mixed border and in groups by the water-side. Few plants surpass a strong, well-flowered clump of *Hemerocallis fulva*, as we have seen it, mixed with a group of male Fern near a brook. The leaves of this Day Lily were overhanging the banks of the stream, intermingled with the Fern fronds, while the flower-heads, tall and straight, were towering upwards. If the ground is well broken up and some lasting manure supplied at planting time, they may be left undisturbed for years. The forms of *H. disticha*, both single and double, are also useful for clumps by water, or intermixed with other robust or bold-foliaged plants; indeed, there seems no reason why all the Day Lilies could not be treated in this picturesque way, the trouble entailed being small, and that chiefly at planting time only. For cutting, *H. flava*, *minor*, and *Dumortieri* are useful, the flowers lasting a few days and the buds opening well in water. The fragrance of these flowers is delightful; they are readily increased by division, and grow with such rapidity that in the course of a few years they may be increased to almost any extent.

The following are the species as they are now recognised, with the principal varieties :—

H. DUMORTIERI (Dumortier's Day Lily).—This valuable kind is the first to flower of all the Day Lilies. Coming as it does from Japan and W. Siberia, it proves hardy in the open air. It does not require protection during winter, and we have never known it fail to bear freely its charming and fragrant flowers. The blooms are short-lived, but the reserves are so numerous as to keep up the succession for a long time. This Day Lily dwindles in vigour of the plants and size of the flowers if allowed to remain too long in one place. If the plants are examined, the centres will be found to be matted together, the stronger shoots appearing on the outside. If the plant is divided and replanted it will amply repay the trouble by increased vigour and larger flowers. It is closely allied to *H. minor*, also known as *H. graminea*, but it is a much stronger plant, however, with leaves twice as broad, the flower-stems short, and the divisions of the perianth divided almost or entirely to their base. The leaves are about five or six to a growth, about 18 in. long and half an inch broad, bright green above, and pale but not glaucous on the under surface; flower-stem 1 to 2 ft. in height, bearing a corymb of large orange-yellow flowers. *H. rutilans* and *Sieboldi* of gardens belong to the same species.

H. FLAVA (the Yellow Day Lily).—Few plants can be grown with so little trouble in the border, and give such a valuable return as this one—the flowers large and in such quantities, emitting such an agreeable fragrance, as to earn the name of *yellow Tuberose*. The length of time the flowers last enhances its value as a border plant. It is hardy, and, though not so robust in habit as *H. fulva*, it increases rapidly, and where the soil is good might be naturalised. On banks the beautiful light green curving leaves hang gracefully, surmounted by bunches of large yellow heads of flower in June and July. Europe and N. Asia. *H. Thunbergi* and *japonica* are forms of this species.

H. FULVA (Copper-coloured Day Lily) is a much larger plant than *H. flava*, and more suitable for extensive planting in semi-wild or rough parts of the garden. It is variable under cultivation, and the numerous forms now grown, many without names, are all worthy of attention. *H. disticha* is a well-known garden variety of this species, notable for the fan-like

form of its growths. The flower-stem is forked near the summit, and carries two or three heads of flowers, six to eight blooms on each, of a brown-orange colour. There is also a double-flowered variety of this. *H. Kwanso* is a variety with variegated or striated leaves. It is a handsome plant for edgings or for the rock-garden. Of this there is also a double-flowered form. *H. f. var. angustifolia*, narrow-leaved; *longituba*, *crocea*, natives of China, flowering in July and August, belong to this section.

Yellow Day Lily (*Hemerocallis flava*).

H. MIDDENDORFIANA is from Amurland, in appearance resembling *H. Dumortieri*: the leaves are, however, broader, the flowers about the same size, closer, and paler in colour, and with a distinct cylindrical tube half an inch or so long. It is of easy cultivation.

H. MINOR, also known in many gardens under the highly characteristic name of *H. graminea*, from its Grass-like foliage, was formerly classed by the older botanists as a variety of *H. flava*, though now considered distinct. It is the smallest, though

not the least showy, and, like *flava*, sweetly scented, the flowers lasting two or three days. It makes a handsome plant for a rocky bank, and even when flowers are absent the pretty Grass-like leaves are welcome. It flowers during June and July. It is also known under the names *graminifolia* and *pumila*. Siberia.

H. AURANTIACA MAJOR.—This is the name given by Mr. Baker, of Kew, to a new and handsome kind from Japan, and of which a coloured plate was given in *The Garden*, November 23, 1895. It is certainly one of the finest new hardy plants of recent years, and reminds one of *H. fulva* (syn., *H. disticha*). The new kind has bold leafage, a glaucous tinge overlying the deep green body colour; the flowers, of a rich apricot colour, open out widely, and are of great substance.

where they can grow freely without injury to other plants. The finest are *H. giganteum*, *lanatum*, *sibiricum*, *eminens*, *Wilhelmsi*, and *pubescens*, all of which, when in flower, are 5 to 10 ft. high. All are increased by seed.

HERNIARIA. — Dwarf perennial trailers, forming a dense turfy mass, green throughout the year. There are two or three species, but the most important is *H. glabra*, which has been largely used as a carpeting plant on account of its dwarf growth, and it is always a deep green, even in a hot season.

HESPERIS (Rocket).—*H. matronalis* is a popular old garden plant, and among the most desirable of hardy flowers. It bears showy, varied, and fragrant flower-spikes. The original single-flowered kind grows 1 to 3 ft. high, and has pinkish flowers, but the double kinds are much more

Double White Rocket.

HEMIPHRAKMA.—*H. heterophylla* is a dwarf trailing plant of the Figwort family, bearing inconspicuous flowers, succeeded by bright red berries about the size of small peas, on slender creeping stems. It is rather tender, and requires a sheltered and well-drained spot in the rock-garden. Himalayas.

HERACLEUM (Giant Parsnip). — Umbelliferous perennials, mostly of gigantic growth, having huge spreading leaves and tall flower-stems, with umbelled clusters of small white flowers 1 ft. or more across. Though well-developed plants of the large kinds have a fine effect when isolated in a position not too obstructive, they are out of place in the flower garden and suitable only for the rougher parts of pleasure-grounds, the banks of rivers or lakes, and other places

valued. There are two distinct forms of the double white Rocket as well as of the double purple Rocket in cultivation. One is a tall white, turning to a pale flesh colour with age; the other is the old white variety, of dwarfer growth, with smaller and more compact flowers. It is met with in the north, but is little known in the south, where it does not flourish so well as the common variety. There is the old purple double Rocket and a free-growing dwarf form known as Compactness, which has also larger and darker flowers. Rockets require care in cultivating, and will soon be lost if left to themselves. They should be divided at least every second year and transplanted, for they seem to tire of the soil and to require more change than most perennials. If the young shoots are formed into cuttings

when they are about 3 in. long, they strike very freely in the open ground, and the spikes of bloom on the remaining stems are all the finer when some of the others have been removed. When shaded from the sun for about three weeks with a few Laurel branches, the cuttings do better than when covered with a pot or box, as has been advised. They like a rich soil, rather moist, and are all the better for repeated applications of liquid manure if the soil is not as deep and good as it should be. Double Rockets really belong to the garden plants requiring annual attention, and they therefore cannot well be used as true perennials. It is always worth while having a bed of them in the reserve garden in case the plants should be lost or neglected in the borders. We have seen them best grown where there was a yearly transfer of plants from the reserve garden to the mixed border, and the groups look very well. The single Rocket is easily naturalised, and is a showy plant in woods or shrubberies.

H. tristis (*Night-scented Stock*).—A quaint plant with dull-coloured flowers, sweet-scented at night. It is rather tender, and requires a light warm soil and a sheltered position.

HESPEROCHIRON.—*H. pumilus*, a pretty Californian rock plant, is stemless, dwarf in growth, with leaves borne on slender stalks, forming a rosulate tuft. The flowers are bell-shaped, $\frac{1}{2}$ in. across, and white, varying to a purplish tinge. It grows in marshy ground, and in damp places in the Rocky Mountains and Northern Utah, and is apparently quite hardy, as it thrives in ordinary soil in well-drained parts of the rock-garden. *H. californicus* is a species of somewhat the same form.

HEUCHERA (*Alum Root*).—Dwarf, tufted, perennial herbs, with distinct and sometimes finely-coloured leaves, and modest but inconspicuous flowers. Of little value for their flowers, one or two kinds give pretty effects of foliage either as edgings to or beneath groups of shrubs; the best are also worth growing for their leaves for cutting for the house in winter, lasting as they do fresh for weeks in winter, the foliage being good in form as well as colour. Among the best are *H. hispida* (*Richardsoni*), *americana*, *pubescens*, and *sanguinea*, the last the only one with any showy bloom. They are North American plants, of the easiest cultivation in ordinary soil. Division. Saxifrage order.

HIBISCUS (*Rose Mallow*).—Shrubby and herbaceous perennials and annuals. They are numerous in hothouses, but few

are suited for the flower-garden. The splendid hardy Rose Mallows of the woods and swamps of N. America will live with us, but our climate is not warm enough for them, though it would be well to try tufts of them in warm sunny places in the southern parts of England, in deep, moist soil. They have splendid crimson or rosy flowers, as large as saucers, and are from 4 to 7 ft. high. The finest are *H. Moscheutos*, *H. palustris*, *H. grandiflorus*, and *H. coccineus*. They seldom bloom in the open air in England, as they flower late in the season. There are two or three annual kinds, the finest being

Venice Mallow (*Hibiscus Trionum*).

H. Manihot, which forms handsome pyramids 4 to 6 ft. high, the flowers being 3 or 4 in. across, and pale yellow with a dark centre. *H. Manihot* should be treated as a half-hardy annual, sown in heat in February, and in May planted out in good deep soil. *H. africanus* is a hardy annual with showy pale yellow flowers that only open in fine weather. In light soil it usually sows itself. *H. Trionum* appears to be extremely variable, and has long been cultivated in gardens. It is widely scattered over all the warm regions of the Old World, and is usually described as a common sub-tropical weed, found plentifully in cultivated fields in Afghanistan. It is found in several places in China, and is a very common weed in waste garden ground and rich damp soil throughout the Cape Colony, and has given rise to almost innumerable varieties, a few of which are so distinct as to have at one time been considered species. The great objection to the type is the short-lived flowers, which Gerard says open at eight in the morning and close at nine, and which supposed fact gave rise to the curious appellations, "Flower of an hour,"

"Good night at noon," or "Good night at nine."

In a fine form, figured in *The Garden*, this objection is quite done away with, the flowers opening in the morning, and, on bright days, remaining so until late in the afternoon. Individual flowers do not last very long, but there is a succession on a well-grown plant, and these are large and beautiful. It is quite as hardy as the one usually grown, seeds as freely, and much more striking, especially in bold clumps. Simply scatter the seeds in the open on the spots where they are intended to grow, thinning, where too close together, to 6 in. or 1 ft. apart, and leaving the sun, etc., to do the rest. It will even sow itself, the seeds coming up in plenty the following spring if the winter has not been too severe, but sowings should be made at different times to ensure bloom all through the summer and autumn.

H. Syriacus (*Syrian Mallow, Rose of Sharon*).—A beautiful shrub, bearing showy blossoms in late summer and in autumn. It is a very old favourite, and in good moist soils it rises 8 and even 10 ft. high. The wild form has bluish-purple flowers with crimson centres, but now there are forms representing every tint from white (*totus albus*) to crimson and purple, while the blooms of one sort (*Celeste*) are almost blue. There are also double flowers of varied colours. The best kinds, single and double, are *totus albus*, *Celeste*, *Violet Clair*, *Leopoldi*, *bicolor*, *roseus plenus*, *Pompon rouge*, *carneoplenus*, *Duc de Brabant*, *albus plenus*, *puniceus plenus*, and *anemonæ-florus*.

In the South German gardens this shrub assumes a larger growth, and bears much larger flowers, than in England.

Hibiscus syriacus.

The usual form has flowers not so attractive in colour as some of the newer forms raised from seed mainly in France, and there are some double kinds poor in colour and effect. The pure white kind (*totus albus*) and a few others lead to the hope that it is a plant capable of real improvement through raising seedling forms, and

perpetuating the best of them. Our experience of this shrub in our own islands is that it is best on free and warm soils; not too dry. Where it thrives it is

well worth more attention than is usually the fate of flowering trees in the British shrubbery; all the more so now that we are getting varieties of good colour—like the pure white one named above, and *Celeste*.

HIERACIUM (*Hawkweed*).—Perennial herbs with yellow flowers, very numerous, and often beautiful in nature, but not much grown in gardens. Among the best are *aurantiacum* with orange flowers, a good plant, but apt to spread too much in the garden; and *villosum*, the Shaggy Hawkweed, a handsome plant with silvery leaves and large yellow flowers. Free in ordinary soil. Borders. Division.

HIPPOCREPIS COMOSA (*Horse-shoe Vetch*).—A small prostrate British plant, with pretty little deep-yellow flowers, in coronilla-like crowns, the upper petal faintly veined with brown, the pinnate leaves small and leaflets smooth. It is a capital little plant for the upper ledges of rocks in dry positions, as in such places the shoots will fall down some 18 or 20 inches; it is easily raised from seed; partial to chalky soils; and is rather common in the South of England, but not a native of Ireland or Scotland.

HIPPOPHÆ (*Sea Buckthorn*).—*H. rhamnoides* is a beautiful seashore native

Hippophaë rhamnoides.

shrub, happy in any free soil. The best position for it is a rather damp spot near a running stream, where the subsoil is always moist. It forms, when wild, a straggling bush, 8 or 10 ft. high. In gardens it grows taller. The Sea Buckthorn has silvery-looking Willow-like leaves and bears a profusion of orange berries. Apart from the brilliantly coloured fruit, the silvery effect of the leaves is good where the bush thrives. There are other kinds, *H. fasciculata* and

H. salicifolia, natives of Indian mountains, but they are so far rare in gardens.

HOLBÆLLIA.—*H. latifolia* is a beautiful evergreen climbing shrub from the Himalayas, hardy against walls in the southern and the warm districts. The foliage is thick with three or five leaflets of a deep shining green. The flowers are a deliciously fragrant dull purplish green, but it does not bloom so freely out of doors as in a cool conservatory. As it is of tall growth, it must be planted against a high wall, such as that of a house or stable. It is known also as *Stauntonia latifolia*. The variety *angustifolia* has smaller and more numerous leaflets.

HORDEUM.—Grasses, of which the Barley is the most familiar type, few of ornamental value except *H. jubatum* (Squirrel-tail Grass), which has long feathery spikes. It grows in any soil in open places, is easily raised as an annual, and is one of the most distinct dwarfer Grasses. Sow in autumn or spring.

HORMINUM PYRENAICUM.—A Pyrenean plant, forming dense tufts of foliage and having purplish-blue flowers, in spikes about 9 inches high, which appear in July or August. It is hardy and of easy culture, but is not a plant of much effect from a garden point of view.

HOTEIA.—*H. japonica* is a fine tufted herbaceous plant 1 ft. to 16 in. high, with silvery-white flowers early in summer in a panicked cluster. In a rich soil it is excellent for a shady border. Strong clumps planted in autumn will flower in the following spring. Where there are forced plants to spare they may be planted out when they have done blooming, but will not make much show in the following season. Much used indoors; is seldom good in the open garden, partly because it does badly in heavy and poor soils. Where it thrives and flowers well it would be a graceful aid in the varied flower-garden. Increased by division in autumn. Japan. *Syns.*, *Spiraea japonica*, *Astilbe barbata*.

HOTTONIA (*Water Violet*).—*H. palustris* is a pretty British water-plant, which, however, thrives better on soft mud-banks than when submerged. The deep-cut leaves form a dwarf deep-green tuft over the mud, and from this tuft arise stems bearing at intervals whorls of handsome pale lilac or pink flowers. As water and bog may be associated with the rock-garden, this plant may with advantage be grown at its margin in the water or on a bank of wet soil. It grows from 9 in. to 2 ft. high, flowers in early

summer, and is abundant in many parts of England.

HOUSTONIA (*Bluets*).—A very pretty little American plant, *H. cœrulea* forming small, dense cushion-like tufts, and from late spring to autumn bearing crowds of

Houstonia cœrulea.

tiny slender stems, about 3 in. high. The flowers are pale blue, changing to white. There is also a white variety. It succeeds best in peaty or sandy soil, in sheltered shady nooks on well-drained parts of the rock-garden. As it sometimes perishes in winter, it is advisable to keep reserve plants in pots. Propagated by careful division in spring, or by seed. *H. serpyllifolia* and *H. purpurea* are allied species and alike in stature and wants.

HUMEA.—A very graceful half-hardy biennial, 3 to 8 ft. high, *H. elegans* having large leaves with a strong balsamic odour, and forming, when in flower, an elegant feathery pyramid of reddish-brown blossoms. It is highly ornamental as a back line to a long border, as a single specimen to let into the lawn, as the centre of a bed or vase, or in masses with other elegant foliage plants. Excellent effects may be obtained by combining it in masses or groups with other good plants. For cutting, its light feathery sprays are useful. The proper time to sow seed is July or August, as plants do not bloom the first year, and, if raised before those months, get too large to winter conveniently, often becoming

leafless below, and the nakedness of stem detracts from their beauty. To prevent this, they should be well fed during winter with weak liquid manure, and be shifted into larger pots early in spring. Rich soil should be used, as they can only be kept healthy by good feeding. When planting them out in beds, which may be done by the first week in June, put under each a spadeful of rotten manure and mix it up with the soil. As the plants, when large, hold a good deal of wind, they must be securely staked to prevent their being damaged. *Compositæ*. Australia.

HUMULUS (*Common Hop*). — *H. lupulus*, a well-known vigorous twining

HUTCHINSIA. — A neat little alpine plant, *H. alpina* having shining leaves and white flowers, in clusters about 1 in. high, quite free in sandy soil, and easily increased by division or seeds. In an open spot, either in the rock-garden or in good free border soil, it becomes a mass of white flowers. Its proper home is the rock-garden, though in borders of dwarf and choice hardy plants it may be grown with success. Central and S. Europe. *Cruciferae*.

HYACINTHUS (*Hyacinth*). — The familiar garden Hyacinth is not generally included among hardy plants, though it is perfectly hardy, and, when treated as it should be, is most important. The

Hyacinths.

perennial, is admirable for bowers, especially when vegetation that disappears in winter is desired; and will soon run wild in almost any soil, among shrubs or hedges. A slender plant climbing up an Apple or other fruit tree, near the mixed border, looks well. Division. *H. japonicus*, an annual plant of merit, quick growth, and graceful festooning habit.

HUNNEMANNIA. — *H. fumariæfolia* is an erect perennial, 2 to 3 ft. high, with glaucous foliage, like some of the Fumitories. Its flowers are large and showy, of a rich orange, and in form are like *Eschscholtzia californica*. They continue long in perfection. Being a native of Mexico, it is rather tender, and not satisfactory for open-air culture. Poppy family.

parent of all the varieties is *H. orientalis*; this is as hardy as a Daffodil, and its varieties are scarcely less hardy. Hyacinths in the open air are generally the refuse, as it were, of the forced bulbs of preceding years, but even these create a good display in suitable positions. To have a fine bloom of Hyacinths in the open air, however, it is essential that the bulbs should be good and sound, and due regard paid to assortment of colour, as tints massed by themselves are far more effective than a confusion of various colours. Now that bulbs may be obtained cheap there is no difficulty. The hyacinth will grow well in any good garden soil, but a light rich soil suits it best, and the bed should be

effectually drained, for though the plant loves moisture, it cannot stand in a bog during the winter. It is advisable to plant early and deep. If a rich effect is required, the bulbs should be 6 in. apart, but a good effect may be produced by planting them 9 in. or even more apart. The time of blooming may to some extent be influenced by the time and manner of planting, but no rules can be given to suit particular cases. Late planting and deep planting both tend to defer the bloom, but make no great difference, and as a rule late bloom is to be preferred, being less liable to injury from frost. The shallowest planting should ensure a depth of 3 in. of earth above the crown of the bulb, but, generally speaking, they will flower better, be a few days later, and form stronger bulbs after flowering, if there is fully 6 in. of earth over the crowns. No protection is better than dry litter, but a thin coat of half-rotten manure spread over the bed is safer if severe frosts are likely to come at any time before the growth has fairly pushed through. The bulbs need no further attention until the flower-stems are much advanced, unless very severe weather intervenes, when a mat or some oiled calico should be thrown over them. Waterproof calico is also useful in very wet weather, as too much water, especially when iced by February frosts and March winds, is by no means good for Hyacinths, which will thrive all the better for a waterproof covering. Hyacinths in the open air seldom require artificial watering, the natural moisture of the soil and the strength of the manure mixed with it being sufficient. When grown in beds they do not require sticks or ties; simply proper planting. After blooming, the bulbs, if intended to flower again, must be left undisturbed until the leaves wither or die. The bulbs should then be taken up, dried in a stack for a week or two, and finally placed in the sun for a few hours, the dry leaves being pulled off. Offsets should also be removed from the bulbs, and stored in dry sand or earth till the next planting time. Some take up the bulbs every year, but we have seen handsome beds that were not disturbed for several years. Offsets, carefully cultivated in rich light soil for two or three years, will produce many flowering bulbs, but, as a rule, imported ones are stronger. However carefully cultivated in England, they seldom flower again so well as in the first season, but it is a mistake to throw them away, as many people do. Selections for bedding in distinct colours of red,

yellow, white, blue, or mixed are to be bought cheap.

H. azureus.—One of the earliest as well as the most charming of our early spring flowers. Indeed, one of its chief charms lies in the fact of its producing its numerous dense heads of pretty azure blooms long before we have ceased to expect falls of snow. Many a time have I gone in quest of flowers when the ground was white with its winter covering and have only been able to obtain flowers of this and some Snowdrops and Crocuses. In the case of a dwarf bulb of this kind flowering so early a handlight or bell-glass is simply placed over the clump on the approach of a storm, taking the cover off when all danger is past. The flowers stand any amount of frost without injury, and it is only the chance of their being broken with snow that renders a covering necessary. *H. azureus* is one of those half-way types that one finds so often in the Lily order. It has the habit, appearance, and many of the characters of a Muscari, with the campanulate flowers of a Hyacinth. It was first brought to the Vienna Botanic Garden by Kotschy in 1856, and it was some years after before it was in cultivation in England. The bulb is whitish, round, an inch or so in diameter, producing in great abundance stolons or bulbils from the base; the leaves, in number from six to eight to a bulb, are broad, strap-shaped, glaucous, and deeply channelled; the flower-heads dense, conical, upper flowers sky-blue, campanulate, the lower

Hyacinthus amethystinus.

deep azure blue, and larger than those of the ordinary Grape Hyacinth. It is an excellent plant for the rock-garden, and even in situations where it gets densely shaded by overhanging plants.

H. amethystinus though nearly

related to *H. azureus*, is quite different, and flowers a month later and at a time when there is a dearth of flowers of this description in the hardy bulb-garden. It is one of the very old plants, and although cultivated by Miller as early as 1759, it was until recently a scarce plant. The great mistake with a bulb like this is to have two or three or even a dozen in a clump. Instead of the dozen it should be grown by the hundred, and no prettier sight can well be imagined than a large sheet of this graceful Hyacinth, with its loose racemes of vivid amethyst flowers. Its pleasing flowers are produced in May and June, when there is little chance of their being disfigured by frosts. Spain and Italy.—D. K.

H. candicans. See GALTONIA.

HYDRANGEA.—Handsome flowering shrubs, some well known in gardens, others neglected. In warm districts and on good warm soils it would be well worth while to grow many of the rarer and finer forms of the common Hydrangea, which always flowers best in seashore districts where its shoots are not cut down by frost or by the knife every winter.

H. Hortensia.—The common Hydrangea (*H. Hortensia*), from China, may be grown well out-of-doors, but is not always satisfactory in the midlands and the north, being liable to injury in winter. It likes a sheltered yet sunny spot and good soil. In order to get good heads of bloom, the Hydrangea must be pruned so as to induce the growth of strong shoots. In favoured spots it reaches a height of 6 ft., and as much through, making a beautiful object on a lawn or in the shrubbery margin. From time to time, and especially in recent years, other forms have been introduced and described, some of them as distinct species. Dr. Maximowicz, who has had opportunities of studying them in European and Japanese gardens, and also in a wild state, arranges the following forms under *H. Hortensia*:—

(a) **H. Hortensia acuminata.**—A much-branched shrub, 2 to 5 ft. high; flowers blue. It sports according to locality, and Maximowicz enumerates four such sports, viz.: In open places and in a rich soil it is stouter, with erect thick branches, large, broad, firm leaves, and larger flowers with somewhat fleshy sepals; under cultivation it becomes more showy, passing into *H. Belzonii*. In woods and on the shady banks of rivers it grows taller with slender stems, pointed leaves, and much smaller flowers. In a very fertile soil, a stout plant with toothed

sepals in the barren flowers, which are commonly of a blue colour. This is the true *H. Buergeri* of Siebold and Zuccarini's *Flora Japonica*, and the *H. japonica cœrulescens* of Regel. Sometimes it produces white or rose-coloured flowers, and then it is the *H. roseo-alba*, as figured in the *Flore des Serres*. These variations are all beautiful, but perhaps not constant.

(b) **H. Hortensia japonica.**—This is the *H. japonica* of Siebold and Zuccarini's *Flora Japonica*, and the *H. japonica*

Hydrangea quercifolia.

macrosepala of Regel's *Gartenflora*. It is exactly like *acuminata*, save that the flowers are tinged with red, and the sepals of the barren flowers are elegantly toothed.

(c) **H. Hortensia Belzonii.**—A short stout plant, with beautiful flowers, the inner sterile ones being of an indigo-blue, and the enlarged sterile ones white, or only slightly tinged with blue, and having entire sepals. There is a sport of this in which the leaves are elegantly variegated with white. This was raised by Messrs. Rovelli, of Pallanza.

(d) **H. Hortensia Otaksa.**—This has all the flowers sterile and enlarged. A very handsome variety with rich dark green leaves nearly as broad as long, and large hemispherical heads of pale pink or flesh-coloured flowers, very fine when well grown.

(e) **H. Hortensia communis.**—This is the old variety with rose-pink flowers, commonly cultivated in European gardens. It differs from the last in being perfectly glabrous in its longer, less-rounded leaves, and in its deeper-coloured flowers.

(f) **H. Hortensia Azisia.**—This is not in cultivation, but it differs remarkably from all of the preceding varieties in

the sterile flowers, which have a very long, slender calyx tube.

(g) **H. Hortensia stellata**. — The chief character of this variety is in the flowers, which are all sterile and double. The variety in cultivation has pink flowers, but they are described as being either pale blue or rose, finally changing to a greenish colour, and distinctly net-veined.

The white variety Thomas Hogg is a very fine one, now widely cultivated. Most of the above-named deserve the attention of all who have soil and climate suited to these shrubs.

H. paniculata (*Plumed Hydrangea*). — A shrub or small tree. According to Maximowicz, the only Japanese Hydrangea which becomes a tree. It grows as much as 25 ft. high, with a

The Plumed Hydrangea.

dense rounded head and a straight trunk 6 in. in diameter. But it more commonly forms a shrub a few feet high, bearing enormous panicles of flower. With the exception of *H. Hortensia*, it is the commonest species in Japan, growing throughout that country both in the mountains and the plains, being more abundant in the northern parts, and it is said to vary very much. It is commonly cultivated by the Japanese. The massive clusters of pure white blossoms, terminating every shoot in autumn, are very

beautiful, and there are few finer autumn effects than a well-flowered mass of this shrub. It must have a good soil, and be well mulched with manure in winter. To encourage the new growth the old and useless shoots must be cut away. It is from 3 to 4 ft. high, and spreads its branches gracefully and widely on all sides. The clusters are often 1 ft. long and half as much in diameter, but to get such flowers we must cultivate well and prune the shrubs hard down in winter.

H. hirta (*Nettle-leaved H.*)—A dwarf shrub, 3 or 4 ft. high, with slender hairy branches and Nettle-like leaves. The leaves and branches become nearly or quite glabrous with age. This, although not a showy species, seems to be a pretty, compact dwarf shrub, with numerous clusters of white flowers. A native of the mountains of Japan.

H. virens (*Changing H.*)—This is a remarkable and elegant shrub, varying in height from 2 to 6 ft. The branches, straight, slender, and polished, bearing small, thin, deeply-toothed leaves, 2 to 3 in. long, yellowish-green above, and pale beneath, with small clusters of flowers, some of which are sterile. Altogether this is a pretty little shrub, and it is somewhat surprising that it has not been introduced, as it is common in the neighbourhood of Nagasaki in Japan.

H. chinensis (*Fortune's H.*)—Near the last, but of more robust habit, with leaves 3 to 5 in. long, and with cymes of flowers much larger. It differs from *H. virens* in the leaves being green on both sides, and in the enlarged sepals being nearly equal in size, much thicker, in fact almost fleshy in substance, and remaining on the branches until the fruit of the fertile flowers is ripe. This species was collected by Mr. Fortune in N. China.

H. Thunbergi.—A small shrub with slender branches, small leaves, and small cymes of flowers. A few only of the outermost ones are sterile, and these are not more than $\frac{1}{2}$ in. in diameter. According to the *Gardeners' Chronicle*, Messrs. Cripps, of Tunbridge Wells, flowered this species in June 1870. They describe it as hardy, though not so showy as some of the varieties of *H. paniculata* and *H. Hortensia*. The sterile flowers are of a delicate Peach-blossom colour. It is a native of the mountains of Sikok and Nippon, Japan.

H. quercifolia (*Oak-leaved H.*)—This is a fine distinct kind, and though not

showy like the popular kinds, it is an excellent shrub, and one I have noticed growing with fine vigour in sea-shore gardens. The leaves have a good deep colour in the autumn, and the flowers are beautiful, while old plants have a picturesque habit.

The whole family is in want of looking up by some enthusiastic admirers who have good soil and other favourable conditions. Although there is a large range of land in Great Britain in which Hydrangeas seem happy, there are other inland and cold districts in which they make poor growth, or are cut down so frequently that experiments come to little. I made a trial myself on a cool hill-side in Sussex without getting any bloom or a healthy growth; but on the other hand we see, especially in the South of England and Ireland, beautiful results in warm valleys and on sandy and alluvial soils even from the use of one kind, so that I have often thought that any one who should take up the Hydrangeas in earnest, and grow them and group them well, might have some very interesting results.

HYDROCHARIS (*Frog-bit*). — *H. Morsus-ranæ* is a pretty native water-plant, having floating leaves and pretty white flowers, and well worth introducing to ponds. It may often be gathered from pools in spring, when it floats after being submerged in winter.

HYDROCOTYLE (*Pennywort*). — Small creeping plants, usually with round leaves and inconspicuous flowers. There are several kinds grown, their main use being as a surface growth to the artificial bog. The best are *H. moschata* and *microphylla*, two New Zealand species, and *nitidula*, though all of these are somewhat tender. The common *H. vulgaris* is rather too rank a grower.

HYMENOPHYLLUM (*Filmy Fern*). — Although these tiny Filmy Ferns are hardy and beautiful, yet the conditions for their successful culture occur so seldom that in a general sense they cannot be used with effect in the open air. Still, as they grow abundantly wild in certain hilly districts, in moist, shady, or rocky situations, there is no reason why they should not be grown in some places in the west or north, or in hilly districts.

HYPERICUM (*St. John's Wort*). — For the most part shrubs and under-shrubs, including a few herbaceous perennials and annuals; these are interesting, though not of high value where effect is sought, and the best kinds do not thrive in the colder lands. The Rose of Sharon (*H. calycinum*) is probably the most fami-

liar, and there are other shrubby species of some beauty. Some of the perennials are good border and rock-garden plants, and the best of these is *H. olympicum*, one of the largest flowered kinds, though not more than 1 ft. high. It is known by its very glaucous foliage and erect single stems, with bright yellow flowers about 2 in. across. It forms handsome specimens that flower early, and its value as a choice border plant can scarcely be over-rated. It may be propagated easily by cuttings, which should be put in when the shoots are fully ripened, so that the young plants may become well established before winter. *H. elodes* is a pretty native plant suitable for the banks of pools and lakes. *H. nummularium* and *humifusum*, both dwarf trailers, are also desirable for the rock-garden. Owing to their dwarf compact growth, several of the shrubby species are well suited for the rock-garden. Of these, the best are *H. ægyptiacum*, *balearicum*, *empetrifolium*, *Coris*, *patulum*, *uralum*, and *oblongifolium*. The last three are larger than the others, but as they droop they have a good effect among the boulders of a large rock-garden, or on banks. *H. Hookerianum*, *triflorum*, *aureum*, *orientale* are among the kinds having some beauty, but the species from warmer countries than ours are apt to perish in hard winters. *H. Moserianum* is a handsome hybrid kind raised in France and well worth a place.

Hypericum uralum.

HYPOLEPIS (*New Zealand Bracken*). — *H. millefolium* is a very elegant New Zealand Fern, with a stout and wide-spreading rhizome, from which arise erect light green fronds, 1 to 1½ ft. high, very finely cut. There can be no doubt about its hardiness, as it has flourished for two or three years in a Surrey garden, and was also quite hardy and vigorous in Mr. F. Lubbock's garden in Kent. It thrives in a sheltered nook and in peaty soil.

HYPOXIS. — Low-growing plants, mostly natives of South Africa. They have grassy foliage and yellow flowers, are tender, but are sometimes planted out in summer, in light, sandy soil, in warm borders. The kinds grown are *erecta*, *elegans*, *stellata*, and *villosa*.

IBERIS (*Candytuft*). — Valuable hardy perennials and annuals, the perennials somewhat shrubby and evergreen, and

precious as rock-garden, border, and margining plants :—

I. corifolia.—A dwarf kind 3 or 4 in. high, and covered with small white blooms early in May. Few alpine plants are more worthy of general culture either in the rock-garden or the mixed border—for the front of which it is well suited. Easily propagated by seeds or cuttings, and thriving in any soil. Sicily.

I. correæfolia is known by its large leaves, its compact heads of large white flowers, by flowering later than other common white kinds, and both the flowers and the corymb are larger than in the other species, coming into beauty about the end of May when the other kinds are fading. It is excellent for the rock-garden, the mixed border, and is well suited for the margins of beds of shrubs. Said to be a hybrid. Increased by cuttings, not coming true from seed.

I. gibraltarica, a beautiful plant, larger in all its parts than the other kinds, with flowers of delicate lilac in low close heads,

veined with rose in early summer. It does not possess the vigour of the other evergreen Iberises, but it is fitted for grouping with dwarf alpine flowers on warm parts

Iberis jucunda.

Iberis gibraltarica.

in spring and early summer. Its hardiness is doubtful, and it should, therefore, be planted on sunny spots in the rock-garden or on banks in light soil, and wintered in frames. Increased by cuttings, as it rarely produces seeds in our climate. Spain.

I. jucunda, distinct, growing about $2\frac{1}{2}$ in. high, the leaves small, the flowers, in small clusters, flesh colour, prettily

of the rock-garden in well-drained sandy loam. *Syn. I. Æthiœnema.*

I. petræa, a pretty alpine species, 3 in. high, with a flat cluster of white flowers, relieved in the centre by a tinge of red, thriving among rock-plants in well-drained spots with plenty of moisture.

I. semperflorens.—A shrubby plant, with dense corymbs of white flowers, and not suited for border culture, though hardy enough to stand our winters when grown at the foot of a south wall or in a very sunny corner of the rock-garden. Under those favourable conditions it forms a pretty evergreen bush in bloom nearly all the year. Mediterranean islands.

I. sempervirens.—The commonest perennial Candytuft, half-shrubby, dwarf, spreading, evergreen, and perfectly hardy, it escapes where many plants are destroyed by cold; and in April and May its neat tufts of dark green change into masses of snowy white. Where a very dwarf evergreen edging is required for a shrubbery, or for beds of shrubs, it is one of the best plants known, as on any soil it quickly forms spreading masses almost as low as the lawn-grass. It should be exposed to the sun rather than shaded. Readily increased by seeds or cuttings. Its common garden name is *I. saxatilis*. *I. Garrexiæna* is not sufficiently distinct to be worthy of cultivation; in fact, it and several other Iberises prove, when grown side by side,

to be very slight varieties of *I. sempervirens*; it, however, seeds more abundantly, and is less spreading. *I. superba*, another variety, is of good bushy habit, and bears many large dense heads of pure white flowers.

I. Tenoreana is a dwarfkind, with white flowers, changing to purple. It has not, however, the hardiness of the white kinds, and perishes on heavy soils in winter; on light sandy soils in the rock-garden it is pretty. It is easily raised from seed, and should be treated as a biennial. S. Italy.

I. umbellata (*Annual Candytuft*).—This and its ally (*I. coronaria*) are the hardy annual Candytufts. They are varied in colour, and are among the most useful of annual flowers. They may be sown at all seasons, but, as in the case of most other hardy annuals, the finest flowers are from autumn-sown plants, which flower from May to July. They like a rich soil and plenty of room to flower freely. There are a great number of varieties, differing both in growth and colour. What are known as the dwarf or nana strain are neat and dwarf in growth, are abundant bloomers and showy. *I. umbellata nana rosea* and *alba* are two of the most distinct, being about 9 in. high; the dark crimson, carmine, lilac, and purple sorts, about 1 ft. high, are also fine. The Rocket Candytuft (*I. coronaria*) in good soil grows 12 to 16 in. high, with pure white flowers in long dense heads, and there is a dwarf variety of it (*pumila*), 4 to 6 in. high, forming spreading tufts 1 ft. or more across. The Giant Snowflake is also an excellent variety. These Rocket Candytufts require the same treatment as the common varieties.

IDESIA.—*I. polycarpa* is a Japanese tree of recent introduction, growing out of doors in mild districts; but we have no proof of its hardiness for our country generally. It has large leaves, bright green above, and whitish beneath. The flowers form long, drooping, branched racemes and are fragrant. The colour is not brilliant, but their effect, combined with the red leaf stalks, the varying green of the leaves, and their drooping habit is good. There are male and female forms, and, although the tree may be increased by cuttings, it is better raised from seed. There is a crisp-leaved form. *Syn. flacourtia*.

ILEX (*Holly*).—Beautiful evergreen shrubs of northern temperate countries, of which the most precious is our own native Holly, *Ilex aquifolium*. It would be difficult to exaggerate the value of

this plant, whether as an evergreen tree, as the best of all fence-shelters for our fields, or as a lovely ornament of our gardens; whether grown naturally or clipped as it must be to form fences; embracing also in its numerous varieties the most enduring of variegated shrubs known,—variegation in most other things being mere disease, whereas in the Holly it is quite consistent with health and beauty. No other shrub known to us may be so often used with good effect near the house and garden, and it will be clear, therefore, how much one should consider the common Holly in all its forms and ways. Valuable as many varieties are, probably none are quite so good as seedlings of the common kind. Good seedling plants are the easiest to transplant and establish. The art of grafting—most delusive as well as most curious of arts—should be carefully guarded against as regards Hollies. Hitherto the way has been to graft the many variegated kinds on the common Holly, and although we often see good results in that way, it is by far the safer plan to insist on the variegated and curious kinds being raised from layers or cuttings. Nurserymen are very apt, having large quantities of stocks of common things, to graft indiscriminately; and though time seems at first to be gained by it, it is dead against the cultivator in the end in almost every case. It will perhaps take a long time to recognise the immense superiority of own-root plants, but if purchasers inquire for and insist upon getting them, it will very much hasten progress. My own experience is that old plants grafted are extremely difficult to move with safety, and, generally, Hollies and other trees are best not moved when old. It is an expensive and troublesome business, and often a failure. Young healthy bushes, seedling or layer, will in a few years beat old grafted trees,—that at least is my experience. Very often old specimens from the nursery live for a number of years, but their appearance is deplorable, whereas healthy well-grown young plants, from 3 to 5 ft. high, when transplanted in May, are often beautiful from the first. No doubt healthy seedling plants might be transplanted at various times, but experience has proved that there is a distinct gain in transplanting Hollies in May; and if we transplant them carefully at that time we shall probably see good healthy growth the same year.

As regards the uses of the Holly, they

are so many in the garden that it is difficult even to generalise them. As shelter in bold groups, dividing lines, hedges, beautiful effects of fruit in autumn, masses of evergreen foliage, bright glistening colour from variegated kinds; elegant groups of the most beautiful varieties,—every kind of delightful use may be found for them in gardens.

According to the late Mr. Shirley Hibberd, who was a very keen observer of the Holly, the following is a good selection of varieties. In the selection of Hollies it will be well to bear in mind that the variety known as *Scotica* answers best of any plant near the sea. The variety known as Hodgins's is the most free in growth in a town garden, being less affected by smoke than most others. The most fruitful varieties are catalogued as *fœmina*, *glabra*, *madeirensis*, *balearica*, *lutea*, and *flava*. The most distinct and beautiful of the variegated kinds are Golden Queen, Silver Queen, Painted Lady, Broad-leaved Silver, Gold Milkmaid, *Watereriana*, and *argentea marginata*. The following classification of Hollies in relation to their several characters will be useful :—

“MALE-FLOWERING HOLLIES.—*Ciliata*, *Heterophylla*, *Latispina*, *Laurifolia*, *Tortuosa*, *Gold Tortuosa*, *Beetii*, *Cookii*, *Gold Cookii*, *Cornuta*, *Doningtonensis*, *Ferox*, *Ferox fol. arg.*, *Ferox aurea*, *Foxii*, *Furcata*, *Ovata*, *Picta marginata*, Golden Queen, *Longifolia aurea*, *Longifolia argentea*, *Watereriana*, Gold Few-spined, Silver Queen, *Shepherdii*.

“FEMALE - FLOWERING HOLLIES.—*Angustifolia*, *Angustifolia aurea pendula*, *Angustifolia medio picta pendula*, *Balearica*, Broad leaf, Dark shoot, *Fisherii*, *Flavo fructo aurea*, *Fœmina*, Golden Milkmaid, *Glabra*, *Handsworthiana*, *Silver Handsworthiana*, *Heterophylla*, *Hodginsii*, *Latifolia argentea*, *Latifolia aurea*, *Lutea*, *Madame Briot*, *Madeirensis*, *Madeirensis nigrescens*, *Madeirensis variegata*, *Myrtifolia*, Milkmaid, red berry; Milkmaid, yellow berry; Moonlight, Perry's weeping, *Picta aurea*, *Platyphylla*, *Scotica*, *Watereriana*, Weeping.

“HERMAPHRODITE-FLOWERING HOLLIES.—*Shepherdii*, *Smithiana*, Silver Queen, *Heterophylla*, *Hodginsii*, *Laurifolia*, *Handsworthiana*, *Lutea*, *Flava*, *Scotica*, *Balearica*, *Rotundifolia*.”

By far the best of all known Hollies is our native Holly, but there are other Japanese and American kinds worth

growing, such as *Ilex crenata*, and the fine *I. latifolia*. This, however, requires our most temperate districts to thrive.

ILLICIUM.—An interesting half-hardy evergreen shrub from the Southern States of N. America, *I. floridanum* bearing fragrant flowers of a deep red, like those of the Carolina Allspice. *I. religiosum*, also known as *I. anisatum*, from China and Japan, with pale yellow flowers, is also interesting, and may be grown against walls or as bushes in warm places.

IMPATIENS (*Balsam*).—The species of Impatiens that thrive in the open air are all annual and hardy, and sow themselves freely where they get a chance. The best are—the common *I. glandulifera*, which attains a height of 4 to 6 ft., and bears numerous flowers, varying in colour from white to rose. It will soon take possession of the shrubbery if not checked; and it is seen to advantage in cottage gardens. *I. longicornu* is beautiful, and has the same habit as *glandulifera*, but the lower part of its helmet-shaped flowers is bright yellow, marked by transverse lines of dark brown; while the upper part is rose colour. *I. Roylei* is much dwarfer than the preceding, and has blossoms of a deep rose. *I. cristata* has light rose-coloured blossoms.

I. balsamina (*Garden Balsam*) may be grown in the open air, and makes a pretty display in warm places. The plants should be raised in a frame and transplanted. Soil which is too rich should be avoided; but soil manured for a previous crop, and which has been well pulverised by forking, gives the finest flowers and a less sappy growth. Colours and markings in any good and valued strain include the following, and probably a few others, as some sorts sport continually: Pure white, buff-white, rosy-white, lavender-white, pale mauve, peach, pink, carmine, scarlet-cerise, crimson, violet, purple, purple-white blotch, scarlet-white blotch, and others.

IMPERATA SACCHARIFLORA.—A hardy Grass, from the Amoor, with graceful foliage, forming a tuft, about 3 ft. high, that throws up numerous flower-spikes, about 5 ft. in height, bearing silvery plumes of flowers. The leaves are of a lively green, with a broad white stripe down the mid-rib.

INCARVILLEA (PERENNIAL TRUMPET FLOWERS).—Among the most distinct and handsome plants of recent introduction. All are perennials, sometimes with a fleshy root and soft tissues, in others woody and sub-shrubby in character. Their flowers are large, handsome

and trumpet-shaped; they are, in fact, perennial Bignonias. They thrive best in warm soils, deep and rich to favour their strong roots, and well drained to preserve them from stagnant moisture in winter.

I. Beresowski (BERESOWSKI'S TRUMPET FLOWER).—This plant resembles the better known *I. Delavayi*, nor is it yet clear whether it should not be regarded as one of its forms. It has the same fleshy ap-root and pinnate foliage, with clusters of nine or ten purplish crimson flowers, but upon stems much shorter than in *M. Delavay's* kind. Western China.

I. Bonvaloti (BONVALOT'S TRUMPET FLOWER).—This new plant from the same region is like a small form of *I. compacta*, with very dwarf growth, short leaves, and rather smaller flowers of similar colour.

I. compacta (DWARF TRUMPET FLOWER).—This is a shy bloomer, bearing upon short stalks, hardly rising above the leaves, clusters of deep pink flowers, funnel-shaped, and about 2½ inches long. It is found in forms with stalks of various lengths, but is usually of compact habit.

I. Delavayi (DELAVAY'S TRUMPET FLOWER).—Vigorous and handsome perennial, flowering in the second year from seed sown in April. The dark green leaves vary in length, and often reach 2 feet long, and are finely cut, fleshy, and of a peculiar odour when handled. In cold districts the fleshy root may be lifted and stored like a Dahlia, but must be covered with soil and not allowed to dry. Well planted, the tubers gain force each season, forming at last masses of five or six flower-stems of about a yard high, with ten to fifteen trumpet-shaped flowers in a cluster, the lower ones drooping loosely from the central mass. It has now been proved hardy in so many places all over the British Isles that there is small risk of its loss save in very cold and wet gardens, while it is so easily raised from seed that it can now be planted in bold masses.

I. grandiflora.—Of this the flowers are larger than those of *I. Delavayi*, and the habit of the plant is dwarfer, with shorter leaves and rounded leaflets, while it blooms about a fortnight earlier. Its root, large and fleshy, is less tuberous, throwing a scanty rosette of leaves rather more than a foot long, of deep shining green, and in young plants prostrate, arching when older. The flower stem is at first short, but lengthens, with a succession of flowers, of which the last are generally the finest. On a strong mature plant they are nearly 4 inches across and 2 to 3 inches deep in the tube, the limb being divided into four broad lobes of soft rosy-carmine, deepening towards the yellow tube, and relieved by handsome white blotches in the throat. It is easily raised and grown from seed in rich, free soil; seedlings take three or four years to flower.

I. Olga (PRINCESS' TRUMPET FLOWER).—A handsome perennial of shrubby habit, and hardy in all but cold districts. Its pretty cut leaves are borne upon long, straggling stems of 4 or 5 feet, which rather spoil its beauty. The tubular flowers, about an inch long and wide, are of a pretty pale pink, borne in loose clusters upon very short stalks during summer. Turkestan. Syn. *I. Koopmannii*.

I. princeps.—A new species.

I. sinensis (CHINESE TRUMPET FLOWER). Of good habit, with large flowers of scarlet or bright crimson upon very short stalks. It is best grown as an annual or biennial from seed sown during summer. Being tender, it must be wintered under glass and planted in the spring, blooming during summer upon stems 2 to 3 ft high. There is a form with large flowers of reddish-purple.

I. variabilis (FERN-LEAVED TRUMPET FLOWER).—A shrubby perennial of fine habit, hardy in light, warm soils and in mild districts. The flowers, borne upon stems of about 2 feet, are an inch long and of a beautiful light rose, with finely cut foliage of vivid green. It is beautiful for several weeks during late summer and early autumn.—B.

INDIGOFERA.—Elegant shrubs of medium or dwarf stature, so far as known with us, natives of China and Japan. Very little is known of their garden value, though occasionally seen as wall plants in mild districts. *I. Gerardiana* is a pretty plant which may be grown as a bush or against a wall, which it clothes gracefully with feathery leaves, towards the close of summer, bearing small Pea-like bright pink blooms. In cold districts it may be well to give it protection in cold winters if not against a wall, and the only attention it requires is close pruning in early winter. The kinds in cultivation—some rare—are *I. Bungeana*, *decora*, *decora alba*, *Delavayi*, *Dosua*, *Dosua minor*, *Gerardiana*, *Gerardiana alba*, *hebeptala*, *Kirilowii*, *macrostachya*, *pendula*, *reticulata*, *Roylei*. It is probable that other kinds may be expected from the countries so rich in plants as those from which they come. For treatment we can only say warm walls or sunny positions in open well-drained soils.

INULA.—Perennial Composites, few of which are of high value for the garden. *I. Helenium* (*Elecampane*), a vigorous British plant, 3 or 4 ft. high, with a stout stem, large leaves, and yellow flowers, is well suited for planting with other large-leaved plants, or in isolated specimens on rough slopes or wild places, in good soil. *I. Oculus Christi* grows 1½ to 2 ft. high, and bears orange flowers in summer. *I. salicina*, *montana*, and *glandulosa* are

similar. *Royleana*, *macracephala*, *grandiflora*—the finest kind, and its varieties under various names. Easily propagated by division or seed.

Inula glandulosa.

IONOPSIDIUM (*Violet Cress*). — *I. acaule* is a charming little Portuguese annual about 2 in. high, whose dense tufts of violet flowers spring up freely where plants of it have existed the previous season. Its peculiar beauty makes it useful for various purposes. On the rock-garden, associated with even the choicest of alpine plants, it holds its own as regards beauty, and never overruns its neighbours, and it is particularly suitable for sowing near pathways or rugged steps, growing freely in such places; indeed it would even flourish on a hard gravel walk. It flowers a couple of months after sowing, and often produces a second crop of blossoms in the autumn. Portugal and Morocco. *Cruciferae*.

IPOMÆA (*Morning Glory*).—Beautiful, slender, twining plants of the *Convolvulus* family, for the most part tropical. A few succeed in the open air when treated as half-hardy annuals. The most popular of these is—

I. purpurea, or *Convolvulus major*, as it is called, which is too well known to need description, as it is one of the oldest cultivated plants. Its varieties are numerous; there are white, rose, and deep violet varieties, while *Burbidgei* is crimson, *Dicksoni* deep blue, and tricolor striped with red, white and blue. A mixed packet of seed would contain most of these. This beautiful though common plant deserves much attention, as its uses are various. It may be used for the open border, for

festooning branches, for covering arbours, trellises, and the like, or for rambling over shrubs, growing freely in any good ordinary garden soil. Seeds should be sown in heat in early spring, and the seedlings transplanted in May as soon as large enough. In some localities seed may be sown at once in the open border, but as a rule plants raised under glass succeed best. It is known also as *Pharbitis hispida*. Tropical America and Asia.

I. hederacea (*Ivy-leaved Morning Glory*) is somewhat similar to the common Morning Glory (*I. purpurea*), but has lobed leaves like Ivy. Its flowers, too, are smaller, of a deep blue striped with red. The varieties *grandiflora* (light-blue), *superba* (light-blue, bordered with white), and *atroviolacea* (dark-violet and white) are all worth cultivating, and so are the Japanese variety, *Huberi*, and its variegated-leaved form. The Ivy-leaved Morning Glory is somewhat hardier than *I. purpurea*, and seeds may be sown in the open border in April, in light rich soil, where it will flower from July to September. It is also known as *I. Nil*.—North America. Other kinds of *Ipomœa* for open-air culture are *I. rubrocœrulea*, a half-hardy annual, and *I. leptophylla*, a hardy perennial from North America, but neither is so pretty as those mentioned above.

IPOMOPSIS.—Graceful biennials from California, thriving in light, dry, and warm soils in the milder districts. There are three kinds; each forms a tuft of finely-cut feathery foliage, and has slender flower spikes from 2 to 3 ft. high thickly set with flowers that open in succession. In *I. elegans* the flowers are scarlet and thickly spotted, and in *I. superba* they are much the same, while in the *rosea* variety they are a deep pink. The seeds should be sown in spring in pots in the open border in ordinary soil. During the first year the plants make growth, and early the following summer they flower. If planted out to stand the winter it is advisable to give a little protection. Other kinds mentioned in catalogues belong to *Gilia*, of which *Ipomopsis* is really a synonym. On light soils early autumn-sowing should be tried. These plants are very seldom well grown.

IREFINE.—Dwarf half-hardy plants, remarkable for their foliage, and much used in the flower garden with other tender plants in summer. There are two types, from which have sprung several varieties. *I. Herbsti* grows from 1 to 2 ft. high, and has crimson stems and rich

carmine-veined foliage, the brilliancy of which continues until late in autumn, and is more effective in wet than in hot dry seasons. It requires a moist rich soil, and is readily increased by cuttings taken in September and wintered in a greenhouse. In early spring the plants should be repotted, and grown on in heat, and fresh cuttings taken in March and April will make them fit to put out in May. *I. brilliantissima* and *Wallisi* are two varieties possessing more brightness of colour in their foliage. *Lindeni* is quite distinct from the foregoing, having more pointed leaves, which are of a deep blood-red. It is compact and graceful, and bears pinching back and pegging down to any height. It makes a good edging plant, and requires the same treatment as *I. Herbsti*. *Amarantaceæ*.

IRIS (*Flag*). — Beautiful bulbous or tuberous plants numerous in kind and wonderfully varied in beauty, more than most flowers. By some, Irises have been compared to Orchids, and those who delight in singular and beautiful colour, and to whom greenhouses and hothouses are denied, may find a substitute for Orchids in Irises. The plants are for the most part hardy and have much diversity of habit and colour, varying in height from a few inches to 6 ft. They may be conveniently divided into two classes—those with bulbous roots, which are now called *Xiphions* and those (the greatest number) with creeping stems. In treating of culture it is well to consider these separately. The bulbous kinds should have a warm and sheltered situation, such as the protection of a south wall, and succeed in almost any light garden soil, but prefer one that is friable, and sandy, not too poor, but enriched with rotten leaf-mould and manure. Sun they must have, and the shelter must be without shade. They need an autumn drought to ripen, and a dry soil in winter to preserve the bulbs and keep them at rest, but in spring, when the leaves are pushing up, they love moderate rain. These observations apply to the Spanish and English Irises as well as the rarer bulbous kinds. The great point is not to meddle with the bulbs as long as the plants are doing well, and, when the soil is exhausted and it is necessary to transplant, the bulbs should not be allowed to become dry or shrivelled. It is advisable to place a thin layer of Cocoa-nut fibre refuse or some similar material for protection during severe weather, and to prevent the flowers from being bespattered by mud during heavy rain. Some kinds produce seeds very

freely in some seasons, which should be carefully collected, and when well ripened sown at once. This will be found a ready way of increasing the stock, as they will make strong flowering bulbs in about three years.

Most of the non-bulbous Irises like rich soil, the coarser and stronger forms relishing even rank manure, but to the more delicate ones this is almost poison; and all indeed thrive the better if the manure is given in a decayed state. If it is well rotted they can hardly have too much of it. As regards moisture, they vary a good deal. The condition that suits most is comparative dryness in winter and an abundance of water in summer. Unfortunately, this is the reverse of what they generally get, and they also vary a good deal as to the nature of the soil they like best, some preferring a deep, somewhat stiff, but rich loam, and their long thong-like roots reach down an amazing distance, while others prefer a lighter, looser soil, richer in vegetable matter. The more vigorous kinds are suited for planting among large shrubs, which ought to be wider apart than they generally are in shrubberies; and may be employed in tufts near water, in isolated groups on the Grass, and also on mixed borders and beds. In the smallest gardens, where there is not space to plant them in these various ways, one of the best ways would be to establish healthy tufts in the fringes of the shrubbery. Another good way is to place them here and there in carpets of low evergreens, above which their flowers would be seen in early summer. Tufts of the finest kinds look very beautiful here and there among dwarf Roses. The flowering season of the Iris extends over the greater part of the year. The following selection of the more important kinds for our gardens is arranged in alphabetical order for convenience of reference.

I. alata (*Scorpion Iris*).—A beautiful bulbous kind with fine large blossoms, the ground colour delicate lilac-blue, with showy blotches of bright yellow, copiously spotted with a darker hue. The foliage, which appears with the flowers, much resembles that of a Leek. *I. alata* generally commences to bloom in October, and, if the weather is not too severe, flowers also about Christmas time. It is easy to grow, requiring a warm, dry, sunny border; the bulbs should be planted in autumn in ordinary garden soil.

I. asiatica (*Asiatic Flag*).—Allied to the German Iris, but the handsome flowers are much larger, the lip especially being very long and broad; its colour is a very

fine pale purplish-blue, the standards a little paler than the falls. A good border kind.

Iris asiatica.

I. atro-purpurea.—This Iris may be considered as coming within the *iberica* group, as the foliage is not unlike that kind, and the stem, though always of some length, never rises very high. The flower is somewhat small, and for the most part of deep purple colouring. The plant varies somewhat, one variety being called “Odysseus.”

I. aurea (*Golden Flag*).—This is a lovely tall plant, a native of the Himalayas, with yellow flowers of great beauty, hardy in the coldest soils. It does well among shrubs or in borders of the best perennials, and groups of it so placed are very handsome. It is one of the kinds that may be grouped with good effect near water, though it thrives in borders. Division and seed.

I. Bakeriana.—This is one of the most beautiful of the bulbous early spring flowering Irises. It comes from Armenia, and the flowers, which smell like violets, remind one strongly of those of the

netted Iris. The colouring varies, the yellow streak on the fall, which is conspicuous in some of the forms, being almost entirely absent in others; the size and number of the violet spots and the breadth of the rich violet edging as well as the size and brilliancy of their tints vary in individual flowers. It blooms quite early in the year, and is delightful in pots.

I. Barnumæ. This Iris, a native of the hills of Kurdistan, belongs to the *iberica* group. The flower is smaller than that of that Flag, and both falls and standards are vinous red-purple marked with darker veins, the standard being lighter in colour than the fall and its veins more conspicuous. There is a yellow variety described by Prof. Foster as “an exceedingly charming plant,” and fragrant, the odour not being unlike the Lily of the Valley.

I. biflora.—A handsome Flag, 9 to 15 in. high, bearing large violet flowers on stout stems. Similar to it are *I. sub-biflora* and *I. nudicaulis*, which is one of the best of the dwarf Flags, from 4 to 10 in. high; its flowers large, of a rich violet-

Iris cristata.

blue, four to seven on a stem in early summer. It has the vigour of the German Iris and the dwarfness of the Crimean Iris, but is much sturdier, and is suited for the margin of the herbaceous border and for the rock-garden.

I. Bismarckiana.—This "Cushion" Iris, found in Lebanon, is little known as yet, but it is described as having a flower as large as *I. susiana*, with gray falls and sky-blue standards.

I. cristata (*Dwarf-crested Iris*) is a charming dwarf Flag, flowering in spring and also in autumn, delicate blue and richly marked. It is a fragile plant, 4 to 6 in. high, with broad leaves, and throws out long slender rhizomes, wholly above ground, thriving in sandy earth in beds, borders, or on the rock garden.

I. florentina (*Florentine Flag*).—Its large delicate flowers are nearly 6 in. deep, faintly tinged with blue, the falls veined with yellow, and green at the base, with an orange-yellow beard, whilst the broad leaves are rich dark-green. A native of Southern Europe, flowering during May and June. The variety *albicans* is almost pure white.

I. foetidissima (*Gladwin*).—A British plant, 1½ to 2 ft. high, with bluish flowers.

Iris foetidissima (Gladwin).

There is a variety with variegated leaves. The common green form is worth growing in rough grassy places for its brilliant coral-red seeds.

I. Gatesi.—This is a remarkably handsome Flag from Armenia, and very near to *susiana*, but the rhizome is more compact, and the foliage smaller, shorter, and narrower, and of a darker green than in *susiana*. The stem is taller, 1½ ft. or even 2 ft., and the flower when well grown larger. The prevailing colour of

the specimens so far cultivated is; when the flower is seen at a distance, a soft delicate gray, brought about by very thin clear veins and minute dots or points of purple on a creamy-white ground, the dots being predominant on the fall and the veins on the standard. The ripe capsule is as much as 5 in. in length.

I. germanica (*Common German Flag*).—This best known flag is one of the few plants that succeed well in London. *I. nepalensis* is a charming form from India, with flowers from 5 in. to 6 in. long, the standards rich dark violet-purple, the falls intense violet, striped white and purple at the base, with yellow and reddish markings. It flowers during May and June, and may be increased quickly. The German Flags flourish in ordinary garden, dry gravelly soil, or sandy banks, for which they are well suited. A good selection of varieties of the German Iris, all good garden flowers, would be composed of *Atro-purpurea*, *Aurea*, *Bridesmaid*, *Calypso*, *Celeste*, *Gracchus*, *Mme. Chereau*, *Queen of May*, *Rigolette*, *Victorine*, and *George Thorbeck*.

I. histrio.—This beautiful bulbous Iris, when peeping through the ground in winter or early spring, reminds one of *I. reticulata*, but it is rather taller, and its sweetly-scented flowers are broader and more conspicuously spotted or blotched, the colour being rich bluish-purple, flushed towards the base of the petals with rose-pink, whilst the markings are of the deepest purple, relieved by a crest of gold. Syria.

I. histrioides.—One of the most charming of the spring flowering bulbous Irises. So far, though it has only been in cultivation a few years, it has proved of easy culture. The flowers are larger than those of any of the group, the falls mottled with white and rich lilac both on the claw and on the broad rounded blade. It is a native of Eastern Anatolia, and blooms in early March.

I. iberica (*Iberian Flag*).—One of the most singular and handsome of Irises. The flowers are large, the standards white, pencilled and spotted with purple or violet, while the falls are veined with dark purple or purple-black on a yellowish ground, with a conspicuous dark blotch in the centre. This is the colour of the commonest form, but there are several, and one, *ochracea* is very distinct, is hardy and thrives best in a rich fibrous loam, where it can send its long roots deep into the soil. The rhizome should not be planted deep, but only just below the surface as in most cases the roots perish when planted deeply. Coarse river sand should be used,

the rhizome being planted completely in it, and by this means it is kept rather dry during the winter. Dry borders or warm spots on the rock-garden.

Iris iberica.

I. juncea (*Rush-leaved Flag*) is a lovely bulbous Iris, graceful in habit and with bright yellow flowers of a delightful fragrance, whilst it can be grown almost as easily as the English Irises. It requires a light, rich deep soil, and will be all the better if planted where it can be kept fairly dry during winter. Spain.

I. Kämpferi (*Japanese Flag*).—The many varieties in cultivation under this name have sprung from *I. lævigata* and *I. setosa*, and form a fine race of garden plants, whilst every year many beautiful sorts are added, chiefly from Japan, though many seedlings have been raised in this country. The flowers are variable in size and colour, some measuring as much as 9 and 10 in. across. The varieties of *I. setosa* differ from those of *I. lævigata* in having broader and less-drooping petals, and the three inner petals are often of the same size as the outer, so that the flower is symmetrical. *I. Kämpferi* will grow in almost any soil, but is best in a good loam, with peat added to it, though this is not so much for nourishment as to retain moisture during the hot and dry summer months, for this Flag likes moisture, and its numerous roots will often go 2 ft. deep in search of it. It dislikes shade, preferring a warm sunny position, being especially happy when planted by the margin of a lake, pond, or stream. Two-year-old seedling plants of it bloom in June and July, and amongst them will be found an endless variety of colours from white to the richest plum, the deep blues being very

rich. The mottled flowers are objectionable, and unfortunately these are common, but they are poor in effect, nothing like so handsome as the self-coloured kinds, nor do we care about the more double varieties. In these the natural grace and fine outline of the flower are lost. When transplanted this moisture-loving Flag does not bloom well until the second season after planting. Propagated by division or seeds, which should be sown as soon as gathered either in pots or in the open ground, they will vegetate in the following spring.

I. Kolpakowskiana.—An ally of *I. reticulata* and introduced from Turkestan, it is perfectly hardy in the open air, flowering about the same time, and effective in groups. The chief difference from the netted Iris is in the bulb and leaves, which are narrow, linear, deeply channelled on the inner face, with a central band or rib like a Crocus leaf, and pale-green without the glaucous tint usual to this group. The falls are deep violet-purple, with a beardless bright yellow keel from which are purplish branchings, whilst the standards are pale self-lilac with creamy anthers.

I. Korolkowi.—Of this the leaves are tall, narrow, and upright, the scape, which is about 1 ft. or so high, bearing two large flowers of delicate shades of gray and brown, and beautifully veined. Warm and dry spots on the rock garden.

I. lacustris (*Dwarf Lake Iris*).—A dainty, quite hardy Iris, with beautiful sky-blue flowers in spring and again in the autumn. It belongs to the rhizomatose group, is free both in growth and bloom, and succeeds in full sun and in sandy soil. North America.

I. Lorteti.—This Iris comes from South Lebanon. In general features it is near to *I. Sari*, but its wonderful colouring makes it, perhaps, the most beautiful Iris in the world. "In a plant flowered by myself this summer (1893)," writes Prof. Foster, "the falls showed a creamy-yellow ground marked with crimson spots, concentrated at the centre into a dark crimson signal, while the standards were nearly pure white, marked with very thin violet veins, hardly visible at a distance."

I. lupina (*Wolf's Ear Iris*).—This is from Armenia and Central Asia Minor, and resembles both *I. susiana* and *I. Iberica*. The rhizome is compact and the foliage, though somewhat variable, is dwarf like that of *I. iberica*, and 3 in. or so in length. The flower, borne on a stem varying from 1 in. to 6 in. or even more in length, differs in form from both *I. susiana* and *I. iberica* in that the fall is

distinctly lance-shaped, whilst the colouring consists of irregular brownish-red veins on a yellow or greenish-yellow ground, the red of the veins often merging into purple. The claw of the standard is furnished with quite numerous hairs.

I. Mariæ, which belongs to the *iberica* group, was discovered on the confines of Egypt and Palestine. The rhizome is compact, rather slender, the foliage being not unlike that of *iberica*, but narrower. The flowers, on a stem of about 6 in. high, are somewhat smaller than *I. iberica*, of a uniform lilac colour, though marked with veins, but the uniformity is broken by a conspicuous "signal" patch of deep purple on the fall. The standard is larger and more rounded than the fall, whilst the claw of the latter is beset by numerous deep purple hairs, which, scattered at the sides, are crowded together along the middle line more after the fashion of the beard of an ordinary bearded Flag.

I. Meda is a native of Persia, and has a small, slender, and compact rhizome. The leaves are narrower than *I. iberica*, and for the most part erect, the stem being about 6 in. in length, more or less, but it seems to vary a good deal. The fall, which spreads horizontally, is narrow and pointed, the blade being sharply curled back on itself. The standard is rather larger than the fall, and the style, which lies close down on the claw of the fall, is narrow, ending in two small triangular crests.

I. missouriensis (*Missouri Flag*).—This was found in the Rocky Mountains, and is a good kind, graceful, and with delicate purplish-blue flowers, which are valuable to cut in the month of May. It grows well in a border of good soil, and is not seen as often as one might expect in gardens.

I. Monnieri.—A noble Flag, distinct from any other in cultivation, the leaves being dark-green, and the flower-stem nearly 4 ft. high, whilst the outer divisions of the flowers, which are very fragrant, are recurved, and of a rich golden-yellow, margined with white. It is by no means common, and blooms later than most of the other species, in most seasons even after the varieties of Kämpfer's Flag. It is a native of Crete, and succeeds best in rather moist soil, whilst increased easily by division or seed.

I. Monspur is a seedling, raised by Prof. Foster, between *I. Monnieri* and *I. spuria*, and is a very doubtful plant. The variety *Notha* differs from *I. spuria* in being altogether larger, considerably more

rigid both in stem and leaves, and with a much longer spathe valve. When grown well, by no means difficult in ordinary garden soil, it is most effective in full flower. Some of the varieties, such as *stenogyna*, *sub-barbata*, &c., have been

Iris ochroleuca.

bandied about between *I. spuria* and the nearly allied *I. Guldenstaedtiana*, but the simpler way is to call them all varieties of *I. spuria*.

I. neglecta is amongst the commonest Flags in cultivation, and one of the tallest growing species, having given rise to numerous garden varieties. Its flowers rarely measure more than $2\frac{1}{2}$ in. across, the standards being of a pale blue, with darker shading, and the much reflexed falls are of a deep blue, veined with purplish-red; the crest or beard is bright yellow, and very striking.

I. ochroleuca (*Yellow-banded Flag*).—A stately vigorous flag and an old plant in our gardens, the foliage slender, about 4 ft. long, and coming up in a graceful twist. The spikes usually bear four or five flowers, white or nearly so, with large yellow blotch on the fall, and some reach nearly 6 ft. in height, strong clumps producing four or five. Few Flags will thrive better in the ordinary mixed border. There is a variety called *gigantea* which has larger and finer flowers, but differs in no other way. *I. Kerneriana* differs only in its smaller flowers and much narrower leaves.

I. orchoides.—Distinct in its rich, dark yellow blossoms with black spots on the lower petals and a vigorous leafy growth. It is a profuse flowering kind, often bearing as many as six blossoms on a single spike. It is a tuberous-rooted species, hardy and free at least on warm soils.

Iris pallida.

I. pallida (*Great Purple Flag*).—One of the stateliest and most beautiful of flags. When in full vigour, the spikes will reach 4 ft. in height, with a succession of from eight to twelve of its large pale-mauve or purple flowers, scented like the elder. There are forms of it, such as the Dalmatian and also *Mandraliscæ*, which have deep blue flowers. It is a fine border-plant, and charming in large groups.

I. paradoxa.—This is a singular Cushion Iris, a native of West Persia and the Caucasus, and fitly called “paradoxical.” The fall is reduced to a narrow

Iris paradoxa.

strap half an inch or less in width, but the standard is large, erect, and while the small fall is stout and firm, almost leathery, is delicate and flimsy in texture. The ground colour of the claw is a rich crimson or deep pink, but beneath the claw and for some little distance in front of it the crimson hue is all but entirely hid by numerous short dark-purple, almost black, hairs, so thickly set as to imitate velvet very closely indeed. This velvet area, at some distance in front of the end of the style, comes abruptly and squarely to an end, being marked off by a cross bar of rich crimson devoid of hairs. The small portion of the fall in front of this bar is of a creamy-white, traversed by radiating thick dark-purple veins, which are so closely set as to leave little of the ground visible. The plant varies much in size and

colour, and the total effect of the flower is very striking and beautiful.

I. persica (*Persian Iris*).—This is one of the most charming of the early kinds, and deserves a place wherever the soil is warm and dry. Its flowers, produced from

Iris persica.

a tuft of bright green leaves that just peep over the soil, are white, suffused with pale Prussian blue, and blotched with velvety purple. It comes from Persia, and is therefore somewhat tender, but in warm sheltered spots, in light sandy soil, succeeds well enough, and flowers in winter and spring, according to the weather.

I. Pseudo-acorus (*Common Water Flag*).—Common as is this Flag, everyone who has grown it fairly will admit its beauty. Whoever has in his garden a pond or a ditch, or even a thoroughly damp spot, ought to plant this Flag.

I. pumila (*Dwarf Flag*).—The best of the dwarf Flags, for to it we owe the many lovely varieties that create such a rich display of bloom in spring. It grows from 4 to 8 in. high, and has deep-violet flowers, unusually large for its size. There are several named varieties, the most attractive being the sky-blue (*cœrulea*), which in early spring forms sheets of bright colour edgings in free soil.

I. reticulata (*Netted Iris*).—One of the most beautiful of hardy flowers. While the snow is still on the ground—in January, or even earlier—its leaves begin to shoot, and while these are only a few inches high, the bud opens to the pale wintry sun a beauty of violet and gold. After the flower has faded, the erect narrow leaves grow apace, attaining a height of 1 ft. or

more, and, as in the Crocus, the ripened ovary is in due time thrust upwards from the soil. This little treasure is indeed the Iris companion of the Crocus, and those who have seen large clumps of it growing in some sheltered but sunny spot in the bright and gusty days of February or March, may well wish that its netted bulbs were as plentiful as Crocus corms. The plant comes from some parts of the Caucasus and from Palestine, and there are several varieties. *Krelagei* may be recognised by flowers of a purple or plum colour, with the yellow marking less vivid; the whole flower is smaller, also less fragrant, in fact is almost

Iris reticulata.

wholly without scent, and it flowers ten or fourteen days earlier. An exquisite gem is *I. r. cyanea*, which is very bright in colour, a slaty blue, and dwarf. *Sophonensis*, with red-purple flowers and a bold crest, is a native of Asia Minor, and blooms in early February. *I. r. purpurea*, a small variety with deep-purple flowers, is pleasing. A sunny sheltered spot is, however, advisable, that its tall narrow leaves may, after flowering, be protected from the wind. Sandy soil will do, but it is not particular in this respect. Sometimes, however, it refuses to grow, and in damp places the bulbs rot in summer. Since the flowers come before the leaves grow tall it makes a good pot plant, and a well-grown clump is a charming addition to the Christmas table. Unfortunately *I. reticulata* refuses to grow at all in some localities through disease. Although this disease may be

somewhat retarded by lifting and careful storing it is very difficult to eradicate, and in wet seasons carries the bulbs off by the thousand.

I. Rosenbachiana.—This is a charming bulbous Iris, and found on the mountains of East Buchara, Turkestan, at an elevation of 6,000 ft. to 7,000 ft., we are told, in two varieties, both growing together,

indeed the var. *lurida*, which Prof. Foster mentions as the only one he has seen in cultivation, is often mistaken by a casual observer for *I. susiana*.

I. sibirica (*Siberian Flag*).—A slender plant, 2 to 3 ft. high, with narrow grassy leaves and in summer somewhat small showy blue flowers, beautifully veined with white and violet. There are several

Iris susiana.

the flowers of one form being blue, those of the other of a fine violet, whilst the bulbs of both the varieties are small, with thin tunics, never reticulated as in the netted Iris.

I. Sari. This derives its name from the river Sar, in Cilicia, in the neighbourhood of which it was found. It comes near to *I. susiana*, having a compact rhizome, relatively large foliage, a fairly tall (a foot or less in height) stem and large flowers ;

varieties, the white variety, also called *I. flexuosa*, being pretty, and so is *I. acuta*, but the double-flowered form is not. The finest variety is *I. orientalis*, having larger flowers of a deeper colour, with a different veining, and the falls especially broad and expanding. The Siberian Iris is very hardy and spare plants are easily established in ditches or damp spots.

I. sindjarensis.—This is an interesting species with the habit and general

character of *I. caucasica*, but having bluish flowers and a distinct crest. It flowers however at a time when no other Iris except *I. reticulata* is in bloom, and possesses a certain distinctive charm.

I. stylosa (*Algerian Iris*).—A beautiful plant, flowering in mid-winter, its flowers hidden in grassy foliage. When mixed with even the most delicate flowers of the stove or Orchid-house, its silky sky-blue fragrant flowers possess a charm and softness equalled by scarcely any other flower of the same colour. Although the plant is hardy, its flowers are so delicate that it should have protection from heavy rains unless the position is well sheltered. There are several varieties in catalogues, *speciosa* being one of the best, this having larger flowers of a deep blue colour. Syn., *I. unguiculuris*. They all thrive best on very light warm soil on well-drained borders in sheltered gardens. Division.

I. susiana (*Mourning Iris*).—One of the most singular of all flowers, from $1\frac{1}{2}$ to $2\frac{1}{2}$ ft. high; the flowers very large and densely spotted and striped with dark purple on a grey ground. It should be grown in sunny nooks in the rock-garden, or on sheltered banks or borders, but always in light, warm, or chalky soils. We have seen it flowering well in a border in the Archbishop of Canterbury's garden near Broadstairs, where it is hardy. Asia Minor. Division.

I. tuberosa (*Snake's-head*).—This is an interesting if quiet-coloured kind, 12 or 13 in. high, the flowers small, brownish-green marked with yellow, and a purplish-brown tinge on the upper part. There are usually two tubers. It is not showy enough for every garden, but where admired it may be naturalised in light soil. S. Europe.

I. variegata is a handsome Flag of the Germanica group, 1 to 2 ft. high, with large, slightly fragrant flowers, having bright yellow standards and claret-red falls beautifully veined. Similar in aspect is *I. aphylla*, with deep lilac falls and white standards veined with purple, whilst there are numerous varieties, the colours of which are varied and beautiful. *I. lurida* and its varieties also come under this group.

I. xiphioides (*English Iris*).—This is a beautiful flower, and the many garden varieties are amongst the finest things we have in early summer.

The English Iris got its popular name in a rather curious way, being sent from its Pyrenean home, where its distribution is limited, to Bristol traders, thence to Holland. The Dutch, supposing it to be

a native of our shores, called it the English Iris. The flowers are quite distinct in aspect from those of the Spanish Iris and appear a fortnight or so later. They are broad and display a delightful diversity of colour, from deepest purple to pure white. Among the good varieties are Leon Tolstoi, Mont Blanc, Grande Celeste, King of the Blues, La Charmante, and Vainqueur. There are, of course, many other varieties in which one gets

"The English Iris."

flowers splashed and mottled with various colours. These are not so fine as the bold self kinds, and raisers should think less of them, rather giving us self colours, which are always more effective both in the garden and when gathered for the house. There is a curious variety called Thunderbolt, which is of a dusky dull colour.

Dr. Wallace, of Colchester, writes as follows:—"The English Irises are easily cultivated and well worthy of a place in all gardens. Flowering at the end of June and during July, they come in when most of the other Irises are over, and a bed of their large flowers is beautiful for several weeks, their strong spikes mostly carrying two or more flowers, in all shades

of white, blue, and reddish-purple, some splashed and streaked, others with clear decided colours, formidable rivals to the *Iris Kämpferi*, which they closely resemble in shape and pose of flower, but of dwarfer habit. I find them quite hardy here at Colchester planted out in light soil, with plenty of sand round the bulbs. They increase rapidly, and are best taken up and divided about every two years, at the beginning of August when the bulbs are at rest. Starting again into growth early, they should not be planted after the middle of November, otherwise success will be less certain."

rule of not meddling over-much applies distinctly to the Spanish Iris, as the new roots begin to shoot out almost before the old stalk has withered, and the bulb must not be kept out of the ground. Plant, then, the Spanish Iris in clumps on some rich, loose, friable plot, where their bright colour may be shown to advantage, and let them stay there year after year until the dwindling foliage tells you that they have exhausted their soil. The beautiful varieties of Spanish Iris are well worth a place in the reserve garden for supplying cut flowers.

ISOPYRUM.—A graceful little plant

Spanish Iris (*I. xiphium*).

I. Xiphium (*Spanish Iris*).—A very beautiful flower, and an old inhabitant of gardens. The prevailing colours are blue, with various shades of purple or violet, yellow, and white. The blue tints of the cultivated seedlings seem to be derived from the typical Spanish plant; the yellow hues may be traced to the Portuguese variety, sometimes known as *I. lusitanica*.

The Spanish Iris must not be waterlogged in autumn and winter, preferring a loose, friable, sandy soil, which, however, should not be too poor, for it repays leeding with thoroughly rotten leaf-mould or manure. Sun it must have, but as its slender stalks suffer from winds it should have shelter without shade. The golden

allied to the Meadow Rues, but *I. thalicroides* has prettier white flowers, and is valuable for its Maiden-hair Fern-like foliage. It is well suited for the rock-garden, and for the front edge of the mixed border, is hardy, and easy to grow on any soil. Division or seed. Europe. Ranunculaceæ.

ISOTOMA.—*I. axillaris* is a showy half-hardy plant, resembling some of the dwarfer Lobelias, its growth dense and compact, the flowers $\frac{1}{2}$ in. across, star-shaped, and of a pale blue, continuing a long time, even till cut off by frosts. If preserved in a frame during winter, after the manner of bedding Lobelias, it is perennial, and may be propagated in spring by cuttings. New Holland.

IXIA.—Charming South African bulbs, slender and elegant in growth, and brilliant in flower. They are not grown much because some are tender and require glass protection. For culture outdoors, choose a light loamy soil, thoroughly drained, and with a due south aspect; if backed by a wall or a greenhouse, so much the better. Plant from September to January, 3 to 4 in. deep, and 1 to 3 in. apart. As the early plantings make foliage during the autumn, it is necessary to give protection during severe frost, and this may be best accomplished by hooping the beds over and covering when necessary with mats; or if tiffany is used it may be allowed to remain till the danger of severe frosts has ceased. The December and January plantings require no protection in winter, but as they will flower later in the summer than the early plantings, an aspect where the sun's rays are somewhat broken will prolong the blooming period. On stiff soil, or on soils that lie rather wet in winter, the beds should be raised, and the bulbs should be surrounded with sand, care being taken that they are planted 1 or 2 in. above the level of the path; and, where protection cannot conveniently be given, planting should not take place till December or January. A large number of varieties are in cultivation, and the chief species from which they appear to be derived are *I. crateroides*, *patens*, *maculata*, *fusco-citrina*, *ochroleuca*, *columnellaris*, *speciosa*, and *viridiflora*, which last is of a beautiful sea-green, a colour quite unique among cultivated plants, and in no case to be omitted. A collection of varieties might include the following: Achievement, Amanda, aurantiaca, Cleopatra, Conqueror, Duchess of Edinburgh, Gracchus, Hercules, Hypatia, Isabelle, Lady of the Lake, Lesbia, Loela, Miralba, Nosegay, Pallas, Pearl, Princess Alexandra, Sunbeam, Surprise, Titian, and Vulcan.

IXIOLIRION (*Ixia Lily*).—Beautiful plants of the Amaryllis Order somewhat resembling each other, and about 1 to 1½ ft. high, with grassy foliage, and bearing large trumpet-shaped flowers in a loose, elegant manner. *I. Pallasi* has flowers of the deepest shade, and *I. tataricum* of the palest, the intermediate shades being *I. montanum* and *I. Ledebouri*. Such beautiful hardy plants are deserving of a place in the most select collection, and the flowers last long on the plants. They should be treated like the rarer bulbs, such as *Calochorti*, *Habranthi*, and *Zephyranthes*, for though they may be

hardy, it is not advisable to plant out such rare bulbs in ordinary borders. They should be grown in an open and dry position—in a sunny border, for example, which is all the better with a wall at the back, so as to catch all the sun-heat possible in early spring, when the bulbs are pushing up their young leaves. The border should be well drained, and a bed of light, rich loamy soil, about 1 ft. in depth, placed upon the drainage. When the young growth appears, place a common hand-light over the plants—even two panes of glass will be beneficial—and if similar protection is afforded at the latter part of summer, it will tend to keep the soil dry and warm, and so ripen the bulbs. A handful of dry sharp sand placed in a layer under and around the bulbs is conducive to the formation of roots. Western Asia.

JABOROSA (*J. integrifolia*).—An interesting dwarf perennial, allied to the Mandrake, growing 9 to 12 in. high, with broad leaves, and white tubular flowers about 2 in. long, fragrant and handsome. A native of Buenos Ayres, it is somewhat tender, only succeeding in light warm soils in sheltered situations, and is best close to the foot of a south wall in warm loamy soil. Here it makes a good plant, sometimes spreading so rapidly as to become a weed. Division of the long creeping stems. Solanaceæ.

JAMESIA.—(*J. americana*).—A dwarf shrub from the Rocky Mountains, about 3 ft. high, summer-leaving, many clusters of white flowers. It is hardy, of easy culture, and fitted for association with flowering shrubs of a medium size, but is of no high garden value in view of the many handsome hardy shrubs we possess.

JANKÆA.—*J. Heldreichi* is one of the prettiest of the Ramondia family, a native

Jankæa Heldreichi.

of the mountains of Macedonia, growing in ravines. It has been considered a miffy plant, dying away in our gardens in spite of the most careful handling, but it is likely to grow as well as other *Ramondias* if its special wants are attended to. It likes to be moderately moist at the roots and have shade and moisture in the air. Some place on a well-constructed rock-garden should be chosen, where it will thrive in peat. The blooms are of a deep blue, nodding, and shaped like those of a *Soldanella*, and it has silver-grey leaves.—M. L.

JASIONE (*Sheep's Scabious*).—Dwarf perennials and annuals of the Bell-flower family. *J. humilis* is a creeping tufted plant, about 6 in. high, bearing small heads of pretty blue flowers in July and August. Though a native of the high Pyrenees, it often succumbs to the damp and frosts of our climate, and it therefore requires a dry well-drained part of the rock-garden, and should have a little protection in winter during severe cold and wet. *J. perennis* is taller, often above 1 ft. high, with dense heads of bright blue flowers, from June to August; it is a rock-garden plant, stronger than the preceding, thriving in good light loam, and a native of the mountains of Central and South Europe. These perennial kinds may be propagated best from seed as they do not divide well. *J. montana* is a neat, hardy annual with small, pretty bright blue flower-heads in summer. Seed in autumn or spring. A native plant.

JASMINUM (*Jasmine*).—Beautiful shrubs, the hardy ones among the best introduced to our country, and of very wide and precious use.

J. fruticans (*Shrubby Jasmine*).—This is a wiry-looking shrub from Southern Europe and the Mediterranean region; hardy in England, and though not so important as some of the free-growing kinds, is worth a place on dry banks. It has numerous small yellow flowers.

Jasminum fruticans.

J. humile (*Indian Yellow Jasmine*).—A handsome kind, being quite hardy for wall

culture in all parts; with evergreen foliage,

which adds to its value. It flowers freely, and its yellow bloom amidst the deep green foliage is welcome in summer and autumn. Being an Indian plant it should have a warm aspect and good warm soil. (*Syn.*, *J. revolutum* and *J. wallichianum*.)

J. nudiflorum (*Winter Jasmine*).—A lovely Chinese bush which is happy enough in our northern climate to flower very often in the depth of winter, clustering round cottage walls and shelters, and often very lovely when not too tightly trained. In wet years it will be noticed increasing as freely as twitch at the points of the shoots. It should be planted in different aspects so as to prolong the bloom, planting each side of

Jasminum humile.

a house or cottage, for example. The sun coming out after hard frost may destroy the bloom on one side, and it may escape on the other.

J. primulinum is a good evergreen form of this, recently brought from China, but found not to be so hardy as the winter jasmine; though it will probably be a valuable plant in southern gardens.

J. officinale (*White Jasmine*).—The old white Jasmine of our gardens, one of the most charming shrubs ever introduced for walls and warm banks; it is best on warm and sandy soils and often thrives in the heart of our cities.

The white Jasmine should be planted in every garden against a wall, or used for trailing over arbours. It is one of the best of all climbing shrubs on account of its hardiness and rapid growth in almost any soil. There are several varieties of it, the best

Jasminum officinale.

being *J. affine*, with flowers larger than those of the ordinary kind. There is a variegated-leaved kind, not of much value, and one with golden foliage, and there is a rare double-flowered form. It is almost evergreen, except in exposed places.

It is a native of Persia and the north-western mountains of India, but is naturalised here and there in Southern Europe.

JEFFERSONIA (*Twin-leaf*).—An interesting dwarf plant, allied to the Blood-root, *J. diphylla* being from 6 to 10 in. high, the flowers white, about 1 in. across, in early spring. It is a good plant for peaty and somewhat shady spots on the rock-garden, and for the margins of beds of dwarf American plants. Seed should be sown in sandy soil as soon as gathered, but careful division of the root in winter is the best way to increase the plant. A native of rich woods in N. America.

JUBÆA (*J. spectabilis*).—A handsome, hardy South American palm, with a short, tree-like stem, which sometimes attains a great height, and pinnate leaves of a deep green colour and from 6 ft. to 12 ft. long. The leaf-stalks are very thick at the base, where they are enclosed in a dense mass of rough, brown fibres, which grow upon their lower edges. Young plants are prettier than old ones, and when well established grow without any trouble and are free from the diseases which attack the softer leaves of other palms. The soil for this plant should be a mixture of two parts of rich loam and two parts composed of peat, leaf-mould, and sand. This exists in the open air throughout the winter in the warmest parts of Britain, proving fully hardy and making a fair growth where the climate at all resembles that of Chili. Grown in tubs in the conservatory in winter, and placed in the open air in summer, it is useful for grouping with the hardier palms.

JUGLANS (*Walnut*).—Stately trees of northern and eastern regions, among them being our noble European Walnut. A tree as well known to the ancients as to ourselves, and useful and beautiful in all ways.

Our Walnut (*J. regia*), like many other fruit trees, has been cultivated for so long that no one is clear as to its origin, but it is a tree of wide distribution in the East, and in countries where it is much cultivated has many varieties, differing much in size and in the tenderness of their shells and even in earliness. Though the Walnut is not so much grown in Britain as in countries of Southern Europe, it is very happy in some

of our southern, western, and eastern counties, occasionally attaining fine proportions, especially on warm and chalky soil; but as we go further north it becomes less and less likely to ripen its fruit, and in Scotland it has to be grown against walls. In parts of Central and Southern Europe it is so much cultivated that the wood and fruit and oil produced by it form a principal source of commerce. There is very much of interest as regards the uses of the various products of the Walnut in countries where it is at home, but here we are concerned with its culture and beauty as a lawn, pleasure ground, or orchard tree, and in this way with us it thrives best in good and rather dry soils on calcareous base though thriving in other soils.

The form of single trees is often very fine, as indeed it is as a group, and sometimes as a short avenue. It may also be grown as an orchard tree where the soil is favourable and there is plenty of room. The finest specimens are occasionally nearly 100 feet in diameter in spread of branch. The cut-leaved form will appeal to some. Among the other species there are remarkable trees, but our common Walnut has in Europe so many good qualities that it is the best to plant, although some of the other species are good for collections of hardy trees, such as *J. cineria*, the butternut, *J. nigra*, the black Walnut, both of America; a very hardy, fine tree which would thrive in situations where our common Walnut might not be so free; *J. mandshurica*, of the Amoor region; *J. rupestris*, of the Western United States; and *J. Sieboldi*, of Japan; besides several hybrids between the common Walnut and other species.

JUNCUS (*Rush*).—Water-side or marsh plants, generally with long round leaves. *J. effusus spiralis* is a very singular plant, whose spreading tufts of leaves, instead of growing straight, are twisted in a corkscrew form. It is worth cultivating on the margins of water. It is easily multiplied by division of the tufts. *J. zebrinus* is apparently a form of the common Rush (*J. communis*). The long round leaves are barred with bands of yellow and green, and it is a striking plant, as its rigid habit and singular markings stand out in bold relief.

JUNIPERUS.—Evergreen shrubs and medium-sized trees, natives of northern and temperate countries. The wood of some kinds is fragrant and the foliage contains an acrid principle as in the Savin. The Junipers vary much in size and habit in their native countries owing to their usually wide geographical range,

and growing in all sorts and conditions of soil and climate, probably mere forms of varieties have been considered species. Some are too tender for our climate, although of much value in their own, while others are quite hardy and vigorous

with us. Such beauty as the hardy kinds possess is very much diminished by the common way of planting among shrubs, or, in the case of the pinetum, isolating in grass, both ways being against their good effect and even good cultivation. Where possible the really effective way is to group them. The good effect of this is well seen in the case of the common Savin, as indeed it would be in most of the others, and where there is no room to do this, and do them justice, it would be better to leave them out altogether, as, starving in the embraces of the common British shrubbery, they soon come to a bad end. The following embrace, so far as we know, the most distinct of the hardy kinds only :—

J. CHINENSIS (*The Winter-flowering Juniper*).—A low tree or bush, hardy and useful in gardens, as during winter or in early spring, when covered with its yellow

Juniperus chinensis.

male flowers, it is beautiful, and of the easiest culture, succeeding well on loamy soil ; several

varieties are in cultivation. *J. Japonica* is thought to be an Alpine form of this.

J. COMMUNIS (*The British Juniper*) is chiefly found growing in England on sandy or chalky soils or on open downs, while in Scotland its native home is amongst the granite or trap on hill and mountain sides. The Irish Juniper is a close erect form, not confined to Ireland but occurring also wherever the Juniper is plentiful. *J. communis* varies much in gardens, and we often see forms of it where the wild plant is never cultivated, though we doubt if any of the varieties are better, if as good. The Swedish and Canadian Junipers are supposed to be varieties of this. *J. oxycedrus* is the Mediter-

Juniperus communis.

Juniperus oxycedrus.

ranean representative of our common Juniper, but in our climate it does not generally thrive.

J. DRUPACEA (*Plum-fruited Juniper*) is a native of Syria and Asia Minor, on the mountains there attaining a height of some 15 ft. Thrives in gardens best on good, well-drained soil. It has a close, conical habit of growth with branches of a light grassy-green colour. This Juniper makes a good tree for a lawn. The fruit is a fleshy one, enclosing a hard kernel, about the size of the Sloe, and of a plum-like purple.

J. EXCELSA (*Tree Juniper*).—A graceful tree native of many countries in Northern India, Persia, Arabia and Asia Minor, in some of the most favourable conditions forming large forests at very high elevations. A close tapering form was sent out from Messrs.

Juniperus drupacea.

Rollisson's nurseries as *J. e. stricta*, and is a very glaucous and attractive shrub.

J. PHŒNICEA (*Phœnicea Juniper*).—A shrub of conical form from the Mediterranean region, the male and female flowers on the same plant but on different branches. Although long introduced to our country it is as yet far from common.

Juniperus phœnicea.

J. RECURVA (*Weeping Juniper*).—A distinct kind with graceful drooping branches, from the mountains of India and Cashmere, varying in size from a low bush to a medium-sized tree according to climate and soil. The male form is more close in habit than the seed-bearing one. A graceful kind for banks or the outer flanks of the rock-garden. At

Brynmeirig, near the Penrhyn slate quarries, there are a number of these graceful junipers, which for size are perhaps not excelled in Britain. The soil is loam and peat resting on shaly slate rock—the situation is shady and with a northern aspect, which seems to suit this species.

J. RIGIDA (*Mount Hakone Juniper*).—A graceful and picturesque kind with free and often drooping habit, and in southern England at least vigorous and hardy, assuming in autumn and winter a pleasant bronzy hue of green. It has not been long enough in cultivation to judge of its stature or permanent habit and value in Britain, but it promises well. Japan.

J. SABINA (*Savin*).—A hardy and plummy bush of the mountains of Europe, few evergreen shrubs being more beautiful. In the garden at Goddendene, near Bromley, a dwarf form is very prettily used as a lawn plant. Among the varieties of the Savin the most useful forms are *J. prostrata* and *J. tamarisci*—

Juniperus virginiana.

olia—variegated ones as usual being ugly and seless.

J. THURIFERA (*Frankincense Juniper*).—A

small distinct tree, in its native country attaining a height of 40 ft. As a lawn tree it is attractive, and from its dense conical shape associates well with trees of the same race, and is very hardy. Spain and Portugal.

J. VIRGINIANA (*Red Cedar*).—A graceful, hardy tree on the hills and mountains of N.E. America, giving somewhat of the effect of the Eastern Cypress in Italy, and in Britain one of the hardiest and most graceful except evergreen trees. This tree, like many Conifers that have been much grown, has had its forms and varieties propagated, few of them being better than, if as good as, the common kind, except, perhaps, the silvery forms, which sometimes occur among plants raised from seed, as they should always be. Garden varieties must be grafted, as if raised from seed most of these would revert to the wild form.

Dwarf Junipers for the rock-garden: Small forms of the northern Junipers are used on rock-gardens with good effect as giving on a small scale the form of the Alpine conifers. Among these are *J. nana* and *Echniaformis*, and other dwarf forms.

JURINEA.—A small genus of Compositæ, of slight value. *J. polyclonos* and *J. spectabilis*, both Caucasian plants, are mentioned in catalogues.

JUSSIÆA NATANS.—A curious aquatic plant that bears large yellow blossoms a few inches above the surface of the water. It is a valuable plant for a pool or small lake, and hardy.

KADSURA.—A small group of evergreen climbing shrubs from the mountains of eastern Asia. Only one kind, *K. japonica*, has been introduced, and though a pretty plant this is seldom met with, being somewhat tender and not showy, though with large oval leaves of glossy texture which are handsomely blotched and bordered with red and white in some of the garden forms. The flowers are solitary and something like a Magnolia, creamy-white with a pink centre, and opening from June to early autumn. While fairly hardy in mild districts the Kadsura is safest as a wall or pillar plant where protection can be given in cold weather, and in this way it is said to be doing well even in the milder parts of Scotland. It thrives in almost any soil, and may be increased from cuttings of half-ripe wood, in sand, under glass.

KALMIA (*Mountain Laurel*).—The Kalmias are among the most beautiful of North American shrubs, evergreen in foliage and charming in flower. The broad-leaved *Kalmia latifolia* is the finest, as it is also the commonest in gardens. Like the Rhododendron and Azalea, it must be grown in a moist peaty soil, or one

light or sandy. It will not thrive in stiff or chalky soils. Its lovely clusters of pink wax-like flowers open about the end of June, when the bloom of the Rhododendron and Azalea is on the wane, and last for a fortnight or longer. The broad foliage makes it almost as valuable an evergreen shrub as the Rhododendron.

Kalmia angustifolia.

There are varieties of the common kind having, in some cases, larger flowers, and in others, flowers of a deeper colour, the finest being *maxima*, which is much superior in size of flower and richness of tint. The Myrtle-leaved *Kalmia* (*K. myrtifolia*) seems to be only a variety of *K. latifolia*, with smaller Myrtle-like foliage. The growth is dwarf and compact, and the flowers are almost as large as those of *K. latifolia*. The other species of *Kalmia*, though very beautiful, are of less value, because they are smaller, more delicate, and less showy, but in peat-soil gardens they should be grown. *K. angustifolia* grows about 1½ ft. high, and bears in early June dense clusters of rosy-pink flowers. *K. glauca* and *K. hirsuta* are also pretty shrubs, *K. glauca* flowering in early summer, and *K. hirsuta* in August.

Kaulfussia. See AMELLUS.

KERNERA SAXATILIS.—A neat little plant forming a compact tuft of foliage, and in early summer a dense mass of tiny white blooms. It grows in any soil in an open position in the rock garden, where it is an attractive plant in spring, and may be freely propagated by seeds. Europe.

Kerria japonica.

KERRIA (*Jew's Mallow*). — The double variety of this Japanese shrub, *K.*

japonica, is an old favourite in cottage gardens. The large yellow rosette flowers are more showy than those of the single kind, which is a pretty shrub. Though usually planted against walls, the *Kerria* is hardy, and may be grown as a bush except in the coldest parts. The variegated-leaved form of the single variety is more delicate than the double form, or the green-leaved single form.

Knautia. See SCABIOSA.

KITAIBELIA VITIFOLIA.—A large, coarse-growing plant, from 4 ft. to 6 ft. or more high, with Grapevine-like foliage. It bears in summer large white blooms from the upper parts of the stems. The plant is too coarse for border culture, but adapted for growing among shrubs or for naturalising. Seed or division. Hungary.

KLEINIA REPENS.—A small, dwarf, succulent plant with cylindrical leaves of a bluish glaucous grey. It is used for geometrical beds in summer, but is not hardy. Propagated by division in early spring in heat, afterwards potted and planted out in May in light dry soil.

KNIPHOFIA (*Torch Lily or Flame Flower*).—Handsome and very distinct perennials which are prevented by severe winters from becoming very popular. The genus, as understood by botanists, is restricted to the mountains of Abyssinia and the Cape, with the exception of one species found by Speke and Grant near the Equator, and one or two kinds indigenous to the mountains of Madagascar. There are twenty or thirty species, and none of the six found in Abyssinia is identical with any sort found at the Cape. The *Kniphofias*, and especially the forms of *K. uvaria*, are among the most striking of autumn flowers. Large irregular groups in open spots give a brilliant effect in autumn, and they require no attention beyond an occasional top-dressing of rich soil or well-rotted manure. During the late winters many kinds have perished from frost, but these dangers may be averted by a covering of dry leaves or ashes in late autumn. The stemless kinds are easily propagated by division and by seed when produced in favourable seasons; but not the stemmed or caulescent kinds. However, those who wish to increase their stock of the stemmed kinds need not fear to behead them; in fact, this is the only way in which *K. caulescens* can be propagated, as, otherwise, it seldom develops offshoots. When so treated it will throw up a large number of shoots, which, if allowed to remain until a few roots are produced, may be taken off and kept in a close frame for

a time, and then potted in a sandy compost. *K. sarmentosa* is the easiest to increase, as it throws out underground shoots, which may be taken off at any time. *K. Quartiniana* develops small shoots almost at right angles with the base of the stem, and if these be taken off and treated as cuttings they will strike freely. The following are amongst the best of the kinds in cultivation:—

K. aloides (*Flame Flower* or *Torch Lily*), or *Tritoma Uvaria* as it is still called in many gardens, is perhaps the oldest, and is certainly one of the very best of its family. It is the Flame Flower of cottage gardens, and is one of the noblest and

Kniphofia grandis.

most brilliant of Lilyworts: an excellent border-plant, it is suitable for all soils, and while few plants are better for picturesque grouping in the pleasure-ground, in the shrubbery with a fairly open space and with deep rich soil it forms handsome groups. It begins to flower in late summer and lasts for many weeks in perfection, and nearly 70 per cent. of the garden varieties are traceable to it. *K. pumila* is a pretty dwarf form. The variety *præcox* flowers much earlier than *K. aloides*, from the middle to the end of May; its leaves are broader than those of the type, and are

not glaucous, while the raceme is shorter, the stem being about half as long as the leaves. The variety *nobilis*, which very much resembles *grandis*, if indeed it is not the same kind, is a robust and noble plant, its leaves more distinctly serrated than those of *grandis*, its flowering stem 5 to 8 ft. in height, with flowers varying from scarlet to orange-scarlet; the anthers are prominent. It blooms throughout August. The variety *serotina* is interesting from blooming a month or so after all the other Kniphofias are over; its flowers are greenish-yellow, occasionally tinged with red. The variety *Saundersi* has bright green leaves and very rich orange-scarlet flowers; the variety *longiscapa* has very long flower-heads, and is a most desirable form; the variety *maxima globosa* has globose heads of yellow and red flowers; and the variety *glaucescens* has large flower-spikes, the flowers being vermilion-scarlet shading to orange. It is a free-flowering plant, and is one of the best for heavy rich soil.

K. Burchelli, introduced by Mr. Burchell from the Cape, is a distinct and beautiful plant with a purple-spotted stem and bright green leaves, firm in texture, 2 to 3 ft. long, which taper gradually to the apex. It flowers soon after midsummer, and just between *præcox* and the other forms of *K. aloides*. The flower-heads are moderately dense, and the flowers are bright red, excepting those at the lower end of the head, which are bright yellow, the style protruding, the stamens being included in the tube. A useful and distinct plant, suited for dry banks and borders.

K. carnosa is a beautiful plant, forming low spreading leaf-rosettes, from the midst of which a number of flower-stalks rise to the height of 1 ft., with cylindrical flower-spikes about 3 by 1½ in.; the smallness of the flowers is compensated for by their glowing apricot colour, enhanced by bright yellow anthers. The flowers open first on the top side in September. Abyssinia.

K. caulescens* and *K. Northiæ differ from all other cultivated kinds in their caulescent habit. *K. caulescens* differs from all the forms of *aloides* in being smaller, and in having very glaucous leaves, short heads, and smaller and less curved flowers. The stem, at 5 or 6 in. from the ground, can just be spanned by both hands; the scape is about 4½ ft. high with a dense head of flower 6 in. in length of a reddish-salmon colour in its earlier stages, but in the fully-expanded flower it gradually becomes white, faintly tinged with greenish-yellow, producing an effective contrast. The glaucous blue-grey foliage is pretty. Though less

brilliant than most of the species, it is one of the hardiest, and is distinct and robust. It is a very striking plant for the bold rock-garden, and it does well and flowers freely on dry slopes in light warm soils, and in open sunny positions. It should have a little protection in severe cold. Suckers or offsets taken off in early autumn root freely in sand in a cold frame.

K. comosa seems to be closely allied to *K. pumila*, and has a peculiar appearance with its long protruding style and anthers. It is much dwarfer than *K. aloides*, its leaves are much narrower, while its flowers are smaller and its bright green leaves are in dense rosettes, narrow, very pointed, and almost three-cornered. The bright yellow flowers droop in a dense oblong head, the stamen and style being about twice the length of the flower tube. *K. comosa* is a showy plant, flowering in September, but is rather tender.

K. foliosa may be said to be the counterpart of *K. caulescens*, but it has distinct stems, being also one of the most robust of all the *Kniphofias*, and easily distinguished by its broadish leaves and its protruding stamens. The leaves form a dense tuft on the top of a stem 1 to 3 ft. high and are 3 or 4 in. broad at the base, tapering to a long point: flowers in a dense oblong head nearly 1 ft. long, bright yellow or tinged red, appearing in late autumn. Cape. Syn., *K. Quartiniana*.

K. Leichtlini is a native of Abyssinia, and requires winter protection even in the South of England. Its spreading bright green leaves form a dense tuft; they are 2 to 4 ft. long, three-cornered, with entire margins, the flower-stems 2 to 4 ft. high, the flower-head about 6 in. long, the drooping flowers of a dull vermilion-red and yellow. The variety *disticha*, which is quite distinct from the type, is more robust, its leaves broader, and flower-tube shorter; two or three heads of bright deep yellow flowers are borne on the same stem in August. Some have suggested that it is a hybrid between *K. Leichtlini* and *K. comosa*.

K. Macowani.—This differs from most *Kniphofias* in having the segments of its corolla reflexed, and in being of dwarf habit, 12 to 18 in. high, the narrow grassy leaves 1 to 2 ft. long, the flower-heads small, the flowers of a bright orange-red. It is hardy, and is suitable for rock-gardens. *Rigidissima* and *maroccana* are garden synonyms. The variety *longiflora* has much longer flowers. *K. corallina* is a robust hybrid. It is exactly intermediate between *K. Macowani* and *K. aloides*, and is a very pretty plant.

K. Northiæ.—This is most nearly allied to *K. caulescens*, but its leaves are much broader, are not keeled, and are serrulate on the margins. The dense flower-heads are about 1 ft. long, the flowers being pale yellow, but the upper ones are tinged with red towards the tips. S. Africa.

K. Rooperi is nearly allied to *K. aloides*, but is an early, or summer, flowering plant, while the stamens are included in the tube; the flowers are paler and less curved, and the leaves are broad and very glaucous. *K. Rooperi* is a native of Caffraria, and requires a little protection during severe winters. It has a fine bold effect when in full flower, the flower-heads, 6 in. to 1 ft. long, being crowded with bright orange-red flowers, which get yellowish with age.

The plant usually but wrongly called *Rooperi* flowers in November and December, and is a variety of *K. aloides*.

K. sarmentosa is distinguished from *K. aloides* by its smaller glaucous leaves, the cylindrical flower-heads from 6 in. to 1 ft. long, the flowers red in the upper half, and yellow, or yellow tinged red, in the lower. It is perfectly hardy. There is a good hybrid between *K. sarmentosa* and *K. aloides*. Cape.

K. triangularis, at first sight, reminds one of *K. Macowani*, especially as regards the flower-spike, which is about the same size and of a similar tint. The foliage, however, is broader and longer, and in this respect it resembles *K. Uvaria*. It is desirable because it is earlier in flower than most varieties, and also because it is a free grower.

K. Tysoni.—A handsome new variety, with persistent strong foliage of a soft glaucous shade, each leaf measuring 3 feet or more in length and $3\frac{1}{2}$ inches wide at base, tapering to a fine point; the edges of leaf finely serrated. Through June the strong Yucca-like growths bear bold spikes of orange-scarlet and primrose-yellow flowers, the upper portion of the inflorescence being red, the lower primrose. In the bud stage the whole is orange-red, but as the lower flowers expand they change to soft primrose, the flowers opening from the bottom upwards. The inflorescence measures from $1\frac{1}{2}$ feet to 2 feet in length, while the strong flower spikes attain a height of from 5 ft. to 6 ft. This is a hardy and valuable addition suitable for the flower border, larger rock garden, or in isolated groups. Like the rest of the family, it delights in rich, well-drained soil and a warm, sunny position.

K. Tucki has large, glaucous, Yucca-

like foliage, growing 4 ft. to 5 ft. high, with massive heads of bright red flowers, changing to yellow, and borne early in June.

K. Uvaria. Syn., *K. aloides*.

Other species not noticed in detail are *K. pumila*, *pallidiflora*, *pauciflora*, *natalensis*, *Kirki*, *Tysoni*, *modesta*, *Granti*.—D. K.

HYBRIDS AND VARIETIES.—As we are getting to know the value of the Flame

Kniphofia Obelisk.

Flowers, many beautiful hybrids have been raised. We are indebted to Mr. Max Leichtlin for quite a group of them. Others have given us beautiful forms, such as the varieties John Waterer, Otto Mann, Max Leichtlin, and others, but all these owe their origin to red-flowered species, and do not much depart from the typical forms. Since the introduction, however, of yellow-flowered species, a new field was opened to the hybridiser.

The predominating colour in these new hybrids is yellow, in all shades, varying through orange to a crimson-scarlet. In habit the plants vary quite as much as in the colour and form of the flower-spikes. Of some, whose parentage to *K. Leichtlini* must be very near, the foliage is narrow and deciduous, and the spikes not more than 3 ft. high. Other varieties have massive foliage some 3 in. or 4 in. broad, the spikes attaining a height of 7 ft. The variety *Obelisk* is robust, with broad leafage and spikes some 5 ft. in height. The colour of the spikes is a pure golden-yellow, and strong spikes often produce two or three additional spikelets.

Other beautiful forms are *Triumph*, a very fine hybrid; *Star of Baden-Baden*, straw-yellow, the spikes more than 7 ft. high; *Ophir*, orange-yellow, very free-flowering; *Lachesis*, very hardy and rapid in growth, the flower deep yellow, turning to straw colour. Turning from the yellow varieties we have *Leda*, a beautiful and early-flowering form, about 4 ft. high, the flowers coral-red with an orange tinge. *Matador* seems to have nobilis for one of its parents; the spikes are large, broad, and the colour a deep red. Van Tubergen, jun., of Haarlem, finds that in his deeply dug, rich sandy soil where water can never be stagnant, all the above *Kniphofias* safely pass the winter outside if superfluous water is warded off. This gathers in the central parts of the plants, and may prove disastrous when suddenly sharp frosts occur.

There are now fifty or sixty varieties of these brilliant Torch Lilies, in place of the few known, say twenty years ago, but had we only the old *Kniphofia* (*Tritoma*) *Uvaria*, it is a plant capable of yielding very fine effects as planted in quantity either alone or grouped along with other suitable vegetation. All the hardy kinds grow well in deep well-drained loam and are readily increased by division or by seeds, which some varieties bear freely in mild localities. Once well planted in bold groups, *Kniphofias* form the most effective masses of colour, and their effect is visible at long distances, so that they are plants of much value to the landscape gardener who may use them on lawns, or wood margins, on banks, and near water, either alone or along with other vigorous plants, such as *Spiræas*, *Pampas Grass*, *Arundo*, or the Giant *Polygonum sachalinense* and *P. Sieboldi*. A bold group of these flowers backed or partly surrounded by hardy Bamboos is a sight in October not readily to be forgotten. *K. Obelisk* is the splendid *Kniphofia* of which an

illustration is given in the accompanying woodcut.

KOCHIA (*Belvedere*).—*K. scoparia* is a curious and seldom-grown annual of the Goosefoot family, forming a neat pointed bush from 3 to 5 ft. high, the flowers insignificant. The graceful habit of the plant makes it valuable, placed either singly or in groups, especially from July to September, the time of its full development. It should be sown in April, in a hot-bed, and afterwards planted out in beds or borders. S. Europe.

KÖLREUTERIA.—*K. paniculata* is a small tree, beautiful when in flower; the long divided leaves, elegant throughout summer, in autumn die off a rich yellow, and the yellow flowers form large clusters over the spreading mass of foliage. It is picturesque, valuable for groups, is a native of China, hardy, and thrives in any good soil.

A new variety, *K. bipinnata*, has recently been introduced from China, but it has not yet been established sufficiently long in this country to enable us to judge of its value.

Koniga. See ALYSSUM.

KOROLKOWIA SEWERZOWI.—A singular-looking bulbous plant, allied to and much resembling a Fritillary. It grows from 1 ft. to 1½ ft. high, and has broad glaucous leaves and nodding flowers, greenish outside and vinous purple within. A native of the mountains of Turcomania, hardy in our climate. Bulb-lets or seed.

LABURNUM (*Golden Rain*).—Flowering trees of Europe, of singular beauty,

Laburnum.

quite hardy and vigorous in our islands,

and giving fine effects, all the more so if placed with some care as to position and surroundings.

L. alpinum (*Scotch or Alpine L.*).—A very beautiful hardy tree, a native of the hill forests of France, Central Europe, reaching a height of nearly 40 ft. The natural form is a very beautiful tree, and from it varieties of the highest value have been raised and increased from time to time, among the best *Parkesi*, *Watereri*, *autumnalis*, *biferum*, *grandiflorum*; *hirsutum*, *pendulum*, *Vossi*. The Alpine Laburnum and its best varieties may be known from the other European species by its longer raceme, broader and deeper green leaves, and later bloom. Syn., *Cytisus alpinus*.

L. vulgare (*Common L.*).—Also a beautiful flowering tree of mountain woods on calcareous soil, but growing freely in any soil in our gardens, flowering densely and earlier than the Alpine Laburnum, and like it reaching almost tree-like stature—30 to 40 ft.—in the best conditions. It has several varieties, among them *Carlieri intermedium*, *pendulum*, *semperflorens*, and *quercifolium*, and the inevitable worthless variegated variety.

L. Adami is a curiosity, a graft-hybrid; the same tree, and even the same branch, bearing racemes of both yellow and purple flowers, and sometimes flowers of a dull purple. Old trees of these are quaint and not without beauty, though it is far from having the effect of the natural species and their varieties.

LAGURUS (*Hare's-tail Grass*).—A pretty annual Grass, about 1 ft. high, *L. ovalis* having hare's-tail-like plumes, useful for bouquets. It should be sown in pots in August, wintered in frames, and divided and transplanted in spring, or sown in open ground in April. It flowers from July to September, and it is pretty in the flower garden in large patches as a relief to showy-flowering things.

LAMARCKIA.—*L. aurea* is a small hardy annual Grass, with silky plumes, becoming golden as they mature. It is suitable for bouquets, and may be dried for winter use. Seeds should be sown in spring or autumn, in the open border in light soil. Syn., *Chrysurus cynosuroides*. S. Europe, N. Africa.

LAMIUM (*Dead Nettle*).—Perennial herbs of which there are a few plants occasionally worth a place in poor dry soils, where little else will grow—such as are found on dry banks or beneath trees. *L. garganicum*, from 1 to 1½ ft. high, has in summer whorls of purplish blossoms.

L. Orvala is taller and has deep red flowers in early summer. *L. maculatum*, a native plant, has leaves blotched with silvery-white. Of this species the variety *aureum* is one of the best golden-leaved plants for edgings. It does not withstand the full exposure that suits the yellow *Feverfew*, but in sandy or moist soils its peculiar tint is unequalled by any other hardy plant, and its blooms are pretty. It does not require to be constantly trimmed like the *Feverfew*.

LANTANA.—S. American plants, usually grown in greenhouses, and also in the summer garden. The *Verbena*-like heads of bloom are rich and varied in colour, and range from crimson, through scarlet, orange, and yellow, to white, the colours varying in the same head.

They flower freely for about nine months, and are easy to grow, requiring the protection of the greenhouse during winter after being lifted in autumn. Propagated in spring by cuttings or seeds, the plants being grown in rich light soil till planted out in a warm position. There are many sorts grown, and a selection should include *Phosphore*, *Don Calmet*, *Distinction*, *Eclat*, *Victoire*, *La Neige*, *Feu Follet*, *Pluie d'Or*, *Ver Luisant*, *Ne Plus Ultra*, *Eldorado* and *Heroine*. Like many dwarf half-hardy plants, they have various uses in the flower garden, and may be trained as standards. The pretty *L. Sellowi* is a good dwarf plant; but the odour of these plants is unpleasant, and they are not worthy of much use. West Indies. *Verbenaceæ*.

LAPAGERIA (*Napoleon's Bell*).—A beautiful climber usually grown in the greenhouse, but hardy and flowering well in the open air in Cornwall and the south of Ireland; with care it would be found to do over a larger area round the coast. It forms a lovely picture at Caerhays, trained on a north-west wall, and flowers quite freely. Often at Christmas and onwards through the winter and spring it comes out beautifully; the rose and white and other forms have been tried, as well as the original form. Soil should be peaty with plenty of sand and leaf-mould. The great enemy of the plant is the slug, which is fond of browsing about cool north walls, and must be well watched day and night. The plant may be nailed direct to

a wall, or planted among choice shrubs to take its own way as a climber, and it might be well to try it in various aspects, as the conditions that suit it in the extreme south of England may not do so in all parts.

Sometimes, where there is the least doubt in less favoured places, success may be obtained by letting a plant growing in a greenhouse get through the glass and make its way along any wall surface near. This has been several times done with success in various gardens about London and elsewhere. Chili and Patagonia.

LARDIZABALA.—*L. biternata* is a handsome evergreen climber from Chili, hardy enough for walls in the south and coast districts; the foliage a deep green,

Lapageria in a Cornish garden.

the leaflets thick. Along the south coast it makes a beautiful wall-covering, reaching a height of 20 ft. or more, but its inconspicuous purple flowers are seldom borne in the open air. It should be planted in light or well-drained soil.

LARIX (*Larch*).—One of the most beautiful trees of the north, and though much cultivated in our woodlands for its value as a timber tree it is none the less precious for the lawn and home grounds. Belonging to the great Pine family it has the summer-leaving habit of our ordinary trees, which enhances its charms, not only showing the form better in winter, but the fine colour of the budding leaves in spring, and the ripening leaves in autumn. A true child of the northern mountains, the Larch is hardy everywhere in our country, perhaps thriving better in the north, as in the case of the lovely old trees at Dunkeld, its only enemy being a dreadful

parasitic fungus which eats into the tree and mars its beauty and vigour. Other kinds of Larch are known, and some coming into cultivation, but it is not always easy to obtain them in a good state, and we have yet but little evidence as to their value. All are worth a trial, though it is probable that none will ever rival the charms of the European Larch.

L. europæa (*European Larch*).—A tall and lovely tree with pendent branches emitting a delicate fragrance in the spring when budding. It is a native of the northern and central European Alps, and also the mountains of Northern Asia. The weeping variety is picturesque, but *L. dahurica* is considered to be a form of this, and is likely to be of distinct value for gardens.

L. Griffithii (*Sikkim Larch*) is a Himalayan Larch, attaining in its own country to the height of a stately tree, but often dwarfed into an alpine bush. It bears large cones, and in our country has not yet been proved to be of great value.

L. Kämpferi (*Chinese Golden Larch*).—A beautiful tree of Western China, attaining in its own country a height of over 100 ft. and of good growth and habit in our country, though not so rapid as other species. A choice lawn tree, and also, when it can be got in any quantity in the

Larix.

form of healthy seedling plants, as a group in park or woodland.

L. leptolepis (*Japan Larch*).—In its own country this is described as a medium-sized tree resembling our European Larch, to which it is said to be inferior, but from

experience gained by planters this is thought doubtful, as it promises very well indeed as a woodland tree, and is said to escape the Larch fungus canker which is so deadly to the European Larch.

L. americana (*Tamarack*).—A slender tree, in its own country reaching a height of nearly 100 ft., but not thriving so well in England, and not so remarkable for beauty as our European Larch. It grows naturally in low-lying ground or swamps, and has not been fairly tried in our gardens, in which such ground does not often occur. Syn., *Microcarpa* and *Pendula*.

L. occidentalis (*Western Larch*).—Said to be the noblest of all the Larches, from the mountains of North-west America. It is of great height, but as yet little tried in our country, though promising well.

LASTHENIA.—A pretty hardy annual, *L. glabrata* being from 9 in. to 1½ ft. high, with many rich orange-yellow blossoms. It should be sown in autumn or early summer, or in spring for later bloom. Like other annuals, it looks best in broad tufts, but care must be taken that the plants are properly thinned. The autumn-sown plants come in with the Iberis, Wall-flowers, and early Phloxes. *L. californica* is a variety. California. Compositæ.

Lastrea. Syn., *Aspidium* and *Nephrodium*.

LATHYRUS (*Everlasting Pea*).—Hardy annual and perennial plants, several of them very beautiful for the garden. The perennial kinds of Peas are valuable, as they are of such free growth and last long in bloom. The kinds worth growing are not numerous, yet sufficient to keep up an unbroken display from May till October. They have long fleshy roots, which, when once established, will go on for years without giving further trouble or needing attention. Near a low wall or trellis they succeed admirably, and climbing gracefully drape such surfaces with veils of foliage and blossom. Upon banks, raised borders, or on the bold rock-garden few things are prettier, and they never look better than when scrambling over the face of a rock, flowering as they go. The way to spoil them is to attempt to tie and train them in a stiff or formal way. They may be used with good effect in mixed borders, and they are valuable for cutting from. The best varieties are pretty if allowed to grow through beds of medium-sized shrubs, and there are few effects in gardens prettier than that of the best white varieties when allowed to trail and bloom on a grassy place untrained in any way; a few tufts so placed are charming and

live for many years. Most of the species ripen seed freely, and all may be divided either in autumn or spring.

L. latifolius (*Everlasting Pea*).—One of the hardiest and most easily cultivated of plants, thriving almost anywhere, even in courtyards amongst flags. There are good white varieties and some striped with deeper coloured flowers than the old kind. All are peculiarly suited for rough

The White Everlasting Pea (*Lathyrus latifolius albus*).

places, and will scramble over bushes. Staking, tying, and training only spoil them. An old tree-stump, or the side of a trellis or summer-house, is where they delight to grow undisturbed, but there are many uses for this fine plant and its forms in the flower garden, and in rich hedge-banks it would be easy to naturalise.

In warm seasons these Peas ripen seed in the south and on warm soil, and advantage should be taken of increasing the stock in this way. Generally, however, little if any seed is borne.

L. grandiflorus (*Two-flowered Everlasting Pea*) is a very handsome plant

for the early summer garden, succeeding anywhere, and, as the name implies, is the largest-flowered species, the blooms being as large as those of a Sweet Pea. It is at its best in June and early July, the flowers usually borne in pairs, of a rosy-purple colour, the stems in good soil reaching 6 ft. It is one of the hardiest of the genus, and from its neat and free-flowering habit a very useful border-plant, common in cottage gardens. It has not so far varied in colour as the Everlasting Pea, but it may do so yet, and varieties of it would be welcome.

L. rotundifolius (*Persian Everlasting Pea*).—This pretty Everlasting Pea is also known under the name of *L. Drummondii*, but there is no necessity for this name, as it only leads to confusion. This is a very old species, but it is not so common as the larger kinds, though good from its earliness and freedom of flowering. It grows about 5 ft. high, the leaves are nearly round, the flowers in large clusters, bright rose-pink, about an inch in diameter, and open in early June. It is of easy culture, and increased by division. Asia Minor and Persia.

L. Sibthorpi (*Early Everlasting Pea*).—This is valuable because it is so early, being at its best in May and June. It does not grow very tall, rarely more than 2 or 3 ft., but it bears many fine spikes of delicate flowers of a beautiful purplish-red colour. In Mr. Thompson's garden at Ipswich there is a fine bed of this pretty and somewhat rare species. The plants are all in a large nursery bed, and are supported with a few branched stakes, upon which the flowers cluster in rich masses. It has been in cultivation at Oxford Botanic Garden for many years, and is said to have been introduced by Sibthorp. It flowers a month earlier than *L. rotundifolius*, and may be increased by division or seed, but is not so vigorous in ordinary conditions as the commoner Everlasting Peas, and should until plentiful be planted in warm borders.

L. tuberosus (*Tuber Pea*) is a pretty low-growing kind, with flowers of a bright dark pink. It is found in many of our cornfields, and is cultivated in Holland for the tuberous roots, which are said to be edible. The tubers are about 2 in. long, broadest at the root end and tapering to the apex. It will be found a useful plant for the flower border, it being a true perennial, of neat habit, and very free-flowering. It climbs like other Peas, but also grows in little tendril-bound heaps without any further effort at going higher, and

then the matted herbage soon becomes densely studded over with the rose-coloured flowers in small clusters of five to seven each. It will thus be seen that this free and long-flowering Pea is suited for draping bold rocks. Europe and W. Asia, naturalised in England.

L. magellanicus (*Lord Anson's Pea*) is the most beautiful of blue-flowered Peas. In many gardens a particularly bright form of *L. sativus* will be found under the name of Lord Anson's Pea, which is a true perennial, almost ever-green, the stem and leaves being covered with a bluish bloom. It grows from 3 to 5 ft. high; the flowers, many in a bunch, are of medium size, violet-blue with darker veins, opening in June and continuing until the end of July. This species is said to have been originally introduced by the cook of H.M. ship *Centurion*, commanded by Lord Anson, in 1744, and was cultivated by Philip Miller in the Botanic Garden at Chelsea. In the Fulham Nurseries it stood the winter against a wall. It is a maritime species, and a little salt may help its growth under cultivation. It ripens seed freely, and may also be increased by division. Straits of Magellan, and probably not quite hardy unless planted near a wall or house.

L. maritimus (*Beach Pea*).—This is a very interesting native plant, inhabiting the sea-shore, and not so vigorous as the preceding kinds. It is, however, pretty and worth a place on open parts of the rock-garden, in gravelly or gritty soil. The stems are prostrate, 18 in. to 3 ft. long, sea-green in colour; flowers in summer, purple fading to blue. N. Europe, America, and Asia.

L. odoratus (*Sweet Pea*).—Perhaps the most precious annual plant grown. There are many ways in which it may be prettily used in a garden. A common method is to sow little patches in borders, the seed being generally that of mixed varieties, and, by placing some stakes against them, to secure pillars of flower. Where it can be done, a hedge of Sweet Peas is an attractive sight, and sometimes Sweet Peas can be used to hide an unsightly place during the summer. Many people grow a hedge of Sweet Peas in order to yield a supply of cut flowers, but it is useless to grow the Sweet Pea except in good soil. Some sow in late autumn; this is not always satisfactory, though, when it succeeds, the result is good. By sowing indoors in pots or boxes about the middle of February, and gradually hardening off the young plants when they are 1 in. high, Sweet Peas may be made to acquire a

sturdiness and toughness which, when they are planted out in good well-manured soil in April, conduces to rapid growth and to immunity from birds and slugs, which would otherwise attack the tender shoots the moment they appeared above the ground. The soil should be well trenched, and plenty of good stable manure should be worked in; and after the plants have been rather thickly dibbled in, supports of hazel stakes or netting should be placed round them. Then, with a little attention during dry weather and the regular removal of incipient pods, they yield abundance of beautiful and fragrant flowers all through the summer and autumn. When getting past their best, they should be cut down level with the tops of the sticks, and the result will be that from the bottom to the top a new growth will spring up, and there will be an abundance of bloom until the end of October. There are now many fine varieties of the Sweet Pea, varying chiefly in colour.

Mr. Eckford, of Wem, Salop, now so well known for the many varieties of Sweet Peas he has raised, in writing to me as to their good cultivation, says: "I do not like the Celery-trench fashion. If the ground is in a tolerably good state of cultivation, that is, has been fairly well dug, simply put on a fair coat of stable manure and dig deep, leaving it rough. In the beginning of March when the soil is in good condition, thoroughly break with a fork, which will be sufficient preparation for the seed. To obtain the best results, clumps of two or three plants at 1 yard or 2 yards apart are better than continuous rows. In staking put three or four bushy stakes thus: : round the clump, but well away from the plants, which should have a few smaller sticks to lead them up to the taller ones. Round the whole put a string or bit of wire to keep them together, so that when the plants have grown up a sort of cone may be formed. The sticks should be if possible 8 or 10 ft. high, as planted in this way the Peas will, if mulched with half-spent manure or any kind of refuse to protect the roots from hot sun, grow very strong and tall, and if the flowers are cut close every morning, so that no seed can form, they will continue to bloom till the frost puts an end to them. Should the weather prove dry, a soaking of weak manure water two or three times during the season would be beneficial. Should they from excessive growth get untidy, take the hedge-shears and clip them over neatly; they will in a few days throw out

fresh growths and a profusion of flowers. If this way of growing Sweet Peas is adopted, it is a good plan to put the seed singly into small pots, and when the seedlings are strong enough to plant them out; in doing so make the ground very firm about them—they delight in firm ground. If the weather be dry tread well in."

Sweet Peas do admirably in Scotland. Mr. Brotherston thus writes concerning his mode of treatment at Tynninghame: Mr. Eckford (the raiser of many charming varieties of Sweet Peas) was here a few weeks ago, and he confessed to be unable to grow them so fine. He said that he had never previously seen the flowers of his own Peas grown to so large a size or so fine in colour. Grow the plants singly, allowing each plenty of room. If you are able to get plenty of good loam, allow each plant one and a half barrowfuls, and of leaf-soil half a barrowful, incorporating these with the top spit of the garden soil. Heavy dressings of manure produce rank growth when the plants are young. I prefer to add manure as a surface dressing; my favourite manures for this purpose being soot, pigeon manure, superphosphate of lime and sulphate of ammonia. Peat litter, which has passed through a stable, is also good. Manure water will of course be also beneficial. For training on, nothing is more satisfactory than a dead Spruce Fir for each plant. Pinching is important, as it not only keeps the plant within bounds, but all through the season it causes the formation of young flowering growths. Seeding is so fatal to the production of bloom, and exhausts the energies of the plant so rapidly and immediately, that in hot weather I should not hesitate to remove every flower and opening bud rather than risk leaving them to form seed-pods. A position little exposed to continuous sunshine will be advantageous. I would make a late sowing about the middle of June, or perhaps even later, always, however, allowing each plant plenty of room. Some sorts are less given to form seed-pods than others. Captain of the Blues and Cardinal produce seed the most freely here. Orange Prince, Countess of Radnor, Mrs. Sankey, and Blanche Burpee are shy to set.

OTHER ANNUAL PEAS.—Though none of the other annual kinds of Lathyrus rival the Sweet Pea, there are several pretty ones. Of these the Tangier Pea (*L. tingitanus*) grows about 3 ft. high, and has small dark red-purple flowers; the Chickling Vetch (*L. sativus*) has flowers

varying from pure white to deep purple. The variety *azureus* is a remarkably elegant dwarf-kind with many clear blue flowers; *L. s. coloratus* has flowers, white, purple, and blue; *L. Gorgoni*, about 2 ft. high, pale salmon-coloured flowers; *L. articulatus*, *Clymenum*, and *calcaratus* are other pretty kinds for borders.

LAURUS (*Poet's Laurel*).—*L. nobilis* is generally known as Sweet Bay, but its true name Laurel should be kept, for it is the true Poet's Laurel, the vigorous Cherry Laurel having wrongly taken the name. Perhaps there is no evergreen shrub we oftener see in cottage and other little gardens. In England it is hardy over large areas, if it suffers occasionally, especially on cold soils, where the ripening of the shoots is not completed. Gardeners in the larger places rather neglect it, and seldom plant it in groups and colonies, as they might well do on dry banks. The plant is interesting in every way for its associations as well as for its beauty. There are several slight varieties, in addition to the common form. It requires some care in transplanting or it will be a long time rooting well. Warm and sheltered places are best for it, if possible on sandy or free soil; and it might be planted in different aspects with advantage.

In northern and central Europe it is grown to an enormous extent in tubs, as in these countries it is quite a tender plant, and the same thing may sometimes be worth doing in colder and more inland and northern parts of our islands, where this handsome evergreen is often cut down by frost.

L. sassafras, which used to be included in this genus, is now referred to *Sassafras*.

LAVATERA (*Tree Mallow*).—For the most part vigorous and somewhat coarse annuals, biennials, and perennials, few of great value in the garden. The most useful is *L. trimestris*, a beautiful South European annual, from 2 to 3 ft. high, bearing in summer large pale rose or white blossoms, thriving in rich and light soil. It may be sown in the open border in autumn or early spring. Among the taller kinds the best is *L. arborea*, which has the look of a small tree, in the southern counties sometimes 10 ft. high. The stem branches into a broad, compact, roundish, and very leafy head. In rich well-drained beds it would be a worthy companion for the Ricinus and the Cannas. It is most at home on dry soils, but during the summer months it does on all kinds of soil. A biennial, it should be raised

from seed annually. *L. cashmeriana*, *unguiculata*, *thuringiaca*, *sylvestris*, and others of a similar character are not worth growing except in the wild garden, or naturalised.

LAVANDULA (*Lavender*). — Grey, half-shrubby plants, mostly dwarf with greyish leaves and warm and grateful odour; mostly coming from warmer countries than ours, but, happily, one of the most beautiful survives on all our light and warm soils, and may be cultivated almost everywhere, as even if in winter killed in valleys and on cool soils it is easily raised by division or by seeds, and will escape all save the most severe winters. It succeeds best in an open sunny position, in light soil. The white-flowered variety is as sweet as the blue, and flowers at the same time. Though a bush, the Lavender has been for centuries associated with our old garden-flowers. For low hedges, as dividing lines in or around ground devoted to nursery beds of hardy flowers, and many other purposes, it is admirable, and for dry banks and warm slopes. There appear to be two species and a variety in cultivation—*L. spica* and *L. vera*; and there is a dwarf variety also, probably of garden origin, which is very pretty where taller forms might be out of place. The known species are:—

L. abrotanoides (Canaries); *atriplicifolia* (Egypt); *burmanni* (E. Indies); *cariensis* (Asia Minor); *coronipifolia* (Egypt); *dentata* (Orient regions); *Gibsoni* (E. Indies); *lanata* (Spain); *minutolii* (Canaries); *multifida* (S. Europe); *nimmoi* (Socotra); *pedunculata* (Spain); *pinnata* (Canaries); *pubescens* (Arabia); *rotundifolia* (Cape Verde); *setifera* (Arabia); *spica* (Mediterranean regions); *stachas* (ditto); *subnuda* (Arabia); *tenuisecta* (Morocco); *vera* (S. Europe); *viridis* (Portugal).

LEDUM (*Labrador Tea*). — Dwarf hardy shrubs, of which the best of the few species

Ledum.

grown in gardens is *L. latifolium*, which represents the genus well. Its usual height is under 2 ft., but sometimes it reaches 3 ft.; it is dense and compact, and has small leaves, of a rusty brown beneath. During the latter part of May it bears clusters of white flowers. It is a very old garden plant, and was brought from North America more than a century ago. The

Canadian form of it (*canadense*) is found in some gardens, but does not differ materially from the type. A form called *globosum* is finer, as the flower-clusters are larger and more globular. *L. palustre* is commoner than *L. latifolium*, but being smaller in every part is not so good; it is dwarf and spreading, and its flowers are white. The *Ledums* thrive best in a peaty soil or sandy loam, and are usually included in a collection of so-called American plants. They are charming grouped in the bog-garden, fully exposed if possible. North Europe and America.

LEIOPHYLLUM (*Sand Myrtle*).—*L. buxifolium* is a neat, pretty, and tiny shrub, forming compact bushes 4 to 6 in. high, with evergreen leaves resembling those of the Box. The small white flowers are borne in dense clusters in early summer, the unopened buds being of a delicate pink hue, and it is suited for grouping with diminutive shrubs, such as the Partridge Berry, *Daphne Cneorum*, the small *Andromedas*, and with Willows like *S. reticulata* and *serpyllifolia*, that rise little above the ground. It is generally planted on the margins of peat beds with other American peat-loving shrubs, and it is also a good plant for the rock-garden. A native of sandy "pine barrens" in New Jersey. There is more than one variety in cultivation.

Leontopodium alpinum (Edelweiss).

LEONTOPODIUM (*Edelweiss*). — A pretty and hoary-leaved alpine plant, *L. alpinum*, having small yellow flowers sur-

rounded by star-like heads of leaves clothed with a dense white woolly substance. Some people are so pleased at seeing this plant in cultivation that they send letters to the *Times* to announce the fact ; but its culture is not difficult on sandy soils, or even as a border-plant, and it grows, too, luxuriantly in moist rich soils. To keep a good stock of flowering plants, the old ones should be divided annually or young ones raised from seeds, which in some seasons ripen plentifully. It succeeds either on exposed spots of the rock-garden or in an ordinary border, if not placed too near rank-growing things. Syn., *Gnaphalium alpinum*. Compositæ.

LEONURUS (*Lion's-tail*).—*L. Leonitis* is a distinct and handsome plant of the *Salvia* Order, allied to *Phlomis*, about 2 ft.

The Lion's-tail (*Leonurus Leonitis*). Engraved from a photograph by Miss Willmott.

high, and bearing in summer whorls of very showy bright scarlet flowers. It is a Cape plant, and is not hardy enough for our climate during the winter, even when protected by a cold frame, though in warm light soils, in the southern parts of the country, it thrives out-of-doors in summer, and where it will not bloom out-of-doors, it is worthy of a place as a cool greenhouse plant. Near Paris, established

plants placed out for the summer flower well. Wherever it can be grown in the open air, it would be valuable for association with the finer bedding and sub-tropical plants. Cuttings strike freely in spring—more freely than in autumn—in a slight bottom-heat.

LEPTOSIPHON.—Pretty Californian annuals. To produce the best results these charming plants must be strongly grown, and robust specimens can only be obtained by thin sowing. In light dry soils early autumn sowing is recommended, sufficiently early to permit the young plants to attain some size before the setting-in of winter. Fair success however may be looked for, especially in good soils, where spring-sowing will often yield excellent results ; while the advantages of autumn-sowing are best seen in light sandy soils. Of the numerous kinds in cultivation the best is *L. roseus*, which is one of the most charming of hardy annuals, forming dense tufts, studded with rosy-carmine flowers. The very pretty *L. luteus* and its deeper-coloured variety *aureus* are scarcely inferior to *L. roseus*, which they resemble in habit, though with smaller flowers. The hybrid varieties of these are interesting for the singular variety of shades occurring among them. The larger-flowered species, *L. densiflorus* and *L. androsaceus*, should be too well known to need description ; both have lilac-purple flowers, and are most attractive annuals, and of both species there are good white varieties deserving of especial recommendation. All natives of California. Polemoniaceæ.

LEPTOSPERMUM (*South Sea Myrtle*).—One of the few Australian shrubs which thrive in our country, often attaining much beauty in seashore gardens, not only in the south but in the west. Among the prettiest effects in flowering shrubs I have seen were from this in the garden of the late W. O. Stanley at Penross. It should have shelter and as warm a soil as we can give it, although it grows well near the sea and sea gales have power to injure it. It would have less chance in cold and inland places, and valleys where the frost is more severe. It may be increased by cuttings, but best by seed.

LEPTOSYNE.—Californian plants of the Composite family, resembling some of the *Coreopsis*. *L. Douglasi* is a pretty half-hardy annual, about 1 ft. high, and having large yellow flowers. *L. Stillmanni* resembles it, but is smaller. *L. maritima*, a perennial, is somewhat tender, and should

be treated as an annual. It is a showy plant, about 6 in. high, and bears large bright yellow flowers. All these plants thrive best in an open sunny position in a light warm soil. The seeds should be sown early in heat, and the seedlings transplanted in May.

LEUCANTHEMUM (*Alpine Feverfew*).—*L. alpinum* is a very dwarf plant. The leaves are small, and the abundant flowers are supported on hoary little stems 1 to 3 in. long, are pure white with yellow centres, and are more than 1 in. across. It is rather quaint and pretty, and well deserves cultivation in bare level places, on poor sandy or gravelly soil in the rock-garden. It is sometimes known as *Chrysanthemum arcticum* and *Pyrethrum alpinum*. It is a native of the Alps, and is readily increased by division or seed. (For other species of *Leucanthemum*, see *Chrysanthemum*.)

LEUCOJUM (*Snowflake*).—Pretty bulbs allied to the Snowdrop, but bolder and easily naturalised in rich valley soils.

L. æstivum (*Summer Snowflake*).—A vigorous plant, flowers white drooping on stalks 1 to 1½ ft. high and clusters of four to eight on a stem, with leaves shaped like those of Daffodils. It blooms early in summer (in many places before the end of spring), and is pretty in mixed borders or on the margins of shrubberies. It thrives in almost any soil, but is strongest in deep alluvial soil, and is multiplied by separation of the bulbs. It is excellent for the wild garden, and increases as rapidly as the common Daffodil. A form of *L. æstivum* is *L. Hernandezi*, a native of Majorca and Minorca, growing to about the same height as *L. æstivum*, but with narrower leaves, flowers only half the size, and usually not more than three flowers on each stem, appearing nearly a month earlier.

L. vernum (*Spring Snowflake*).—A beautiful early flower about 6 in. high. The fragrant drooping flower resembles a large Snowdrop, the tips of the petals being marked with a greenish spot. It is excellent for the rock-garden or borders, and thrives in a light, rich soil. Imported bulbs make little show for the first year or two, but when established they flower freely.

L. carpaticum is considered a variety, bearing two flowers on the stem, flowering a month later. Other cultivated Snowflakes are *L. hyemale* and *L. roseum*; but these are very rare, and somewhat difficult to cultivate.

LEUCOTHOE.—Beautiful evergreen shrubs of the Heath family, most of them very old garden plants, and common in collections of American plants. There is a family likeness among the kinds, the best-known being *L. acuminata*, 1½ to 2½ ft. high, with slender arching stems, in early summer wreathed with white bell-shaped pretty flowers. *L. axillaris* is similar, and so are *L. Catesbæi* and *L. racemosa*, all of

Leucothoe acuminata.

which are known under the name *Andromeda*. They are natives of N. America, hardy, thriving in light soil, preferring peat, and are suitable for the margins of groups of American shrubs and for low parts of rock-gardens. A newer and very beautiful species is *L. Davisæ*, introduced a few years since from California, and not so hardy as the others. It makes a neat little evergreen bush 2 or 3 ft. high, and has small leaves on slender stems, in May bearing clusters of small white flowers. It is one of the choicest of evergreen hardy shrubs, and thrives with *Rhododendrons* and *Azaleas* in peat soil.

LEWISIA (*Spatium*).—A remarkable and beautiful Rocky Mountain plant, allied to *Portulaca*, *L. rediviva* being very dwarf 1 in. or so high, with a small tuft of narrow leaves, from the centre of which the flower-stalks arise. The blossoms are large for the size of the plant, being from 1 to 2½ in. across, and vary from deep rose to white. The roots are succulent, and can retain life a long time even when dry, and as the plant sometimes fails to develop leaves annually, it is wrongly supposed to be dead. It should be grown in sunshine, for it cannot be flowered in shade, and the crown kept high and dry, though the roots should have moisture. A crevice in the rock-garden is the best situation for it. If grown in pots, the plant should be on broken stones, and the roots in light sandy loam with peat. After flowering, it shrivels up and becomes a withered twisted mass, like so many bits of string. Oregon, Utah, and Rocky Mountains.

LEYCESTERIA (*Flowering Nutmeg*).—*L. formosa* is a distinct flowering shrub, a native of the Himalayas, nearly hardy throughout these islands, but much com-

moner in Ireland and the west than in the home counties. It is graceful in flower and form, and reaches 6 ft. high in mild districts, with white flowers tinged with purple; the leafy purple bracts, succeeded in autumn by purple berries, are eaten by pheasants, and therefore it is

Leycesteria formosa.

planted in some places for covert. In mild districts it is an evergreen, but generally loses its leaves in late autumn. It thrives in various soils, and under trees.

LIATRIS (*Snakeroot*).—North American perennials of some beauty, having the flower-heads arranged in long dense spikes. Some are effective border flowers when well grown, and well repay good cultivation. *L. elegans* grows about 2 ft. high, and has pale-purple spikes 1 ft. or more in length. *L. pycnostachya*, 2 to 4 ft. high, has deep purple flower-spikes from August to October. *L. spicata* is one of the handsomest and neatest, growing 1 to 2 ft. high, and its violet-purple spikes continue long in beauty. *L. scariosa*, *squarrosa*, *cylindracea*, *elegans*, and *pumila* much resemble the foregoing, and, like them, succeed in any rich light soil, and are best here and there in among peat-loving shrubs or in good borders. Propagated by division in spring or by seed.

LIBERTIA.—Beautiful plants of the Iris Order, of which some are hardy

enough for the open border. *L. formosa* is beautiful at all seasons, even in the depth of winter, owing to the colour of its foliage, which is as green as the Holly; and it bears spikes of flowers of snowy whiteness like some delicate Orchid. It is neat, dwarf, and compact, and has flowers twice as large as the other kinds. They lie close together on the stem, and remind one of the old double white Rocket. *L. ixioides*, a New Zealand plant, is also a handsome evergreen species, with narrow grassy foliage and small white blossoms. *L. magellanica* is also pretty when in flower. All of these thrive in borders of peaty soil, and in the rougher parts of the rock-garden, but they grow slowly on certain loamy soils, living perhaps, but never showing the freedom and grace which they do on free or peaty soils. Increased by seed or by careful division in spring.

LIBROCEDRUS (*Incense Cedar*).—*L. decurrens* is a handsome evergreen tree of the mountains of Oregon and Northern California, being very distinct in habit and found in the Sierra Nevada as high as 8,000 or 9,000 feet, is likely to prove a tree that will last in our climate. It is a beautiful tree for grouping with the choicer Pines; more columnar in habit than most, it does not therefore require the wide spacing too often given to our trees in the pinetum. This tree, more than most other Pines, illustrates the mistake of supposing that conifers should be clothed to the ground with branches, as the natural habit of such trees is often to shed their branches as other trees shed their leaves. In its native country the stem of this tree is often quite free and clear of branches to a height of 70 feet, and this instead of taking from the beauty of the tree really adds to it. Syn., *Thuja gigantea*.

The Chilian Incense Cedar (*L. chilense*) will just live out of doors in the most favoured situations, and is therefore not worth attempting in the country generally.

LIGULARIA.—Large perennials, remarkable for bold foliage, one or two of great size, and strikingly distinct aspect, though not quite beautiful in flower. *L. macrophylla* is vigorous, with an erect stem nearly 3½ ft. high, and very large glaucous leaves, the yellow flowers borne in a long spike. Free, moist, and somewhat peaty soil is the most suitable for this plant, which is multiplied by careful division in autumn or in spring; it is useful for grouping with fine-leaved herbaceous plants, but will seldom find a place in the select

flower garden. Caucasus. *L. sibirica*, *Fischeri*, and *thyrsoides* are fine-leaved plants, and worth growing with *L. macrophylla* for their foliage. The Japanese species, *L. Kämpferi* and *Hodgsoni*, are better grown under glass, except in summer, when they may be used among fine-leaved plants in the sub-tropical garden; but the hardy kinds are most interesting. *Syn.*, *Senecio*.

LIGUSTRUM (*Privet*).—The meanest of all mean shrubs, I think, but popular beyond all others, its weed-like facility of increase making it dear to those to whom something growing with a fungus-like rapidity is a treasure. It is not only

Ligustrum.

that Privets are poor in themselves, and, as a rule, without beauty of leaf or flower, but it is the number of beautiful shrubs they shut out, millions being annually sold to take the places of better things, and helping to kill the few that are planted near them or among them. The commoner sorts have no beauty whatever, and they all have the same vile odour in summer days when they flower, a sickly smell. Happy in the possession of the finest hedging and fencing plants of the northern

world, quick, holly, box, yew and sweet briar, nurserymen and jobbing gardeners make hedges and fences with these wretched privets, fences which have the one poor quality of rapid growth, but which a man, let alone a beast, could walk through without effort. I have seen whole towns like Leicester with miles of these poor hedges, and they are even to be seen in pretentious show places, where one would expect people to know what a real fence meant.

Rich in native and other covert plants, I have seen the privet recommended by Sir Ralph Payne Galway as a covert plant, for which it is useless beside the beautiful covert plants we have—furze, sloe, sweet briar, juniper, and wild briar rose—and above all things recommended as a covert plant near water, for which Nature has given us the most fitting of all in the spiry-leaved trees of the willow and dog-wood order of which there are many kinds.

As to beauty, the wildest briars that vex our legs and sometimes our faces, have far more beauty, whether of leaf, form, flower, or fruit.

The land which has given us so many beautiful trees and shrubs and flowers, America, has nothing to do with the privets, which are inhabitants of Asia and Europe, including China and Japan. Some of the species are evergreen, some summer leafing, and others in our mild climate hang between the two, and keep their leaves except in very severe winters. They are all too quickly propagated by cuttings, and there are tropical species not hardy in our country.

The gain of the rapidity of growth of the privet is more apparent than real, as it simply leads to equally quick decay if used as a fence plant or in any other way. The true fence plants when fairly treated, and put in the open in good condition as all fence plants should be, are not by any means slow growers. Holly in good soil will grow two feet in a year, Quick is a rapid grower after the first year or two; neither is the Yew by any means of slow growth, but this is a plant which should never be used for a fence where animals could by chance come.

L. coriaceum.—A distinct and curious species from Japan, evergreen, dwarf and bushy, from 2 to 5 ft. high with thick leathery leaves, of stiff habit, and flowers in white panicles with the sickly odour of the tribe. It might have some use among dwarf bushes on banks.

L. Ibota.—A shrub from 5 to 8 ft. high or more, of free habit and form, blooming freely in summer. The white flowers in spikes followed by dark berries. A native of China and Japan. *Syn.*, *L. amurense*.

L. japonicum is a good evergreen kind, rather dwarf and bushy, with pointed leaves 2 to 3 in. long, leathery, and of a deep green with straggling panicles of flowers. *Syn.*, *L. Sieboldi*.

L. lucidum is one of the best for erect and bold growth, growing 10 ft. high or more with firm lustrous leaves, 5 to 6 in. long by over 2 in. wide, and bold panicles of flowers 6 in. long in summer and autumn. It is a native of China, where it forms a tree. A variety, *L. Alivoni*, has longer leaves, and there is a variegated variety. *Syn.*, *L. sinense latifolium*.

L. ovalifolium.—One of the most popular varieties, and much used for forming hedges, as it retains its foliage through the winter better than the commoner privet, but it is without much character as a shrub. There is a yellow variegated variety which is also very popular, but less showy as it gets old.

L. Quihoni.—A Chinese privet of a wiry dwarf character, with small leaves, and the branches covered with a purple down; flowering freely and rather showily.

L. sinense.—Not quite hardy on cold soils, but one of the best species, preferring a dry soil and flowering freely and rather handsomely on warm soils. It bears many purple berries, and it is a tall species, often attaining a height of 15 ft. China.

L. vulgare.—This is the kind generally used for hedges and arbours, standing all ill-treatment in town and suburban gardens and growing pretty well where nothing else will grow, but not worth having anywhere. It bears dark purple fruit like most of the kinds, and there are several varieties of it, especially variegated ones of little value.

LILIUM (*Lily*).—The Lilies are among the most beautiful bulbous plants, combining as they do stateliness and grace with brilliant and delicately-coloured flowers. The many kinds in cultivation afford a rich choice. All are beautiful, but some are better suited for particular localities than others. The habit and general character of the plants being so varied, their uses are likewise varied. Some are suited for the rock-garden, others for the mixed border, many for the shrubbery—especially for the Rhododendron beds—while not a few are so robust that they are at home in the wild garden, holding their own against native plants. Their true place, however, is the garden proper, and, when their uses are understood and expressed, there will be a total change in the aspect of the flower garden.

Lilies may be grown in various ways :—

1. Under glass you may have Lilies in flower all the year round.

2. In the open border you may enjoy their beauty each in its own season.

3. You may take them up when coming into flower in the border, and plunging them roots and all into a sufficiently large pot with suitable soil, shade them for two or three days, and then transfer them to bloom in a conservatory or balcony, without damage, providing they are kept well-watered.

Culture is important, but arrangement and grouping are even more so. There are Lilies which will grow in any ordinary soil; a good, rich loamy soil suits the greater number; others want plenty of sand, so as to keep the soil free; while others can be easily grown in ordinary soil if it is mixed with leaf-mould or peat. It will thus be seen that there are no great difficulties in the way of growing a large number of kinds. In nearly all cases Lilies are more vigorous and brilliant where partially protected from severe frosts; and the flowers last longer when sheltered from the scorching rays of the mid-day sun. The shrubbery border, among Rhododendrons (for those re-

quiring peat), and the mixed border between shrubs and herbaceous plants, where the young shoots get a slight protection from the early frosts, are among the best situations. A very safe place is near the edge of a Rhododendron bed; soil that will grow Rhododendrons will grow most sorts of Lilies, and afford protection from "blight and spot," which in some seasons, notably when cold and wet follow drought, greatly injure the growth and flowering of some species, even though the bulbs be unhurt. It should be remembered that bulbs of nearly all Lilies occasionally lie dormant a whole season, and push out luxuriantly the following summer, especially the Martagon tribe.

¹ Manure should never be dug in with the bulbs, though they accept it gratefully if liberally applied as a top dressing after they have been established a year. The only manure to be dug in at planting is rich peat and sand, in the proportion of two parts of peat to one of sand.² This is advisedly called manure. In light soils *L. auratum* and some others are all the better for a top-dressing of dry clay broken small. Though to each brief description below we have appended a word or two upon cultivation, it is perhaps advisable to add a few general remarks. It should be borne in mind that, however beautiful nearly all the known Lilies are, some are extremely fastidious; but there is a rare choice of beauty among those that are easily cultivated. Lilies may be divided into three classes—first, those that are best grown in pots, such as *neilgherrense*, *Wallichianum*, *philippinense*, and *nepalense*; also *Wallichianum superbum* (*sulphureum*), *Lowi primulinum*, *Bakeri*, new Burmese Lilies; and, in many soils and climates, *speciosum*, *auratum*, and *longiflorum*; secondly, those that are best grown out-of-doors in loamy soil; thirdly, those that are best grown out-of-doors in peaty soil. On light soils the following kinds do remarkably well: *L. candidum*, *longiflorum* and its varieties, *chalcedonicum*, *excelsum*, and the *speciosum* section;

¹ Experience has shown me that manure may be applied, more liberally than I thought, to the *Speciosum* group; while *Giganteum* literally revels in "muck." I have given with much advantage to pot Lilies (*Longiflorum*, *Speciosum*, and *Henryi*) Clay's Fertilizer, Albert's Concentrated and Fish Manure, so that I begin to believe that, given sound healthy bulbs, manure, especially in the liquid forms, may be given to a much greater extent than was originally supposed. I have seen an acre of *Speciosum* and *Longiflorum* Lilies in full luxuriant bloom, whose bulbs were planted at the top of farmyard manure dug in to receive them.—ALEXANDER WALLACE.

² Sea-sand, where it can be procured, is by far the best kind to use; all bulbs take to it kindly, as it always attracts moisture.

all of the umbellatum, croceum, and elegans type ; also tigrinum sinense. For deep loamy soil the best kinds are *L. auratum*, *Szovitzianum*, *Humboldtii*, the Tiger family, most of the Martagon group ; while in an intermediate soil of leaf-mould, loam, and sand, we advise the planting of *Buschianum*, *philadelphicum*, *pulchellum*, *Browni*, *giganteum*, *tenuifolium*, *Krameri*, &c. The North American forms require more peat and more moisture than the other groups. Lilies require, so far as their roots are concerned, a cool bottom, abundant moisture, and, for most kinds, a free drainage. The slope of a hill facing south-east or south-west, for instance, with water from above percolating through the sub-soil, so as to always afford a supply, without stagnation, would be an admirable site.

PROPAGATION.—This is generally and most readily effected by separating the bulblets or offsets from the parent bulbs, and these, detached and grown in the same way as the parent, in the course of a year or two make good flowering plants. The scales of the bulbs afford a means of propagation ; but this is a slower method. Raising Lilies from seed is somewhat tedious, though many kinds in this country perfect seed in plenty, and in the case of such kinds as *L. tenuifolium* the seedlings flower in three or four years ; though others will not flower for several years. The finest kinds, such as the Japanese and Californian Lilies, are now so cheap that it is scarcely necessary to propagate from home-grown plants. It will be well, however, if, by rapid increase, or otherwise, they become plentiful enough to adorn the smallest cottage gardens. Several Lilies, chiefly Japanese and Californian, are largely imported every year. As soon as received, all bulbs should be examined, and decaying matter should be removed. They should then be laid in soil, or, better still, cocoa-nut fibre in a moderate condition of moisture, until the bulbs recover their plumpness and the roots are on the point of starting from the base. Then they should be potted or planted out as required ; but, before this, decaying scales should again be removed, as a few of the outside ones are often bruised in transit, and after they have been in the soil a little time decay sets in, which if not then taken off may contaminate the whole bulb. Of those so imported, *L. auratum* and *Krameri* should, when potted, be surrounded with sand, but some do well without it. The most difficult to import among the N. American Lilies are *L. Washingtonianum* and

L. rubescens, since, as a rule, they suffer much more than the large, solid bulbs of *L. Humboldtii*, or than those of *pardalinum*, *canadense*, and *superbum*. These solid bulbs should be treated as above directed, but *L. Washingtonianum*, *rubescens*, and *Humboldtii* should not be potted, as they never succeed in that way ; and indeed all the N. American Lilies do much better if planted out. Those grown in Holland, such as the varieties of *davuricum*, *elegans*, and *speciosum*, &c., arrive plump and sound, but it is much better to lay even these in soil a little while before potting.

L. Alexandræ.—A beautiful new dwarf Lily, apparently a hybrid between *longiflorum* and *auratum*, bearing a large, well-opened, reflexed flower, broad-petalled and pure white, from a southern Japanese Island ; and therefore grows best under glass. Its native name is Uke uri.

L. auratum.—Some forms have flowers nearly 1 ft. across, with broad white petals copiously spotted with reddish-brown and having broad bands of golden-yellow down the centre. The poorest forms have starry flowers and scarcely any markings. Several named varieties are particularly distinct ; and the chief are *cruentum* and *rubro-vittatum*, which have deep crimson instead of yellow bands down the petals. *Rubro-vittatum* is a variety with a very distinct bulb, the foliage is darker, and it is a hardier, better doer than the type. *Platyphyllum* is also more easily grown than the type. The white-petalled variety of *platyphyllum*, generally called *virginale*, is perhaps one of the most beautiful forms. *Wittei* and *virginale*, the flowers of which have no colour but the golden bands ; *rubro-pictum*, with a red stripe and spots ; *platyphyllum*, with very large flowers and broad leaves ; and *Emperor*, a grand flower, with reddish spots and centre. There are also some beautiful hybrids raised between *L. auratum* and some of the other species ; for example, *L. Parkmanni* (between *L. auratum* and *L. speciosum*), which has large white flowers banded and spotted with carmine-crimson. It grows freely in peat or loam, a mixture of both with a little road-scrapings best fulfilling its requirements. Where the soil is naturally poor, light, and sandy, it should be taken out to a depth of 18 in., and replaced with the compost above mentioned, or some fine, well-enriched mould. The bulbs should be planted in this, and, as soon as growth commences in spring, should be mulched with decomposed manure or short Grass. If the garden soil be fairly good, it need only be well stirred and manured but the

manure should be thoroughly decomposed. A sheltered situation should be chosen, and if possible screened from the mid-day sun, and protected from westerly and southerly gales and from heavy driving rains; for this Lily is very susceptible to injury by cold draughts and cutting winds. No better place can be chosen than a snug nook sheltered from the north and east by shrubs, but at the same time open to the sun. The best examples that have been seen were grown in a Rhododendron bed, and planted in a deep, moist, peaty soil, where they have been for years undisturbed. When planted among other things the young and tender uprising shoots are greatly protected in spring. As to propagation, there is scarcely any need to enlarge upon that, as bulbs are imported so plentifully; and it is only necessary to separate the young bulbs and replant them in good soil. Those who increase this Lily from seed must be prepared to exercise a little patience, as the seed is long germinating and the seedlings are several years before flowering. The seed should be sown, as soon as ripe, in a frame. The seedlings should be planted out as soon as the bulbs are of an appreciable size.

L. Browni is a fine Lily in the way of *L. japonicum*, but with larger flowers. It is readily distinguished from any other kind by the rich brownish-purple markings on the exterior of the blossoms, which in well-grown plants are sometimes 9 in. in length. It is hardy and vigorous, and succeeds without giving much trouble. In a soil and position which suits *L. auratum* it flourishes, and need only be lifted every few years and replanted in fresh rich soil. It grows from 2 to 4 ft. high, and has deep green foliage distinct from allied kinds. The variety *Colchesteri* is handsome. Quite recently, some remarkably fine and strong-growing varieties of this Lily have been obtained from the district whence *L. Henryi* came; named by Mr. Baker *Chloraster* and *Leucanthum*.

L. bulbiferum is one of the handsomest of European Lilies, and is about 2 ft. high. It bears large crimson flowers shading to orange. The variety *umbellatum* is finer and stronger, and has large umbelled clusters of flowers. This Lily is generally distinguished from its congeners by bulb-lets on the axils of the leaves. It grows freely in ordinary soil, and flowers in early summer. A capital plant for bold groups, and thriving under partial shade or in the open.

L. canadense (*Canadian Lily*).—This

beautiful flower is among the oldest of cultivated Lilies. It is 2 to 4 ft. high, and bears, on slender stems, terminal clusters of drooping blossoms usually orange, and copiously spotted with deep brown. It also occurs with red flowers (*rubrum*) and with yellow flowers (*flavum*). *L. parvum*, *L. Bolanderi*, *L. Grayi*, and *L. maritimum* resemble it, and like it require a partially-shaded position and a moist, deep peaty soil enriched by decayed leaf-mould. It flowers late in summer, and is very attractive in bold masses, such as are often seen in nurseries about London. Like its allied forms it makes elegant groups among choice shrubs such as Azaleas and Rhododendrons; and by such an arrangement we get a second bloom and a variety of form from beds that had only one blossoming season, and were poor and stiff in outline; we prevent senseless digging when the groups are once in place; and we keep the shrubs from growing into a solid ugly mass, while they shelter our Lilies.

L. candidum.—One of the best-known and loveliest Lilies, seen in almost every cottage garden, and producing snow-white blooms in summer. It dislikes coddling or being meddled with, and thrives best when undisturbed for years in good garden soil. Any attempt to deal with it like the more delicate ones generally results in failure. The best-flowered plants are in old gardens, where the bulbs are allowed to run as they like with no attention whatever. In bold masses, no plants can compare with the common white Lily when in bloom. It is so fair a flower that there is scarcely a place which a good plant or well-grown group of it will not adorn. But the careful growth and the proper placing of such lovely hardy plants give the highest charm to the garden. For years it has been difficult to find even a miserable tuft in many "show" gardens, though they displayed nothing there so good as a tall white Lily in a cottage garden. Moist loam seems to suit it generally, though, like other Lilies, it will grow in a variety of soils. There are two forms in gardens—a thin petalled and a broad petalled form, with petals overlapping and dark stem. This is the handsomest and most vigorous. There is also a late tall variety called *speciosum*, a beautiful one. The varieties *peregrinum*, *striatum*, and *monstrosum* are not so fine, but the striped-leaved variety *aureo-marginatis* is valuable for its foliage in winter.

L. chalcedonicum (*Scarlet Martagon*)

is a very old and handsome Lily, of tall and graceful growth, and bears several pendulous, vermilion, turban-shaped blossoms about the end of July. It is one of the easiest to cultivate, thrives in almost any soil, and is best when well

stems, bearing in summer several brilliant scarlet blossoms. *L. carniolicum*, of a similar character, is 1 to 3 ft. high, and produces in early summer turban-shaped nodding blossoms of bright vermilion or yellow.

Lilium candidum (White or Madonna Lily).

established and left undisturbed. There are a few varieties, *majus* being the largest and best. The others are *græcum*, rather taller than the type and having smaller flowers; *pyrenaicum*, with yellow flowers; *Heldreichi*, tall and robust, flowering a week or two earlier; and *maculatum*, a very handsome form. Native of Greece and Ionian Isles. Similar to the scarlet Martagon is the Japanese *L. callosum*, a pretty Lily, $1\frac{1}{2}$ to 3 ft. high, with slender

L. concolor.—A pretty little Lily from Japan, 1 to 3 ft. high, bearing three to six bright scarlet flowers, which are spotted with black, star-shaped, and erect. There are some three or four varieties—*pulchellum*, or *Buschianum*, an early variety from Siberia, $1\frac{1}{2}$ to 2 ft. high, with crimson blossoms; *Coridion*, with flowers somewhat larger than the type, and of a rich yellow spotted with brown; *sinicum*, a Chinese form, with four to six crimson flowers heavily spotted and larger than the type; and *Partheneion*, with scarlet flowers flushed with yellow. This charming Lily and its varieties are quite hardy, though they require some attention in cultivating. They succeed in half-shady places in a soil composed of two parts of peat, one of loam, and one of road-scrappings; but seem to require renewing every few years.

L. croceum (*Orange Lily*) is one of the sturdiest and hardiest, and therefore one of the commonest of Lilies. It grows in almost any soil or position, and bears in early summer huge heads of large rich orange flowers. In the mixed border it is attractive, but shows best on the margin of a shrubbery, where its stems just over-top the surrounding foliage. It is always best after some years' growth. A native of the colder mountains of Europe, it is one of the Lilies that may be naturalised, but is never so strong as in rich garden-ground. Lilies are said not to like manure, but we have

never seen this one so fine as when in well-manured ground after several years' growth. Indeed, we have planted it over a subsoil, so to say, of solid cow manure, and have had bulbs and flowers of enormous size in two years.

L. davuricum is a slender European Lily with moderate-sized flowers, spotted with black. Like *L. elegans*, it has several varieties, the chief being *Sappho*, incomparable, *erectum*, *multiflorum*, *Don*

Juan, and Rubens. Being strong growers and flowering freely, they are fine plants for the mixed border, for margins of shrubberies, or for groups or masses, thriving in partial shade as well as in sunny places.

L. elegans.—One of the best and most generally grown of the early Lilies. It is commonly known by the name of Thunbergianum. It is very variable, and there are about a dozen named varieties. The type grows about 1 ft. high, and has stout erect stems, which bear numerous narrow leaves, and are terminated by a bright orange-red flower, 5 or 6 in. across. A native of Japan, flowering with us about the beginning of July. Most of the varieties are so distinct as to merit a slight description. They are—marmoratum and marmoratum aureum, two of the earliest forms; alutaceum, not more than 9 in. high, with a large pale apricot-coloured flower, copiously spotted; armenaicum (venustum), about 1½ ft. high, with several moderate-sized flowers (in autumn) of a rich glowing orange-red; atosanguineum, about 1½ ft. high, with large flowers of rich deep crimson; Batemannia, about 4 ft. high, with several moderate-sized flowers, in late summer, of a rich unspotted apricot tint (L. Batemannia and L. Wallacei are put by Mr. Baker as allied to L. Leichtlini and the Tiger group. I do not consider the above two species to be Thunbergianum); bicolor, about 1 ft. high, with large flowers orange-red, flamed with a deeper hue; brevipodium, 1½ ft. high, with flowers pale red and slightly spotted; citrinum, like armenaicum, but taller; fulgens, 1 to 1½ ft. high, with four to six large flowers of a deep red; sanguineum, 1 to 1½ ft. high, with one or two large blood-red flowers; L. Horsmanni, a dwarf form with richly-coloured flowers of a blood-red mahogany tint, and Splendens, the early form of L. Wilsoni; Alice Wilson, the beautiful, scarce, lemon-yellow, dwarf form; Van Houttei, 1½ ft. high, with very deep crimson-red flowers, spotted with black; Wallacei, 2½ ft. high, with rich orange-red flowers, spotted with black; Wilsoni, 2 ft. high, with large apricot-tinted, yellow striped flowers—one of the latest to bloom. All the L. elegans group are perfectly hardy; they grow vigorously in almost any soil, but prefer a deep loamy one with an admixture of peat. They like an open position, and are suitable for planting around the margins of shrubberies. Small groups are beautiful in the open spaces that should exist in every shrubbery or Rhododendron bed. They

are all excellent border-plants, and the dwarf kinds may be introduced into the rock-garden. In all cases they must be placed in sunny situations.

L. giganteum.—A noble Lily of huge growth and in aspect different from any other. Its bulb is large and conical, and develops spreading tufts of handsome shining heart-shaped foliage. The flower-stems are stout and erect, 6 to 10 ft. high, terminated by a huge raceme, 1 to 2 ft. in length, of about a dozen long nodding fragrant flowers, which are white and tinged with purple on the inside. It is one of the hardiest Lilies, and gives very little trouble. It flourishes best in a sheltered position, where there is an undergrowth of thin shrubs to protect the

Lilium giganteum.

growth in spring. The soil must be deep and well drained, and must consist of sandy peat and leaf-mould, strengthened by a little rich loam, and plenty of rich manure. Years sometimes elapse before the tufts of foliage send up bloom. Nepal. L. cordifolium, a Japanese plant, is a similar, but inferior, species, very rare in cultivation. It requires the same treatment. Cordifolium is said to grow naturally in Japan in shady damp places, cool and moist. A small group of three or four plants will do well in an open spot among shrubs, in a free peaty soil, and when in flower the effect will be all that can be desired.

L. Hansonii.—A handsome Japanese species, about 4 ft. high, having whorls of

bright green leaves and a terminal spike of about a dozen bright, orange-yellow, brown-spotted flowers. It flowers about the beginning of June, is quite hardy, and succeeds in sheltered situations in a soil consisting of two parts of peat, one of loam, and one of road-scrapings.

L. Humboldti is very graceful. The

Lilium Humboldti.

singular beauty of the blossoms and the elegant manner in which they droop from their slender stalks, make it most desirable, and its flowers, on account of their great substance, are more lasting than any other Californian Lily. The stout and purplish stems attain a height of 4 to

8 ft. The leaves are in whorls of from ten to twenty each, and are of a bright green. The flowers differ considerably in colour and markings, but are usually bright golden-yellow, richly spotted with crimson-purple. The variety *ocellatum* or *Bloomerianum* is dwarf, and has petals tipped with brownish-crimson. It grows

best in an open border of rich peaty or leafy soil of a good depth. *Columbianum*, *syn.* *Nitidum*, seems to be a smaller variety of this Lily.

L. japonicum, or *Krameri* as it is more often called, possesses the most delicate beauty of any. The flowers are of the shape and nearly as large as those of *L. auratum*. They are either pure white or delicate rosy-pink—generally the latter. *L. japonicum* is 1 to 3 ft. high, and sometimes bears five blooms—but generally only one or two. It is somewhat difficult to grow, owing to its delicate constitution, but the best specimens produced in this country were grown under the same conditions as *L. auratum* and *speciosum*. On account of its beauty it deserves the most careful attention. It is a lovely plant for a select spot between choice dwarf shrubs, in free peaty soil or deep sandy loam with vegetable soil in it. When Mr. Kramer first sent me this Lily he wrote that he obtained it from a mountainous slope at a high altitude.

L. longiflorum (*White Trumpet Lily*).—This is among the most beautiful and most valuable of garden Lilies. The typical form is 1 to 3 ft. high, the stems in summer being terminated by reflexed, tubular, waxy-white flowers, which are sweetly scented. There are several varieties, the best being the early variety now

called *præcox*, of rather dwarf habit, with long, pointed, three-nerved, dark-green foliage; the flowers are of great substance, tubular, and but little reflexed at the tip, which flowers a fortnight earlier than the type, bears larger and more numerous flowers, and is in every way

superior to it *Takesima* is recognised by a purplish tint on the exterior of the blossoms and on the stem. *Wilsoni*, or *eximium*, the finest variety, has bold dark foliage, and is nearly 4 ft. high, with numerous flowers about 9 in. long. *Takesima* is the latest to bloom. *Madame Von Siebold* is also a fine variety. *L. longiflorum giganteum* is the variety generally obtained from Japan; strong bulbs will send up a head of from 8 to 12 flowers widely opened; the foliage is bright green; under glass this Lily may easily be forced. *L. formosanum*, the variety from *Formosa*, has its flowers ribbed

checked. A well-drained light loam, well enriched with leaf-mould, suits it admirably. *L. Wilsoni* is benefited by a lighter soil and by a warmer and more sheltered position. When just pushing the growth in spring it is advisable to encircle the plants with a few dead branches, if unprotected by shrubs. Where this fine species and its forms fail in the ordinary soil of the garden, success may be ensured by making a special soil of rotten manure, leaf-mould, or cocoa fibre. In such a mixture, so free and open that the hand could be pushed down below the bulb, we have seen them perfectly grown

Lilium longiflorum Harrisi.

and flushed with rosy-brown; they are somewhat smaller in size than the type. *L. Harrisi* is *L. longiflorum* altered by growth in a tropical climate, Bermudas, S. Africa, &c. *Jama-Jura* and *Liukiu* are native names for the varieties mentioned. The variegated-leaved form (*albo-marginatum*) is desirable, as the variegation is distinct and constant. *L. longiflorum* and its varieties sometimes bloom well in borders, but care should be taken that they are not injured by spring frosts. *L. longiflorum* is so early that, unless protected by the leaves of evergreens, its growth is apt to be

checked. where the natural soil was too stiff and impervious. The hardier varieties are admirable for artistic gardening, their fine forms being very effective when tastefully grouped on the fringe of beds of choice bushes and when touching and seeming to spring out of the Grass. They are also good in beds either specially devoted to them alone or in combination with other plants. Similar to *L. longiflorum* are *L. neilgherrense*, *philippinense*, *Wallichianum*, and *nepalense*, but none is hardy and all are poor and unsatisfactory, except, perhaps, for the greenhouse.

L. Martagon (*Turk's-cap Lily*).—This

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is so common that we need only mention its varieties. These are very fine, especially dalmaticum, which has flowers larger than the type and of a shining blackish-purple, a contrast to the loveliness of the pure white variety (album). Cattaniæ is a form of dalmaticum and scarcely differs from it. Like the type, the varieties thrive freely in a good loamy soil; they are perfectly hardy and are rather partial to shade, growing freely in grassy places, open woods, or copses. Some of the finer varieties are good garden plants, and should be grouped in the spaces between hardy Azaleas or similar flowering bushes.

Mr. R. A. Jenkins writes as to the white Martagon: "The white Martagon

White Martagon Lilies.

Lily is one of the most distinct of the family, and if given a suitable soil and position there are but few of its relatives that excel it in beauty, hardiness, or freedom of bloom. As to its free-flowering qualities, suffice it to say that three bulbs in my garden after being planted as many years ago gave me no less than 167 blooms, two of the stems carrying forty-two and forty-nine blooms. Even in the summer immediately after planting the Lilies sent up forty blooms. This I attribute to their being moved early in September, for if planted late in the year, most of the Martagon section refuse to bloom in the ensuing summer. I find

that this Lily does best in good deep soil enriched with leaf-mould, and without manure or sand. As the above-mentioned soil suits such plants as *Anemone sylvestris* and Lily of the Valley to perfection, I have carpeted the ground with them, and they serve to keep the soil cool

Lilium monadelphum, var. *Szovitzianum*.

during the summer, while in May they furnish me with countless flowers."

L. monadelphum is a magnificent Lily of noble growth. The stout flower-stems vary from 3 to 5 ft. in height, and are terminated by a pyramid of six to twenty

turban-shaped flowers, ranging in colour from a rich canary-yellow to a pale lemon-yellow. Some forms have spotted flowers, and some are much larger than others. The varieties are known as *L. Szovitzianum*, *colchicum*, and *Loddigesianum*. *L. monadelphum* thrives best in moist deep loamy soil, well enriched with good manure at the time of planting; but does not show its true character till it has been planted several years. It rarely fails, and is one of the least disappointing of all. It may be readily increased from root-scales, a fact which is taken advantage of by many cultivators, and is the only method of increasing and keeping pure any really good or marked variety. Seed is, however, the readiest way of acquiring a stock of this truly charming plant. The seeds are usually sown in large shallow pans as soon as ripe, and remain there for two years, by which time the bulbs have attained a considerable size; they are then planted in beds in rows 6 in. apart, with 4 in. between the bulbs, replanting when necessary. By this treatment flowers are frequently produced by seedling plants four or five years after sowing.

L. Parryi is a new and distinct species from California. It is of elegant slender growth, and 2 to 4 ft. high, bearing graceful trumpet-shaped flowers of rich yellow, copiously spotted with chocolate-red, and delicately perfumed. The flowers being borne horizontally, render it very distinct. It grows in elevated districts in South California, in boggy ground. Not much is known of its culture, but the finest plants have been produced where the soil was two thirds common peat and one third loam, with plenty of coarse sand. A bed in a shady spot was selected, in which the bulbs were placed at a depth of 4 in., having underneath about 1 ft. of the soil. Here the strongest bulbs threw up stems 4 ft. in height, and the greatest number of blossoms on one stem for the first season was six.

L. pardalinum (*Panther Lily*).—One of the handsomest of the Californian Lilies, and one of the most valuable for English gardens, as it makes itself

thoroughly at home in them and grows as vigorously as in its native habitat. It is 6 to 8 ft. high, and has large drooping flowers of bright orange, spotted with maroon. There are several varieties, the most distinct being—*Bourgæi*, one of the finest, having stout stems 6 to 7 ft. high, with twelve to twenty flowers of bright crimson, shading to orange, and freely spotted with maroon, and blooming a fortnight later than any other; *pallida*, a dwarf variety, scarcely 5 ft. high, bears flowers nearly double the size of the type, and paler in colour; *californicum*, a more slender variety, 3 to 4 ft. high, and the brightest in colour; *pallidifolium* (*puberulum*), a small form, with lighter flowers;

Lilium Parryi.

and *Robinsoni*, a robust variety, with stout stems 7 to 8 ft. high, and with massive foliage, large flowers of a bright vermilion shading to yellow, and freely spotted. This last is the noblest, and should be grown if possible. The Panther Lily is one of the most satisfactory of all Lilies; it has a strong constitution, increases rapidly, soon becomes established, and rarely pines away, as many kinds do. It likes a deep, light, good soil, enriched with plenty of decayed manure and leaf-soil, where the roots can receive ample moisture. It should always be in a sheltered position, like the sunny side of a bold group of shrubs or low trees. In a special bed the near shelter of hedges is desirable, though their roots should be kept away. Bare borders are not the

places where this noble Lily does or looks best—there is no shelter or support for plants which in their own country have many shrubs for companions and are sheltered by the finest trees of the northern world.

L. polyphyllum.—A rare and beautiful Lily, 2 to 4 ft. high, and having large turban-shaped flowers of a waxy white, copiously spotted and lined with purple. North India. Mr. M'Intosh of Duneevan, Weybridge, who has been most successful with it, writes: "Sandy loam, peat or leaf-mould, sand, and charcoal, with a slight admixture of pulverised horse-droppings, and good drainage under the bulbs, are all I have to tell; and I think early staking and tying may have something to do with many growing taller than they otherwise might."

L. pomponium.—This lovely Lily must not be confounded with the *L. pomponium* usually sold as such, this latter being simply the red variety of *L. pyrenaicum*. *L. pomponium* is elegant and vigorous, and blooms earlier than the varieties of *chalcidonicum* and *pyrenaicum*, to which it is related. It is about 3 ft. high, is erect, and has long linear leaves. The flowers appear in a lax raceme 1 ft. through, and a well-established plant will bear as many as twenty flowers. In rich loam it grows luxuriantly in sunshine or shade, and no difficulty is experienced with either home-grown or imported roots. Maritime Alps. *L. pyrenaicum*, a similar but smaller plant, with small yellow flowers, is a variety of *L. pomponium*, and the red form is much inferior to the true *L. pomponium*, though generally sold for it. These varieties require the same culture as *L. pomponium*. *L. pomponium* has an extremely offensive odour, and is not, therefore, likely to be used for cutting.

L. speciosum, or *lancifolium* as it is erroneously called, is one of the most popular for pot-culture, and is no less desirable for the open air, though, being somewhat delicate, it is grown to perfection under glass. It is well known, and we need not describe it, but we will mention the chief varieties. There is the true *speciosum*, which has large deep rosy blossoms, richly spotted; *vestale*, pure white; *album*, white or faintly tinged with pink; *rubrum*, deep red; *roseum*, rosy-pink; *punctatum*, white spotted with pink; *Krætzleri*, very large white flowers with greenish stripe on the exterior; *album novum*, a somewhat finer variety with light orange anthers, and broader petals of great substance; *fasciatum album* and *fasciatum rubrum*, two

monstrous varieties bearing numerous flowers on flattened stems. Among the more beautiful Japanese forms are *roseum*, *superbum*, and *formosum*, and *rubrum macranthum*, *cruentum*, *compactum*, and, darkest of all, *Melpomene* (not the American *Melpomene*). In this group must also be included the fine *L. Henryi*, an orange-coloured *speciosum*, first sent to this country by Dr. Henry from Central China, and appropriately named after him. It is a strong grower, perfectly hardy, and from its unique tint and bold growth a grand acquisition to our gardens. Other fine varieties have originated in America, and among these *Melpomene* is very distinct. The beautiful hybrid, *Mrs. A. Waterer*, is large, white, and spotted with pink. All the varieties require shelter from winds and draughts, and a rich loamy soil mixed with peat and leaf-manure. They flower for the most part in September, and last longer in bloom than many other Lilies. In good soils, very happy use can be made of these handsome Lilies in warm and sheltered places where their blooms may be fully developed.

L. superbum (*Swamp Lily*).—One of the stateliest of N. American Lilies, bearing late in summer beautiful orange-red flowers, thickly spotted. It may be recognised at once by its purple-tinged stems, which rise 5 to 10 ft. high, and which are very graceful, waving with the slightest breeze. A pyramid of flowers terminates each stem. *L. superbum* delights in moist deep soil consisting chiefly of peaty and decayed leaf-manure, and is one of the best Lilies for growing in shady woods when the undergrowth is not too rank. In the garden it should have snug glades and nooks protected by shrubs, and moist rich soil. *L. carolinianum* is a less showy form.

L. tenuifolium.—A most elegant dwarf Lily, especially valuable for earliness in flowering. It is 1 to 1½ ft. high, and has narrow leaves on slender stems, furnished with a cluster of about a dozen brilliant red turban-shaped flowers, which shine like sealing-wax. It succeeds in open warm borders of light sandy loam, but is all the better for a hand-light or frame, as it flowers very early. Siberia and N. China. *L. callosum* and its form *stenophyllum* are similar but less showy.

L. testaceum (*Nankeen Lily*).—This is a distinct-coloured Lily, and should always be grown, being of easy culture and thriving in any ordinary soil, though preferring one that is peaty. It has the growth of the white *L. candidum*, but the flowers are a delicate apricot, or nankeen,

colour. When well grown it is 6 or 7 ft. high, and bears several flowers in a large head. Other names for this Lily are *L. excelsum* and *isabellinum*. It is one of the plants that grow freely in London.

L. tigrinum (*Tiger Lily*).—This is one of the commonest kinds, and is too well known to need description. No garden should be without it, for few plants are so attractive or have such stately growth. The common kind is handsome, but the variety *splendens* is much finer, having larger flowers with larger spots, is produced later, and grows 7 ft. high. *Fortunei* is an early form and as desirable as *splendens*. The double-flowered variety (*flore-pleno*) is showy and vigorous. Erectum also is distinct and desirable. *L. pseudo-tigrinum* and the varieties of *Maximowiczii*, though referred to other species, much resemble *L. tigrinum*.

Lilium testaceum.

The Tiger Lily is very easy of cultivation, thriving best in deep sandy loam with an open, but sheltered position. The earliest varieties begin to flower at the end of August, and the latest last till the end of October. The Tiger Lily may be quickly propagated by the bulblets, which form in the axils of the leaves.

L. Washingtonianum.—A lovely Californian Lily, 2 to 5 ft. high, bearing a cluster of large, white, purple-spotted flowers that become tinged with purple after expansion. Nearly allied to this, and by some considered a variety, is *L. rubescens*, which has smaller flowers which are of a pale lilac or nearly white. These flowers are erect—not horizontal, as in the Washington Lily. Neither *L. Washingtonianum* nor *L. rubescens* is easy to grow, owing, probably, to their

being but little understood at present. The best results have been obtained in partially-shaded situations, in loose, peaty, well-drained, but moist soil.

Known species:—*Lilium alpinum*, Hungary; *auratum*, Japan; *bolanderi*, California; *bulbiferum*, S. Europe; *callosum*, Japan; *canadense*, N. America; *candidum*, S. Europe; *carniolicum*, S. Europe; *Catesbaei*, N. America; *chalconicum*, Carniola; *columbianum*, N.W. America; *concolor*, China; *cordifolium*, Japan; *croceum*, S. Europe; *dauricum*, Dahuria; *Davidi*, China; *elegans*, Japan; *formosissimum*; *formosum*, Japan; *Fortunei*, do.; *Glehni*, do.; *Grayi*, N.W. America; *Handsoni*, Manchuria; *Hansonii*, Japan; *Heldreichii*, Greece; *Hookeri*, Himalayas; *Humboldtii*, California; *japonicum*, Japan; *Jeffersoni*; *lancifolium*, Japan; *Leichtlinii*, do.; *lilacinum*; *longiflorum*, Japan; *maculatum*, do.; *maritimum*, California; *martagon*, S. Europe; *medcoloides*, Japan; *monadelphum*, Caucasus; *neilgherrense*, E. Indies; *nepalense*, Himalayas; *nitidum*, California; *oxypetalum*, Himalayas; *pardalinum*, California; *Parryi*, do.; *parvum*, do.; *persicum*, Persia; *philadelphicum*, N. America; *philippinense*, Philippines; *polyphyllum*, Himalayas; *pomponium*, Siberia; *ponticum*, Asia Minor; *puberulum*, N. America; *pulchellum*, Dahuria; *pygmaeum*; *pyrenaicum*, Pyrenees; *recurvum*; *roseum*, E. Indies; *rubescens*, California; *Sieboldi*, Japan; *speciosum*, do.; *superbum*, N. Amer.; *tenuifolium*, Dahuria; *testaceum*, Japan; *tigrinum*, Japan; *Wallichianum*, Himalayas; *Washingtonianum*, California.

LIMNANTHEMUM (*Fringed Buckbean*).—*L. nymphæoides* is a pretty native water-plant, growing in ponds or slow streams, with floating leaves, and bright yellow flowers 1 in. or more across. One of the prettiest of floating water-plants, flowering for months in the summer and autumn. Wild in the southern and eastern counties, and naturalised in other districts. Division as soon as gathered. Syn., *Villarsia*. Gentian order.

LIMNANTHES.—A vigorous though dwarf hardy annual, valuable because so early; *L. Douglasi* has yellow and white flowers, and there is a pure white variety. Few annuals are hardier, severe winters not injuring it, and it requires neither a deep nor a rich soil, but thrives where the earth is poor as well as in ordinary garden soil. It often sows itself on light soils, and gives no further trouble; but if wanted for a special purpose in spring, the seed should be sown in autumn in boxes or in the open ground; for summer-flowering, sow in the spring. Plains of California and foothills of the Sierra Nevada.

LIMNOCHARIS.—*L. Humboldtii* is an interesting water-plant, in summer covering the surface with heart-shaped leaves and soft yellow flowers, for several months; it will thrive either in running or still water, if planted 6 to 9 in. below the surface, and may also be grown in tubs sunk in the ground. These tubs should be about 1½ ft. in depth, should be half-filled with loamy soil, and then filled

up with water. In fountain-basins and clear, still waters, where the plant is fully exposed to the sun, it flowers freely during summer, but it will not survive out-of-doors in winter, except in the mildest districts, and unless placed at least 18 in. below the surface. Plants put out of a warm aquatic house in May soon begin to grow in the open air in tanks well exposed to the sun. Division. Butomaceæ.

LINARIA (*Toadflax*).—An interesting family, which includes some beautiful garden annuals and perennials, varying from dwarf alpine to tall coarse plants.

L. alpina (*Alpine Toadflax*) forms dense, spreading, dwarf, and silvery tufts, covered with bluish-violet and intense orange flowers. It is usually biennial; but in favourable spots, both wild and cultivated, becomes perennial. It sows itself freely, being one of the most charming subjects that we can allow to "go wild" in sandy, gritty, and rather moist earth, or in chinks in the rock-garden. In moist districts it will establish itself even in gravel walks, is readily increased from seed, which should be sown in early spring in cold frames, or in the places where it is to remain out-of-doors. It is found on moraines and in the débris of the Alps and Pyrenees.

Linaria antirrhinifolia.

L. antirrhinifolia.—This elegant little rock plant forms a very neat spreading mass about 2 feet across and about 6 to 8 inches high and has the advantage of not

spreading so rapidly as some of its congeners, and its bright purple flowers are produced incessantly during the summer and autumn. The plant is of the easiest possible culture, and can be highly recommended for the rock-garden.

L. cymbalaria (*Ivy-leaved Toadflax*) often drapes walls in a graceful way, and is grown by cottagers as a window plant, a common name for it being "Mother of Thousands." A moist half-shady place best suits it, and the white variety is even prettier than the species.

L. dalmatica is a handsome plant, 3 to 5 ft. high, much branched, and in summer has a profusion of large showy sulphur-yellow blossoms. It thrives best in warm places in light well-drained soil, and when once established can be eradicated with difficulty. *L. genistæfolia*, which also has yellow flowers, is similar but inferior.

L. macedonica is a new and distinct plant, from 2 to 3 ft. high, and throwing up shoots from the base. It differs from *L. dalmatica* in its broader leaves, and is quite hardy.

L. purpurea is a pretty kind with spikes of purple flowers, and one occasionally sees it on old walls, as it thrives well in dry spots.

L. triornithophora is a beautiful plant when well grown, 1 to 1½ ft. high, and with large purple long-spurred flowers in whorls of three. It is rather delicate, and, though perennial, should be raised yearly from seed. *L. triphylla* is similar.

L. vulgaris (*Common Toadflax*).—This is well known, and is very pretty as one sees it growing in wild or neglected gardens, but is also a good garden plant. The British variety *Peloria* is a handsome Toadflax, flowering freely after mid-summer in a warm sunny border, and is effective in a mass.

A few other perennial *Linarias* that may be mentioned are *L. hepaticæfolia* (*Hepatica-leaved Toadflax*), from Corsica, which is nearly always in flower in summer and autumn; *L. saxatilis*, with dark brown and yellow flowers; and *L. anticaria*, a good rock-plant, forming little tufts and sowing itself freely. The finely-veined flowers are dull white tinged with lilac.

ANNUAL TOADFLAXES.—Some of the annual species are among our prettiest border flowers, growing about 1 ft. high, and very effective in broad masses. Seed should be sown in ordinary garden soil in early spring, and the seedlings will flower in July and August. The best are *L. reticulata*, with small purple flowers; the variety *aureo-purpurea* being a

charming plant, with flowers which vary from rose-purple to dark orange. *L. bipartita* is also very variable, the colours ranging from deep purple to white. *Perezi* has small yellow flowers; whilst the flowers of *maroccana* vary from violet to pink; and those of *multipunctata*, the dwarfiest of the group, are black spotted with yellow.

LINNÆA (*Twin Flower*).—A little evergreen creeper, *L. borealis* having slender upright stalks bearing two flowers each, delicately fragrant white, often tinged with pink, and drooping. It is usually found in moist woods, where it forms a dense carpet, and is wrongly supposed to be difficult to cultivate. Little need be done beyond planting healthy young plants in a moist sandy border or rock-garden. I have often seen it thriving where the air was pure and the soil suitable; and it is excellent for a moist rock-garden, growing rapidly, and forming a charming fringe to groups of small alpine shrubs, in cool borders or on cool parts of the rock-garden. N. Europe, Asia, and America; also Scotch mountains.

LINUM (*Flax*).—Plants of marked elegance and lightness of growth, and including some pretty garden plants.

L. campanulatum (*Yellow Herbaceous Flax*).—A perennial with yellow flowers on stems 12 to 18 in. high, distinct and worthy of a place. A native of the south of Europe, it flowers in summer, and flourishes freely in dry soil on the warm sides of banks or rock-gardens. Similar to it is *L. flavum*, or *tauricum*, also a handsome and hardy plant with yellow flowers; but *L. arboreum*, a shrubby kind, also with yellow flowers, is not hardy in all districts, though where it thrives it is a pretty little evergreen bush for the rock-garden.

L. grandiflorum (*Red Flax*) is a showy hardy annual from Algeria, with deep red blossoms. By successive sowings it may be had in bloom from May till October. Seed sown in autumn will give plants for spring-blooming, and sowings made from March to June will yield a display through the summer and autumn. By sowing seeds in pots in good rich soil in summer, and plunging in a sunny border with plenty of water, plants may be obtained for the greenhouse or window during October and November. If protected from frost the plant is perennial.

L. monogynum (*New Zealand Flax*).—A beautiful kind with large pure white blossoms blooming in summer. It grows about 1½ ft. high in good light soil, and its neat and slender habit renders it particu-

larly pleasing for the borders of the rock-garden or for pot-culture. It may readily be increased by seed or division; it is hardy in the more temperate parts of England, but in the colder districts is said to require some protection. *L. candidissimum* is a finer and hardier variety. Both are natives of New Zealand.

L. narbonnense (*Narbonne Flax*).—A beautiful kind, bearing during summer many large light sky-blue flowers, with violet veins, growing best on rich light soils, and is a fine plant for borders, or for the lower flanks of the rock-garden, forming lovely blue masses 15 to 20 in. high. Southern Europe.

Other similar but inferior blue-flowered kinds are the common *L. perenne*, *usitatissimum*, *alpinum*, *sibiricum*, *alpicola*, *collinum*, and *austriacum*; all are hardy European species, and make pretty border or rock-garden plants. The white and rose varieties of *L. perenne* are pretty plants.

L. salsoloides (*White Rock Flax*) is a dwarf half-shrubby species, essentially a rock-garden plant; its flowers, white with a purplish eye, reminding one of some of our creeping white Phloxes. In the rock-garden, in a well-exposed sunny nook, the plant is hardy, and trails over stones, flowering abundantly. It produces seeds rarely, so that it must be increased by cuttings of the short shoots taken off about midsummer; these will strike freely, and make vigorous plants when potted off in the following spring. Mountains of Europe. *L. viscosum* with pink flowers, is a closely allied plant not so pretty.

The Common Flax, which gives us the linen fibre, is a pretty annual plant worth a place for its beauty among annual flowers.

LIPPIA.—*L. nodiflora* is a dwarf perennial creeper bearing, in summer, heads of pretty pink blooms. It grows in any situation or soil, and is a capital plant for quickly covering bare spaces in the rock-garden where choicer subjects will not thrive.

LIQUIDAMBAR (*Sweet Gum*).—A very beautiful summer-leaving maple-like tree from Florida westward to the prairie States, often reaching 100 feet in height, the leaves turning an intense deep purplish red in autumn, fine in effect. This tree, thriving in wet and marshy places, is more at home in Great Britain than some of the American trees in our clouded country. It would probably attain a greater stature in river-side soil in a warmer country than ours, the best

trees in its native country growing in rich moist soils. In Northern Britain, and Northern Europe generally, it is somewhat slow and tender. Its name comes from a resinous gum found between the bark and wood, exuding from the cracks of the bark, and having an agreeable fragrance. This is produced in the southern and warmer districts of which the tree is native, and not to the same ex-

Liquidambar.

tent in northern countries. It is a beautiful lawn and home-ground tree, but should be sheltered and in rather deep moist soil. The leaves are fragrant in spring. It is best increased from seed, and good seedling plants greatly facilitate its health and good growth. It is a tree which would be better grown as a group instead of depending upon single plants. There are one or two varieties which, however, have not proved so useful for our country as the wild tree.

LIRIODENDRON (*Tulip Tree*).—*L. tulipiferum* is one of the noblest of flowering trees. It is only when the tree has reached maturity that it bears its beauti-

Liriodendron tulipiferum.

ful Tulip-like flowers of pale green and yellow. Young Tulip trees should be planted on lawns in free or ordinary soils, as the flowers are very pretty in a cut

state for the house, and the tree a beautiful one at all times. N. America.

LITHOSPERMUM (*Gromwell*). — A few of these Borage-worts are pretty and worth growing. One of the finest is *L. prostratum*, a spreading little evergreen having flowers of a lovely blue, with faint reddish-violet stripes, in great profusion when the plant is well grown. It is hardy, and valuable as a rock-plant from

Lithospermum prostratum.

its prostrate habit and the fine blue of its flowers—a blue scarcely surpassed by that of the Gentians. Its shoots may be allowed to fall down the sunny face of a rocky nook, or to spread into flat tufts on level parts of the rock-garden. On dry sandy soils it forms an excellent border-plant, and becomes, if the soil be deep and good, a round spreading mass, 1 ft. or more high. In such soils, it is suited for the margins of beds of choice and dwarf shrubs, either as a single plant or in groups. In heavy or wet soil it should be in the rock-garden, or on banks, and in sandy earth. It is sometimes grown as *L. fruticosum*, but the true *L. fruticosum* is a little bush, and not prostrate. Easily propagated by cuttings. S. Europe.

L. petræum (*Rock Gromwell*).—A neat, dressy, dwarf shrub, something like a small Lavender bush, with small greyish leaves like those of the Lavender. Late in May, or early in June, all the little grey shoots bear small oblong purplish heads, and early in July the plant is in full blossom, the full-blown flowers being a beautiful violet-blue. The best position for it is in the rock-garden somewhere near or on a level with the eye, on a well-drained, deep, rather dry sandy soil on the sunny side. Native of dry rocky places in Dalmatia and Southern Europe. Propagated by cuttings, or seeds if they can be obtained.

L. purpureum-cœruleum, a British plant, *L. Gastoni*, *L. canescens*, *L. graminifolium*, *L. tinctorium*, and *L. rosmarini-*

folium, are very pretty plants, but coming from sunnier lands than ours are not really at home in our climate, and for the most part they can only be grown well on dry ledges of the rock-garden in the most favourable districts.

LLOYDIA (*Mountain Spider-wort*).—

L. serotina is a small bulbous Liliaceous plant, suitable for the cool parts of the rock-garden, and not of the showy order of beauty. It is one of the first flowers the early visitor to the Alps sees by the pathway over the high mountains.

LOASA.—Curious prickly annuals with singular flowers and stinging foliage. *L. hispida* is pretty, growing about 18 in. high, with deeply-cut foliage and short stinging hairs, the flowers 1 in. across, of a bright lemon-yellow, the centre prettily marked with green and white. It blossoms several weeks in succession during August and September. The other kinds in cultivation are the beautiful *L. vulcanica*, with its pure white flowers and red-and-white striped centres; *L. lateritia*, a twining species, with orange-red flowers; and *L. triloba*. All are natives of the cool regions of Peru and Brazil, and can be grown in the open air during summer. Treated as half-hardy annuals, and grown in a light fertile soil, they are interesting for open borders; the climbing species, such as *lateritia*, require branches to twine among. All may be freely raised from seed.

LOBELIA.—Distinct and much varied perennials and annuals, some of high value for the flower garden. The perennial Lobelias, of which *L. splendens* and *L. syphilitica* may be taken as types, are amongst the most useful of autumn flowers. Although fairly hardy, they are impatient of excessive moisture, and in most districts require protection during winter. This may be done by placing ashes in the shape of a cone over the crowns, or lifting and storing in a dry shed or frame. The latter method, though perhaps more troublesome, is safer, as the plants are always under control and easier propagated in spring. By storing the roots in frames they begin to grow earlier, and where large stocks are required it is most convenient. Although impatient of moisture during the resting period they revel in it when in active growth, and where beds can be prepared in the vicinity of lakes or streams, better results will be obtained than in the mixed border or flower beds. In propagating in early spring they can be divided into single crowns, and these potted on soon form sturdy plants ready to plant out on

the approach of warm weather. They thrive best in a free vegetable soil and like plenty of sun, unless in the case of *L. cardinalis*, which I find thrives best in a partially-shaded bed. In some districts with light soils and often near the sea

The scarlet Lobelia.

these plants do not require protection in winter.

L. cardinalis (*Cardinal Flower*).—The true plant is one of the rarest and one of the prettiest of the genus. The brilliant effect produced in autumn by tufts of this species well repays any trouble it may give, for though by no means fastidious, the difficulty of growing it well in small gardens in the absence of shade and moisture is great. It is a bog-loving plant, being found in wet ground in Brunswick, Florida, and the borders of Texas, and is not very hardy. It is, how-

ever, a true perennial, although maybe a short-lived one, and should be frequently raised from seed to make sure of keeping up the stock. This species is not so liable to disease as *L. splendens* and its varieties. Grown on an ordinary border it invariably has a weak, stunted appearance, but in a free rich soil, in a shady position and well supplied with moisture, I have often seen it 3 to 4½ ft. high and flowering profusely. The flowers are of the most vivid scarlet, and as they last a long time in bloom it well deserves care. So far as I know, there are no varieties of this species in cultivation. Dr. Gray mentions its varying to rose colour and even white, but this, it seems, is rare. Parkinson mentions it as "cherished in our garden in 1629," and gives it as "growing near the river of Canada where the French plantation in America is seated." It is hardier than *L. fulgens*, living through the winter in open beds and with little or no protection. Its leaves are shorter and greener than those of *L. fulgens*; the flowers, too, are smaller, but more numerous on the spikes, and of a vivid scarlet colour on spikes from 2 to 3 ft. in height.

L. Gerardi is a hybrid raised by Messieurs Chabanne and Goujon from that superb variety of *L. cardinalis* named Queen Victoria, the seed parent being an improved variety of *L. syphilitica*, with taller and more robust flowering stems than those of the typical species. The raisers named the hybrid in compliment to Mons. Gerard, director of the botanical collections in the park of Tête d'Or, under whose supervision the experiments and culture were carried on.

Lobelia Gerardi is a vigorous growing and very continuous flowering plant. Before the flowering stems make their appearance it forms a rosette of leaves of a very pure green colour, and resembling the rosette of the wild Chicory. The running roots are abundantly furnished with fibres. When fully grown the plant attains a height of 4 to 5 feet; the strongest flowering stems are as thick as one's thumb at the base, and branch with from twelve to fifteen clusters of fine broad flowers, which all bloom together, the whole forming a compact, rigid pyramid needing no stake or prop to support it. All parts of the stems and leaves have lost the reddish tint of the Queen Victoria and also the somewhat glaucous hue of *L. syphilitica*, and are of a fine green colour; the calyx, however, is slightly reddish and ciliated on the margin of the sepals.

L. splendens.—This species is also

called *L. fulgens*, and is a brilliant and precious plant for the flower garden. Its leaves are long and narrow, and the flower-stalks taller and thicker than those of *L. cardinalis*, the flowers larger with broad over-lapping petals. The best known, and a handsome form of this, bears the name Queen Victoria. Its leaves are a deep purple colour, and the flowers a brilliant crimson-red. Firefly is the handsomest variety in this section, and was raised in Ireland. In good rich soil it attains to a height of 5 ft., whilst in colour the flowers are intensely vivid and rich. A merit of this kind is that it bears lateral flower-spikes around the central one much more freely than Queen Victoria, and these keep up a succession of bloom after the leading spike is past its best. Huntsman is another variety, brighter in colour than Firefly. Sir R. Napier, Rob Roy, and other varieties have been obtained from it. These vary in colour and habit very much, and as they are all robust, free-flowering plants, they are valuable in the autumn garden, giving brilliant effects until cut down by frost. The variety *igneae* has broader leaves and larger flowers.

This *Lobelia* suffers from a kind of rust, which fastens on the main fleshy roots when the plants are at rest, and rots them. This disease, working as it does at a time when growth is at a standstill, is not perceived in time to be checked, and makes its appearance towards the end of October or the beginning of November, especially if the weather be cold and wet. The plants should then be carefully taken up, reserving as much of the roots as possible, the soil being shaken off, and the roots well washed. The disease will be readily discovered by its rusty-looking spots, which must be cut out with a sharp knife, as the least portion will suffice to destroy the plant. After the plants are examined they may be potted or laid in a frame in some free sandy soil, and very fine specimens may be obtained by potting and plunging in a slight bottom-heat, keeping the top quite cool. In about a fortnight they will have made fresh fibre, and all danger will be past. They may then be kept in a cold frame during the winter, and planted out where desired in spring. The bottom-heat, however, is not indispensable; for they will succeed if carefully and sparingly watered after potting. All the plants of the *fulgens* group show their great beauty only on peaty or deep leafy and moist soils; often on loamy soils the growth is short and weak, the

flowers poor, and under such conditions they may not be worth growing.

L. syphilitica.—A variable species, not very showy, hardy and robust in free moist soils, it stands our winters well, and is prolific in varieties of violet and purple, varying to rose and white. *L. hybrida* of gardens appears to be a hybrid between *L. splendens* and *L. syphilitica*, though this is uncertain. Its fine rich violet-purple flowers mark it out for special distinction. It is valuable for grouping in the flower garden or mixed border, and is one of the hardiest of the hardy Lobelias. It may be left out during winter with safety, and can be lifted, divided, and replanted in spring. The leaves are almost as broad as those of *L. cardinalis*, glandular, hairy, and with the long sepals and hairs of *L. syphilitica*.

L. Tupa.—This is also known as *Tupa Fuelli*, and although a native of Chili, will be found to stand well in the south protected with sifted ashes, gravel, or other loose material in autumn. It is best, however, against a south wall or in front of a house, and when doing well often attains a height of 6 to 8 ft.; the flowers large, brick-red, in large racemes, from July to September. *L. Cavanilles* is said to be amenable to the same treatment as above. In deep free soils near the sea *L. Tupa* is sometimes a very distinct and handsome plant, and is best fitted for borders among large plants or for a warm corner among shrubs.

L. Erinus.—The dwarf section of annual Lobelia is one of the most important, being much used among half-hardy bedding plants. The chief points to start with are good soil and well-grown established plants. The soil should be light and rich, and rest on a dry bottom perfectly drained. On a porous bottom it may be plentifully watered during a dry time in summer without fear of injuring the roots. The roots cannot make way, nor can the plants thrive in a strong adhesive soil of clay or heavy loam, and if the soil be heavy, it must be lightened by a plentiful addition of leaf-mould, sand, or peat. This Lobelia thrives admirably in equal parts of some sandy loam and leaf-mould with a sand to keep it open. Charcoal dust and peat form good additions to loam, as also does spent manure from Mushroom beds. A slight mulching of one-year-old sifted hot-bed manure will be found useful for keeping out the drought and nourishing the roots through a dry season. One of the difficulties in carrying dwarf Lobelias in full beauty through the season is the freedom with which they

seed, and the moment the flowers fade they should be picked off every week throughout the season. Dwarf Lobelias may be propagated by seeds or cuttings, or by lifting the plant, potting it, and placing it in a gentle bottom-heat until established; then setting it on a light airy greenhouse or forcing-house shelf, when it may be increased by cuttings and root-division in the spring. Increase by cuttings, and potting a few old plants in autumn, is the best method of preserving and increasing special varieties. They strike freely in a brisk heat in a moist pit or frame in spring. The cuttings should be potted by the end of May in the same way as seedlings sown in heat in September, October, or February. Those who want early Lobelias from seed should sow in the autumn, and prick the seedlings off in boxes or pans, or shift them into 2½-in. pots before winter; store them on shelves near the light, and well exposed to air; shift them again in March into 6-in. pots of equal parts of leaf-mould and loam, and they will be perfect for planting by the end of May. Spring-sown seedlings may go into smaller pots, and be planted rather more closely, but will not flower so early nor so well. On the whole, autumnal propagation, by cuttings or seeds, is preferable to sowing in spring.

The varieties are numerous, and it is difficult to make a selection to suit every locality. *L. Erinus* is divided into five sections—viz. *compacta*, of which there is a white form; *speciosa*, of which the best are *Blue Stone*, *Ebor*, *Blue Beauty*, *Emperor William*, *Blue King*, *Lustrous*, *Brilliant*; *ramosoides*; *pumila*, of which *grandiflora* and *magnifica* are fine forms, as is also the pure white *Mrs. Murphy*; and *Paxtoniana*, which is a lovely blue. The double variety is also beautiful where it succeeds, but it is hardly to be depended upon. Sometimes it forms a sheet of bloom, and at others the shoots run up through it, as it were, and prevent it from blooming, giving it the appearance of tufts of Grass.

Other dwarf Lobelias are *ramosa*, with large light-blue flowers, and *coronopifolia*, also with large blue flowers. Both are half-hardy annuals, requiring the same treatment as *L. Erinus*. *L. ilicifolia* is another dwarf trailing species, a native of the Cape, and is best suited for growing in suspended pots in greenhouses, though in some localities it succeeds as a rock-garden plant.

LOISELEURIA.—A wiry little shrub, *L. procumbens*, growing close to the ground, the plants forming tufts with small reddish flowers in spring. Its bloom is never

attractive, and the plants transferred to gardens from the mountains usually perish, because perhaps the strongest specimens are selected instead of the younger ones. Its true home is the rock-garden, and it prefers deep sandy peat. Heath Order. Arctic and alpine Europe and Asia and higher Scottish mountains. *Syn.*, *Azalea procumbens*.

LOMARIA.—Ferns, for the most part tropical, and requiring artificial heat ; but in mild parts two or three thrive in the open air. *L. alpina*, a native of New Zealand, is dwarf and produces, from a creeping rhizome, abundance of dark shining green fronds, 4 to 6 in. in height. It is specially adapted for the rock-garden, should receive similar treatment to the *Ceterach* (to which it forms a charming companion), and should, like it, be associated with *Sedums* and alpine plants. *L. crenulata* is similar, but not quite so hardy, though it succeeds in the mildest localities, as will also the Chili *L. chilensis*, a Tree Fern of noble growth. These Ferns should be placed in the snuggest quarters of the hardy fernery, and care should be taken to protect them during severe cold.

LONICERA (*Honeysuckle*).—Graceful and fragrant woody climbers and bushes precious for gardens. The Twining Honeysuckles form a distinct group of species with whorled clusters of flowers terminating the young shoots. The Erect-growing or Bush Honeysuckles have the flowers axillary and generally in pairs. Among the twining species there are a few that have axillary flowers, and of these *Lonicera japonica* is a typical example, while the commonest example of the Bush Honeysuckles is the Tartarian Honeysuckle.

They all flourish best in a light rich soil in a fully-exposed sunny position. It is a mistake to plant Honeysuckles at the base of shady trees and expect them to climb up and produce crops of flowers as they do when in the open. Honeysuckles naturally delight to twine upon other plants, but in shade they do not flower. One often sees a thicket overrun with common Honeysuckle, but until the trees have been cut the Honeysuckle does not flower so well. It loves to ramble over a hedge, as we see it by the wayside, and in the garden one can make various hedge combinations with it and some other hedge plants, such as Sweet Briar and Holly. To cultivate Honeysuckles to perfection, they should not be planted near any other living shrub, but should be supported by a dead tree trunk or

trellis, as then the Honeysuckle gets all the food from the soil. This is why one sees plants of Honeysuckle on a wire trellis bearing much finer blooms than is the case when growing over trees or hedges. A good plan is to plant some in good soil against wooden posts at distances of 12 ft. apart, and when they have reached the top of the posts to connect them by a festooning chain from post to post, as Roses and Clematises are often done.

Some attention is required in pruning, especially the European and American deciduous species. The old stems should be cut away so as to encourage new ones, otherwise if allowed to go unpruned the plants die out. The Japanese Honeysuckles are more vigorous, and only require pruning to keep them in check. This is especially the case with *L. japonica* and its variegated form, which soon form an impenetrable mass of shoots, and that is why they should not be grown on an arbour or over a walk, as owing to the dense shade the under side becomes full of dead leaves and shoots. The Dutch and similar growing kinds are best suited for arbours.

L. Caprifolium (*The Goat's-leaf Honeysuckle*) is a common plant, but not a true native, though it occurs occasionally in a naturalised state. The flowers, borne in clusters, have long tubes, yellowish and blush tinted, and very fragrant, coming in May and June, succeeded in autumn by yellowish berries. It is a robust twiner, and grows wild in chalky districts in hedges and woods. There are numerous recorded names of varieties of this Honeysuckle, among them being *rubella*, *pallida*, *verna*, *villosa*, *atrosanguinea*, and *Magnevillei*. The last-named is one of the most distinct.

L. confusa of De Candolle is the beautiful Honeysuckle that is grown under the name of *L. Halleana*. A slender plant with long twining branches, the leaves are ovate, and not pinnatifid as in *L. japonica*, deep green, with not such a ruddy tinge as in *L. japonica*, neither is there a variegated form. The flowers are in pairs from the axils of the leaves on the tips of the young shoots, pure white when first expanded, changing to yellow, and this is the character that makes the plant so beautiful apart from its fragrance and free flowering. It flowers throughout the summer, and its lithe, slender stems will soon reach the top of a wall or tree stump.

L. flava (also named *L. Fraseri* in collections) is a moderate climber, with

broad ovate leaves, pale green beneath, and terminal clusters of flowers, bright rich yellow fading to a deeper shade, and delightfully fragrant. It grows most luxuriantly in the more Southern States, and hence is best when planted against a sunny wall in this country.

L. flexuosa.—Out of flower this resembles *L. confusa*, but the leaves, though ovate and of a ruddy tinge, show no inclination to become pinnatifid or sinuated. The flowers are tubular, reddish outside, whitish inside, and fragrant. At midsummer it produces quite a mass of sweet-scented blossoms and continues for a long time in bloom.

L. grata (*The American Woodbine*).—This is a vigorous grower, having broad glaucous leaves (almost evergreen). The

flowers are in clusters, whitish, with a purple tube fading to a yellowish shade, and fragrant. It flowers in May, and grows wild in rocky woodlands in the New England States.

L. japonica (*Japan Honeysuckle*).—This is as hardy as the common Honeysuckle, and retains its foliage during winter.

It may be distinguished from the other two Japanese species by its slender growth, deep green shining leaves, which have a marked tendency to vary from the normal ovate form to a pinnatifid or Oak-leaved form, and this tendency is most marked in the varieties named *heterophylla* and *diversifolia*, though at all seasons it is evident in the true plant. The flowers of *L. japonica* are in pairs on the tips of the young shoots, tubular, slender, white tinged with red, and fragrant, from midsummer till the beginning of autumn. Being hardy, there is no need to protect by a wall, but it is generally seen, especially the variegated form *aureo-reticulata*, as a wall-covering. *Syns.*, *Brachypoda*, *chinensis*, *aureo-reticulata*, and many others.

L. Periclymenum (*Honeysuckle: Woodbine*).—A native of the middle of Europe and northwards, and is a true native in England, where it is generally seen in hedgerows and thickets. Numerous varieties of this species have sprung up either wild or under cultivation. Some differ in regard to colour of flowers, others in time

of flowering, and these are the most important. The wild form flowers about midsummer, according to the season, but the variety *serotina* continues to flower till autumn, and is known as the Late Dutch Honeysuckle, as its flowers are decidedly redder than those of the type. Another variety, *belgica*, is popularly known as the Dutch Honeysuckle, as distinguished from the Late Dutch, and it is a stronger growing plant than the type. Its branches are purplish and its flowers are reddish outside, yellowish within.

L. semperflorens is probably a variety of *Periclymenum*, though Koch places it as a variety of the allied species *L. etrusca*. The Oak-leaved Honeysuckle (*quercifolia*) is a variety of the common form, having leaves sinuated like those of the Oak.

L. sempervirens (*Trumpet Honeysuckle*) the most beautiful Honeysuckle that has come to us from America, both for the greenhouse and the open garden, where it flourishes well in the southern counties, and none of the Honeysuckles have such brilliant flowers. It is a robust-growing climber, quite evergreen when protected. From the beginning of summer till the end it bears loose clusters

of long, tubular flowers, which are scarlet outside, yellow within. It is best against a warm wall in the cooler parts of the country. There are several named varieties of this plant but not very distinct.—W. G.

L. fragrantissima (*The Winter Honeysuckle*).—Among the earliest of all hardy shrubs whose flowers greet the new year are this species and its close ally, *L. Standishi*. Neither of them can be called showy, yet they are both well worth growing, because their flowers, although small, are abundant, and have besides a fine fragrance. *L. fragrantissima* is one of Fortune's introductions from China. It is a deciduous shrub (not evergreen, as the books so frequently have it), of low spreading growth, with short leaves, which, except when young, are nearly or quite devoid of hairs (*L. Stan-*

Lonicera japonica.

Lonicera sempervirens.

dishi, on the other hand, has hairy ciliated leaves). The flowers are in several pairs from the joints of last year's wood, and they are creamy white or pale yellow. This Honeysuckle is useful for early forcing, a few plants in flower filling the greenhouse with their fragrance. In the

pale green hairy leaves, and large pink flowers. It thrives in the open air in summer, and is a beautiful plant for festooning old stumps, or for trailing over dead branches placed against a warm south wall. It may be easily raised from seed in heat in early spring or autumn and kept

Lonicera periclymenum (Honeysuckle).

open it likes a sunny, sheltered spot, not because it is tender, but because it blooms more freely, and the flowers, appearing as they do in these inclement January days, deserve all the protection that can be conveniently given them.—B.

LOPHOSPERMUM.—*L. scandens* is a tender climber with long slender stems,

through the winter, but the best plan is to lift the plants in autumn and to winter them in a greenhouse.

LOTUS (*Bird's-foot Trefoil*).—Trailing or half shrubby herbs, the one best worth growing being the native *L. corniculatus*, which occurs in almost every meadow, or pasture, forming tufts

of yellow flowers with the upper part often red on the outside. Though so common, it is worthy of a place in the garden. The double-flowered variety is the best, as the flowers continue longer in perfection. *L. creticus*, *maroccanus*, *sericeus*, are found in botanical gardens, but are not so pretty. *L. Jacobæus*, a tender species with almost black flowers, succeeds in the open air in summer, and is all the better for planting out. The Lotus is best planted so that its shoots may fall in long and dense tufts over the face of stones.

LUNARIA (*Honesty*). — When well grown this old-fashioned plant *L. biennis* is beautiful, not only on account of its fragrant purple blossoms, but from the silvery flat seed-pods that succeed them. In borders, on the margins of shrubberies, and in half-shady situations, it is effective in April and May, in any ordinary light garden soil. *Honesty* is charming in a

Lunaria biennis (seed vessels of *Honesty*).

semi-wild state on chalky or dry banks and in open bushy places. Seed should be sown every spring, and the plants should be thinned out during growth in order to make good ones for the next year. *L. rediviva* is a perennial similar to the *Honesty*, but with larger and more showy flowers. It is 2 or 3 ft. high, and flowers in early summer, doing best in half-shady borders of good light soil. Division or seed. Mountain woods of Europe. Cruciferae.

LUPINUS (*Lupine*). — Beautiful annuals, biennials, and perennials, chiefly

from N. America. The species in cultivation are few, though the names occurring in catalogues are numerous. The best of the perennials are—

L. arboreus (*Tree Lupine*).—A precious plant for dry soils and rough rocky banks or slopes, the scent of a single bush reminding one of a field of Beans. Its purplish variety is good, though not nearly so valuable, and there are some inferior yellowish varieties. The best variety is the yellow, because while there are good blue perennial Lupines, there is no other good yellow. It forms a roundish bush, 2 to 4 ft. high, and is easily raised

Lupinus arboreus.

from seed; handsome forms are increased from cuttings. It may be killed in severe winters, but is worth raising from time to time where the soil suits it. Mr. T. Smith, of Newry, has raised many good forms of this.

L. polyphyllus, one of the handsomest hardy plants, 3 to 6 ft. high, with tall flower-spikes crowded with blossoms, varying from blue and purple to reddish-purple and white; in summer thriving in open positions in any kind of garden soil. It is a fine plant for naturalising, as it holds its own against stout weeds. The principal varieties are *argenteus*, *flexuosus*, *laxiflorus*, *Lachmanni*, *rivularis*, and *grandiflorus*. N. America. Division: seeds.

L. nootkatensis is a dwarfer species, and has large spikes of blue and white blossoms. It flowers earlier than *L.*

polyphyllus, and continues in bloom for a long time, but it is not a good perennial, and requires to be frequently raised from seeds. N.W. America.

ANNUAL LUPINES are among the most beautiful of hardy annuals, extremely

Lupinus polyphyllus.

varied in colour, and of the simplest culture. As they grow quickly, they need not be sown till about the middle of April. They thrive in any common soil. *L. sub-carnosus* is a beautiful ultramarine blue, and should always be grown. *L. hybridus atrococcineus* is the finest of all, having long and graceful spikes of flowers

of a bright crimson-scarlet, with white tips. Other excellent sorts are *mutabilis*, *Cruikshanki*, *Menziesi*, *luteus*, *superbus*, *pubescens*, *Hartwegi*, and the varieties of *Dunnetti*. Many other sorts are so much alike that they are not worth separating. The smaller annual Lupines are very pretty, and could be charmingly used to precede late-blooming and taller plants.

LUZURIAGA.—*L. radicans* is a small Liliaceous evergreen from Chili almost hardy in the mildest localities, though even in these it does not thrive so well as in a cool house. It is worthy of a trial in a cool bed of peat, on the north side of the rock-garden, among the larger alpine shrubs.

LYCHNIS (*Campion*).—Plants of the Pink family, among which are a few well suited for the garden. All are perennial.

L. alpina is a diminutive form of *L. Viscaria*, the tufts being seldom more than a few inches high and not clammy. In cultivation it is pretty and interesting, if not brilliant, and may be grown without difficulty in the rock-garden, or in rather moist, sandy soil. A British plant.

L. chalcedonica.—An old border plant, $1\frac{1}{2}$ to 4 ft. high, with large dense heads of brilliant scarlet flowers, and of easy culture in any good ordinary soil. There is a handsome double scarlet variety. The double white and single white kinds are less desirable. Division.

L. diurna.—The double deep purple-red sort of this common native plant is very desirable, being very hardy and very showy, and never failing in any soil to produce a fine crop of bloom in early summer.

There are two double red varieties of *L. Flos-cuculi* (Ragged Robin), pretty border plants. Division.

L. grandiflora.—A handsome plant, typical of the numerous varieties now in cultivation under the names of *Bungeana*, and others which grow 1 to 2 ft. high, and bear flowers in a cluster of a dozen or so, each flower being 1 to 2 in. across, fringed at the edges, and varying from vivid scarlet to deep crimson, and from pink to white. If exposed to strong sun the colour of the flowers soon fades, but in a partially-shaded place they retain their true colour for a considerable time. They are good border flowers, thriving in warm sheltered situations in light soil, for though quite hardy they are apt to suffer from moisture and cold. They are greatly benefited by frequent transplanting, say every other year. All the varieties may be raised by seeds or from cuttings. *L. fulgens*, a Siberian plant, is similar to the forms of *L. grandiflora*.

L. Haageana is a reputed hybrid

between *L. fulgens* and *L. coronata* or *grandiflora*. It is one of the best of this valuable group of border plants, in itself extremely variable, affording nearly every shade of colour, from the brightest scarlet to white. The flowers are large, of good substance, and produced in the greatest

Double Ragged Robin.

profusion all through the summer months ; indeed, as a permanent "bedder" we have rarely seen its equal. Where it can be managed, a partially shady spot should be chosen for the most brilliantly coloured forms, as the flowers fade somewhat when exposed to bright sunshine. Apart from this they will be found to grow more strongly, and continue longer in beauty in a cool spot. The plants vary in height considerably, and this should be taken into account when choosing for permanent bedding use. The variety called *hybrida* is a veritable gem, dwarf, compact, and giving an abundance of prettily fringed, vivid scarlet flowers. The colours seem fixed, and we have now good distinct scarlet, crimson, pink, salmon, and several white forms, all worthy of attention, and suitable as substitutes for *Geraniums* in summer bedding. They can be increased with the greatest ease either by cuttings, division, or when in quest of new forms by seed, which is best sown as soon as ripe in boxes and placed in a cold frame. The seedlings by the end of May will be ready to plant in their permanent quarters. They may almost be treated as annuals or biennials, especially in heavy soils,

where the hopes of their living through severe winter in northern counties will be limited indeed. In the neighbourhood of London they give very little trouble, and are a source of much enjoyment.

L. Lagascæ.—A lovely dwarf alpine plant, with many bright rose-coloured flowers, about $\frac{3}{4}$ in. across. It is suited for adorning fissures on the exposed faces of rocks, associated with the smallest alpine plants. It is easily cultivated in the rock-garden in any free sandy or gritty soil. An exposed position should be preferred, as the plant is very free in growth. The flowers appear in early summer, and if not weakened by shade, or by being placed in frames, are in fine condition when the plant is about 3 in. high. Readily increased by seed. *Syn.*, *Petrocoptis Lagascæ*.

L. Viscaria (*German Catchfly*).—A British plant, with long Grass-like leaves, bearing in June many showy panicles of rosy-red flowers, on stems 10 to nearly 18 in. high. The bright-coloured variety called *splendens* is the most worthy of cultivation. *L. V. alba*, a charming white variety, is worthy of a place in gardens, as also is the double variety, which has rocket-like blooms. They are excellent for the rougher parts of the rock-garden, and as border plants on dry soils. The double variety is used with good effect as an edging plant about Paris. Easily propagated by seed or division.

Lycium chinense.

LYCIUM (*Box Thorn*).—

Rambling shrubs, the best-known being *L. europæum*, a common climber on cottage walls. Though not a showy flowering shrub, few others are so rapid in growth, so graceful, and so indifferent to the nature of the soil. It is also suited for covering porches, pergolas, and arbours, and in late summer and autumn, when every long drooping branch is thickly hung with small orange-scarlet berries, it is pretty. The flowers are small, purple and white, and the

unripe berries are of the same tints. The description of *L. europæum* may be taken as applying to the other kinds in gardens, as they are all much alike, though differing more or less in a botanical sense. The commonest kinds are *L. chinense*, from China; *L. barbarum*, from North Asia; *L. afrum*, from North Africa; *L. Trewianum*, and *L. ruthenicum*. They are of rapid growth, and therefore suitable for covering high walls, though all are deciduous. Sometimes hedges are made of Box Thorns, for, as they all throw up numerous suckers, the hedge soon becomes thick. There is a species named *L. chilense* against one of the walls at Kew, which seems to be more rapid in growth than the rest.

LYCOPODIUM (*Ground Pine*). — *L. dendroideum* is a very distinct Club Moss, worth a place in the rock-garden, its little stems, 6 to 9 in. high, much branched, and clothed with small, bright, shining green leaves. It flourishes best in a deep bed of moist peat in a low part of the rock-garden, where its distinct habit is attractive at all seasons. Difficult to increase, it is rare in this country. N. America, in moist thin woods.

LYGODIUM (*Climbing Fern*). — *L. palmatum* is an elegant North American twining fern, hardy in a deep, peaty, moist soil if in a sheltered and partially shady position. The wiry stems are furnished with delicate green fronds. It may be allowed to trail on the ground, but it prefers to twine around the branches of some shrub.

LYONIA. — Plants allied to *Andromeda*; indeed the species belonging to it, numbering about three, are sometimes called *Andromedas*. They are not important, but would add interest to a collection of peat-loving shrubs. The chief are *L. ligustrina*, *frondosa*, and *rubiginosa*, which have evergreen foliage and small white blossoms.

LYSIMACHIA (*Loosestrife*). — Plants of the Primrose family of much diversity of habit. The most familiar example is the common creeping Jenny (*L. Nummularia*), than which there is no hardy flower more suitable for any position where long-drooping, flower-laden shoots are desired, whether on points of the rock-garden, or rootwork, or in rustic vases, or on steep banks, growing in any soil; in moist soil the shoots attain a length of nearly 3 ft., flowering throughout their extent; it is easily increased by division, and flowers in early summer and often throughout the season. There is a yellow-leaved variety (*L. N. aurea*), which retains its colour

well, can be readily increased, is useful for rock-gardens or borders, and merits its name. The other kinds are tall and erect. *L. vulgaris*, *thyrsiflora*, *lanceolata*, *ciliata*, *verticillata*, *punctata*, and *davurica* are all 2 to 3 ft. high, have spikes of yellow flowers, and, delighting in wet places, are suitable for the sides of ponds, lakes, streams, and similar spots. Indeed, they grow almost anywhere, but in a border they must have a place to themselves, as by their spreading they soon destroy weaker subjects. *L. clethroides*, a Japanese species, is a graceful plant, 2 to 3 ft. high, with long nodding dense spikes of white blossoms, and the leaves in autumn of brilliant hues. *L. Ephemerum* is a similar plant, from S. Europe, but is scarcely so fine. There are some beautiful species, such as *L. atropurpurea* and *lupinoides*, which are rare.

LYTHRUM (*Purple Loosestrife*). — The common waterside *L. Salicaria* is the most familiar plant of this genus, and one of the showiest. It is well worthy of culture where it is not plentiful. The beauty of the ordinary wild kind is surpassed by the varieties originated in gardens, of which *superbum* and *roseum* are the finest. The colour of these is a much clearer rose than that of the wild kind, and the spikes are larger, particularly those of *superbum*, which, under good cultivation, are 5 or 6 ft. high. These plants are well worth growing by lakes or in boggy ground, and are easily increased by cuttings, which soon make good flowering specimens. Isolated plants in good soil make well-shaped bushes, 3 or 4 ft. high and as much through, and look better than when planted closely in rows.

L. virgatum, *alatum*, *Græfferi*, *flexuosum*, and *diffusum*, smaller plants, and not so showy, are not without beauty.

MACHÆRANTHERA. — Biennial and annual Composite plants, native of N. America, now classed with *Aster*. *M. canescens* and *tanacetifolia* are in cultivation, and are scarcely worth growing.

Macleaya. See **BOCCONIA**.

MACLURA (*Osage Orange*). — A tree of great use in its own country, and occasionally grown with us in the south and near the sea, but of slight value for its beauty, and as a fence not nearly as good as our native Whitethorn or some of the American kinds of Thorn.

MACRORHYNCHUS. — A Composite of N. and S. America, allied to the *Dandelion*. *M. grandiflorus*, a Californian plant, is a rather handsome species with

large yellow flower-heads, but it is rarely found in gardens.

MADARIA (*Mignonette Vine*).—*M. elegans* is a hardy Californian annual with showy yellow and brown flowers, requiring the treatment of hardy annuals.

MADIA.—A hardy annual Composite of slight ornamental value.

MAGNOLIA (*Lily Tree*).—Most beautiful of flowering trees and shrubs, there are about twenty species of *Magnolia* known, and all but some half-dozen or so are in cultivation in this country. The headquarters of these trees are in China and Japan, a few are peculiar to the Himalayan region, and a few more to North America. A glance at the engraving, representing a very fine specimen of the Yulan, will show what glorious effects may be obtained in spring, in the South of England at any rate, by its use. It is true enough, unfortunately, that frosts sometimes injure the flowers and change their snowy whiteness into an unsightly brown. Perhaps the reason that this *Magnolia* and its allies are not more often met with in gardens is owing to the fact of their not transplanting readily. The best results are obtained if the plants are planted just as growth begins in spring. The fleshy roots when injured rot rapidly, and when autumn-planting has been practised, many succumb to the ordeal, those that do not do so outright often struggling on in a pitiful plight for years. A little care in transplanting in spring, in sheltering with mats from dry winds or hot sun, and in syringing the wood to prevent shrivelling, until the plants are established, would do much to prove that the *Magnolias* can be planted with every prospect of success. Some species occasionally ripen seed freely in this country, and it is well worth while to sow this seed at once. If dried and kept like other seeds until the following season, all chance of germination will have passed. All the species of the natural order *Magnoliaceæ* have seeds which retain their vitality for but a very limited period.

M. acuminata (*Cucumber Tree*) makes a noble specimen when planted singly in the park or pleasure-ground. It is deciduous, the leaves varying from 5 in. to 1 ft. in length, and glaucous green, the flowers yellow-tinged, bell-shaped, and slightly fragrant. There are fine examples of this tree at Kew, in the gardens of Syon House, and Claremont. In its native country it attains a height of from 60 to 90 ft., with a trunk from 2 to 4 ft. in diameter. The yellow Cucumber

Tree (*M. cordata*) is regarded by Professor C. S. Sargent as a variety of *M. acuminata*. It is a rare plant in a wild state, as it does not appear to have been collected since Michaux found it in Georgia.

M. Campbelli, one of the most gorgeous of Indian forest trees, has not fulfilled the expectations of those who took so much trouble in introducing the species to British gardens. In a wild state it attains a height of 150 ft., and the fragrant flowers, varying from deep rose to crimson, come before the leaves. Probably the finest specimen in the British Islands is the one at Lakelands, near Cork, which ten years ago was 35 ft. high. In 1884 it flowered for the first time, and it has also flowered well at Fota in the same district.

M. conspicua.—In its typical form this has snowy-white flowers, which are borne in the greatest profusion in the latter part of April and beginning of May. Splendid specimens of this beautiful Chinese and Japanese tree are to be seen at Gunnersbury House, Syon House, and Kew. *M. Yulan* and *M. precia* are names under which this is found in some books and gardens. Several hybrid forms between this species and *M. obovata* occur in gardens; of two of these, *M. Lenné* and *M. Soulangeana nigra*, coloured plates have been published in *The Garden*. *M. Soulangeana* has flowers similar in shape and size to those of typical *M. conspicua*, but they are deeply tinged with red; *M. Soulangeana nigra* has dark plum-coloured flowers. Both these bloom a week or ten days later than the type. Other seedling forms or slight varieties of the Yulan are *M. Alexandrina*, *M. cyathiformis*, *M. speciosa*, *M. spectabilis*, *M. superba*, *M. triumphans*, and *M. Yulan grandis*.

M. Fraseri, a native of the southern United States, is recognised by its green spathulate leaves, measuring about 8 in. to 1 ft. in length, and about 3 or 4 in. across at the widest part, the flowers, 3 or 4 in. in diameter, are creamy-white in colour, and appear later than those of any other cultivated species. In a wild state the tree attains a height of from 30 to 50 ft.

M. glauca, the Laurel *Magnolia* or Sweet Bay of the eastern United States,

Magnolia glauca.

is a delightful sub-evergreen shrub, with leathery leaves, bluish-green above and silvery below. The flowers are globular in shape, very fragrant, opening of a rich cream colour and gradually acquiring a pale apricot tint with age. In a wild state this species occurs in swamps and attains a height of 20 ft. It is hardy and easily grown in Britain in peat soil.

M. grandiflora, the great Laurel Magnolia of the southern United States, is—in England—best treated as a wall-plant; under these conditions it thrives well and flowers freely. In order to form some idea of the beauty of this species it is necessary to see it in large symmetrical stately trees in the west of France, where climatic conditions obtain which more nearly approach those of its native habitats. A correspondent in the West

Magnolia grandiflora.

of England writes to *The Garden* as to the culture of this plant: "At one time it was thought necessary to protect the trees with mats during the winter, but this practice, which necessitated restricting the growth considerably, has largely ceased, and the trees in some instances have attained a very great height. For instance, there is one under my charge that is now fully 50 ft. high. The bole of the stem is slightly over a yard in circumference. In some seasons several scores of blooms are borne by this tree, but during the winters of 1891 and 1892 many of the more exposed points were badly injured by frosts, and the bloom lessened in quality accordingly. A very exposed position is not suitable for this heavy-foliaged tree, and

shelter from cold winds is desirable. Where the evergreen Magnolia does best is in the nooks between bay windows or irregular fronts of dwelling-houses, but-tresses on extra high walls also affording a good shelter. The best instance of what can be done in the way of clothing extra high yet sheltered walls with evergreen magnolias is to be seen at Canford Manor, Wimborne, Dorset, while there are also several fine specimens against high walls at Ashton Court, near Bristol. It is quite useless to plant them in a tiny hole, but the site should be well prepared by trenching or forking peat and leaf soil freely into common garden soil, or, better still, fresh loam, a space not less than 3 ft. by 30 in. being prepared for each tree. Once the trees have attained a good size, no further trouble need be taken with the roots, as they are quite capable of foraging for themselves. In planting, it is advisable to moisten and then slightly loosen the ball of soil, some of the roots being spread out. During the first summer the soil about the roots should be examined occasionally and watered thoroughly when dry. The tops branch naturally, and all that need be done is to spread them out thinly, and to keep the growths secured to the walls or trellis. In after years the strongest branches will require to be kept to the walls by means of strips of leather and strong nails, the side shoots being tied to these with osier twigs. They ought not to be very closely trained, or so much so as to present a painfully neat appearance, but if the branches or shoots are left too long the strong winds may break them off."

M. hypoleuca.—This is the wood commonly used by the Japanese in the manufacture of objects to be lacquered; it is preferred for sword sheaths, and the charcoal made from it is used for polishing lac. In the southern part of Yesso it is abundant in the forests, and forms fine trees 60 ft. or more in height, with a trunk diameter of 2 ft. The leaves are 1 ft. or more long, and 6 or 7 in. wide, dark green and smooth above, and clothed with white hairs beneath. The flowers are creamy-white in colour, deliciously fragrant, and when fully expanded measure 6 or 7 in. across, the brilliant scarlet filaments forming a striking contrast to the petals. There are no large specimens as yet in this country, but as the species thrives well in the north-eastern United States, it is fair to assume that it will do well in Britain.

M. Kobus, a Japanese species, grown in the United States under the name of

Magnolia in a Japanese garden.

M. Thurberi. It is hardy in the south of England, having been grown outside for several years at Kew. The leaves are 6 or 7 in. long by about half as much in width, the flowers 4 to 5 in. in diameter, creamy-white. Professor Sargent, who found the species growing in the forests of Hokkaido, in Japan, describes it as a tree 70 to 80 ft. high, with a tall straight trunk 2 ft. in diameter. He says the flowers appear before the leaves, about the middle of May.

the South of England, and bears freely its purple, sweet-scented flowers, though not in the same profusion as are those of the white-flowered *M. conspicua*. This species has a number of synonyms, amongst which the following are the most frequently met with in books and nursery catalogues : *M. discolor*, *M. denudata*, *M. liliflora*, *M. purpurea*, *Talauma Sieboldi*, &c. There are several varieties, but these differ so slightly from each other and from the type, that descriptions without

Magnolia obovata var.

***M. macrophylla*.**—This, unfortunately somewhat tender in a young state, is worth growing simply for its beautiful leaves, which are green above and clothed with white hairs beneath, and attain a length of upwards of 3 ft. The open bell-shaped fragrant flowers are white with a purple blotch at the base of the inner petals, and measure 8 or 10 in. across. It is a lovely flowering tree on warm soils in the southern counties of England, as at Claremont.

M. obovata is a native of China; in Japan it only occurs in cultivation. It is a dwarf-growing bush, perfectly hardy in

good coloured figures would be next to useless. The best are *Borreri*, *angustifolia*, and *erubescens*.

***M. stellata*.**—An excellent coloured plate of this very beautiful Japanese shrub was published in *The Garden* in June 1878, under the name of *M. Halleana*. This species is the earliest of the *Magnolias* to flower, and it should be extensively grown for the beauty of its starry white flowers. A variety with blush-coloured flowers has been sent from Japan by Mr. Maries. Both are dwarf-growing deciduous shrubs.

M. tripetala, a native of the southern United States, has large slightly-scented white flowers, from 5 to 8 in. across, and obovate-lanceolate leaves, from 1 to 3 ft. in length. In a wild state the tree rarely exceeds 40 ft. in height. Philip Miller was the first to introduce this fine species to British gardens. Other names for it are *M. Umbrella* and *M. frondosa*.

M. Watsoni.—A coloured plate of this beautiful Japanese species was published in *The Garden* in December 1883, under the name of *M. parviflora*; at that time it had not flowered in British gardens. It is hardy, has large creamy-white fragrant flowers with petals of great substance and deep red filaments, which add materially to the beauty of the blossoms.

MALAXIS.—Terrestrial Orchids, of botanical interest mainly, and fitted for the bog garden.

MALCOLMIA (*Virginian Stock*).—The old *M. maritima* is a charming dwarf hardy annual, and grows in any soil. The varieties are—the white (*alba*), *albana*, a dwarfer white than the other, and *Crimson King* (*kermesina*), a dwarf deep red sort, and these are all worthy of culture. The *Virginian Stock*, like many other annuals, does not show its full beauty from spring-sown seedlings, and where it sows itself in the gravel it is often handsome. Being easily raised it is a good surfacing plant in the spring or early summer garden, bolder flowers standing up from its pretty sheets of

Magnolia stellata.

The true *M. parviflora* is probably not in cultivation in Britain.—N.

Magnolia acuminata, N. Amer.; *Bailloni*, Cambodia; *Campbelli*, Himalayas; *compressa*, Japan; *cordata*, N. Amer.; *dealbata*, Mexico; *Duperreana*, Cambodia; *Figo*, China; *Fraseri*, N. Amer.; *glauca*, N. Amer.; *globosa*, Himalayas; *grandiflora*, N. Amer.; *Griffithii*, Himalayas; *hypoleuca*, Japan; *inodora*, China; *insignis*, E. Indies; *kobus*, Japan; *macrophylla*, N. Amer.; *mutabilis*, obovata, Japan; *parviflora*, *pterocarpa*, Himalaya Japan; *portoricensis*, Porto Rico; *parvifolia*, Japan; *pumila*, Java, China; *punduana*, Himalayas; *salicifolia*, Japan; *Schiedeana*, Mexico; *stellata*, Japan; *Umbrella*, N. Amer.; *Vrieseana*, Celebes; *Yulan*, China.

Mahonia. See BERBERIS.

MAIANTHEMUM (*Twin-leaved Lily of the Valley*).—A plant allied to the Lily of the Valley, *M. bifolium* is a native of our own country. Its habit and relationship make it interesting, and it is easily grown in shady or half-shady spots, and under or near Hollies or other bushes. It is not fitted for the border, and is more suitable for the rock-garden. *Syn.*, *Convallaria bifolia*.

bloom, and in flakes, or masses, or beds, it is pretty and effective.

MALOPE.—*M. grandiflora* is one of the most showy of hardy annuals, and effective where a bold, crimson flower is desired. It is 18 to 24 in. high, and the better the soil the finer will be its bloom. If the Malope be sown in the open, the ground should be prepared by digging and manuring, the seeds being covered to the depth of $\frac{1}{2}$ in. in light rich soil, gently pressed down. There is a white variety, *M. g. alba*. The variety *M. g. rosea*, white flushed with rose, is pretty and distinct. *M. trifida* is smaller in every part, but showy. These bold annuals are rarely used with good effect. Like all annuals, they lend themselves to rotation in the flower garden. If from any cause the beds or borders get worn out, it is worth while to try the effect of a crop of the best annuals. The Malopes, being vigorous

plants, are, as a rule, best in masses or groups. S. Europe.

Malus. See PYRUS.

MALVA (*Mallow*).—Stout and sometimes showy perennial and half-shrubby plants of which there are few pretty garden plants; the majority being coarse and weedy. One of the most beautiful is the white variety of the native Musk Mallow (*M. moschata*), which is charming when in flower. It is a branching bush, with stems about 2 ft. high, and many flowers 1 to 1½ in. in diameter. It is a hardy perennial, will grow in almost any soil, is useful for cutting, and is slightly Musk-scented. *M. campanulata* is a beautiful dwarf plant, but rare and not hardy except in very mild districts. It is dwarf and spreading, and bears numerous lilac bell-shaped flowers. *M. Alcea*, *Moreni*, and *mauritanica* are worth growing in a full collection, and so is the annual *M. crispa*, 3 to 6 ft. high—an erect pyramidal bush of broad leaves, with a crimped margin, pretty in groups, beds, or borders. By sowing in cool frames and planting it out early in May, strong plants may be obtained early in the season.

MALVASTRUM (*Rock Mallow*).—These are in flower like Mallows, but dwarfer, not quite hardy, being natives of the warmer parts of America. *M. Munroanum* is a dwarf plant with rather small orange-red flowers, and *M. lateritium*, a dwarf native of Buenos Ayres, has brick-red flowers. Sometimes in mild districts these plants thrive in the rock-garden or well-drained borders, in light warm soil. *M. coccineum* has flowers of a brick-red and blue-grey leaves. *M. gillissi*, crimson flowers. Dry and warm positions on the rock garden.

MANDRAGORA (*Mandrake*).—Curious plants of the Solanum family, suitable mainly for botanical collections. They are easily grown in warm, free soil, and enjoy borders at the foot of south walls.

MARGYRICARPUS (*Pearl Berry*).—Small wiry shrubs, natives of the mountains and cool parts of S. America, the flowers not showy, but the berries rather pretty. One cultivated kind, *M. setosus*, is best suited for the rock garden in dry soil.

MARRUBIUM.—Unattractive plants of the Sage order, of which the common Horehound (*M. vulgare*) is the best known.

MARSHALLIA CÆSPITOSA.—An interesting Texan plant, from 6 in. to 9 in. high, each stem having a single Scabious-like white flower-head about 1½ in. across.

It is of perennial duration, and flowers the second season from seed, forming a neat border plant, blooming in summer in light garden soil. Although not showy, its flower-heads are so distinct that it is worth a place in the herbaceous border.

MARTYNIA.—*M. lutea* is a pretty Brazilian annual, about 1½ ft. high, with large roundish leaves and handsome yellow flowers in clusters, useful for beds, groups, and borders. It requires a light, rich, cool soil, a warm place, and frequent watering in summer. *M. fragrans*, another species, has sweet-scented flowers, and, under similar conditions, thrives in the open air in summer. It is best in rich borders, or among groups or beds of curious or distinct plants. *M. proboscidea* and others are less desirable. Seed.

MATRICARIA (*Mayweed*).—Weeds, excepting the double variety of *M. inodora*, which is a pretty plant with feathery foliage somewhat like Fennel, and with large white flowers, perfectly double. It is creeping, requires much space, and pegged down forms a dense mass which has a pretty effect in autumn. It is hardy, and perennial on most soils, and is easily propagated by cuttings or division in autumn or spring. *Syn.*, *Chrysanthemum inodorum* fl.-pl.

MATTHIOLA (*Stock*).—Annual or perennial herbs, sometimes inhabiting sea cliffs. From a few wild kinds have been obtained the numerous varieties of the garden Stocks, which have so long been among the best of our open-air flowers. The principal of these species are *M. incana*, *M. annua*, and *M. sinuata*. *M. incana* grows wild on cliffs in the Isle of Wight, and is the origin of the Biennial, or Brompton and Queen Stocks; *M. annua* has yielded the Ten-week Stocks, and *M. sinuata* the others. These three primary divisions—the Ten-week, Intermediate, and Biennials—require each different treatment, and Stocks are so easily grown, so fragrant and handsome, that they will ever deserve care in our gardens.

TEN-WEEK STOCKS, if sown in spring, will flower continuously during the summer and autumn. The finest strain is the large flowering Pyramidal Ten-week, vigorous plants, each branching freely, bearing a huge main spike of double flowers and numerous branching spikes in succession. A bed of these Stocks should be grown if cut flowers are in request during the summer. The seed may be sown at any time from the middle of March onward, but it is always well to get Stocks from seed early. The seed can be sown thinly in pans or shallow

boxes, in a gentle heat, and, as soon as the plants can be handled without injury, they should be transplanted to other pans or boxes and grown on quickly, care being taken not to draw them so as to make them lanky. There are various places in most gardens where a bed or patches of Stocks might be grown with advantage, and, given good rich soil, they will amply reward the grower. The German growers have a formidable list of kinds, many of which are more curious than showy. There are, however, sufficient good colours among them, such as crimson, rose, purple, violet, and white, to yield distinct hues. There is a strain of English-selected Stocks, known as Pyramidal, which are of tall growth, and remarkable for their large pyramids of flowers, and there is a very distinct type known as Wallflower-leaved, which was introduced many years ago from the Grecian Archipelago, and which has shining deep-green leaves, not unlike a Wallflower. In all other respects the type is like the ordinary German Stock. One of the finest varieties of this type, and one of the most beautiful Stocks in cultivation, is known as Mauve Beauty. It has huge heads of pale, lustrous, mauve-coloured flowers. The culture for the Ten-week Stock will answer for this. The autumn-flowering strain is very desirable, as the plants succeed the German varieties, and so prolong the season.

INTERMEDIATE STOCKS may be sown either in July or August, to stand the winter and flower early in the spring, or in March, to flower in the following autumn. The strain is dwarf and bushy, and very free-blooming, and the varieties may be said to be confined to scarlet, purple, and white. There is a strain grown in Scotland under the name of the East Lothian Intermediate Stock, and much used there for beds and borders, the climate exactly suiting it for late summer blooming. It is sown in the usual way about the end of March, planted out at the end of May when 3 or 4 in. high, and blooms finely through August and September, and even later, as the numerous side shoots give spikes of flowers. Thus, by using the autumn-sown Intermediate Stocks for early blooming, the ordinary large flowering German Ten-week Stock for summer flowering, and the later East Lothian Intermediate Stock for late summer, Stocks can be had in flower for eight or nine months of the year without intermission.

BIENNIAL STOCKS comprise the Brompton and the Queen, and they should be sown in June and July to flower in the

following spring or summer. They are closely allied, and are probably only varieties of the same kind; but the seed of the white Brompton is pale in colour whilst that of the Queen is quite dark. Old growers of the Stock assert that while the under side of the leaf of the Queen Stock is rough and woolly, the leaf of the Brompton Stock is smooth on both sides. Of the Queen Stock there are three colours—purple, scarlet, and white; and of the Brompton Stock the same, with the addition of a selected crimson variety of great beauty, but somewhat difficult to perpetuate. Both types are really biennials. The seed should be sown at the end of July in beds, and the plants transplanted to the open ground in the autumn. The difficulty of wintering the Brompton Stocks deters many from attempting their cultivation, and many die, even in a mild winter. A well-drained subsoil with a porous surface soil suits them best, and shelter from hard frost and nipping winds is of great service. A second transplantation of the seedlings about December has been tried with success.

MAURANDIA.—An elegant Mexican twining plant, *M. barclayana* is often grown in the greenhouse, but hardy enough for the open air in summer, and admirably suited for covering trellises. The deep violet flowers are very showy, and there are also white (*alba*), deep purple (*atropurpurea*), and rosy-purple (*rosea*) varieties. Easily raised from seed sown in early spring in heat; they will flower in the following summer if planted out in May in good soil and sheltered situations.

MAZUS.—*M. pumilio* is a distinct New Zealand plant, vigorous, and creeping underground so as rapidly to form dense tufts, rarely more than $\frac{1}{2}$ in. high; the pale violet flowers are borne on very short stems in early summer, and the leaves lie flat on the soil. *M. pumilio* thrives in pots, cold frames, or the open air, and does best in firm, open, bare spots in the rock-garden, in warm positions in free sandy soil. Though not showy, it is an interesting plant, easily increased by division. Figwort family.

MECONOPSIS (*Indian Poppy*).—Handsome Poppyworts, the most familiar of which is the common Welsh Poppy (*M. cambrica*); the other kinds are natives of the Himalayas, hardy, but only of biennial duration. They may be easily raised from seed sown in spring; and, indeed, a good stock of strong plants can be ensured only by annual sowings. The following is the most successful mode of

cultivating them : A piece of ground is prepared by digging in good loam and well-rotted stable manure ; a two-light frame is placed over it, and seedlings are put in about March. As soon as the plants are fairly established the sashes are removed (unless the weather is frosty), and throughout the summer the plants are well supplied with water. In the following April and May they will have become large plants, often 2 to 3 ft. in diameter, and are then removed to where they are wanted to flower. This may be readily done without needlessly checking them, as they form so many fibrous roots that a good ball of soil usually adheres to them. They are thus grown on as quickly as possible, being treated like biennials. They should be planted out in a well-drained rock-garden in good soil, with plenty of water in summer, but they must be kept as dry as possible in the winter, as excessive moisture in cold weather soon kills them. Sandstone broken fine should be placed under the leaves, to prevent contact with the damp soil. A piece of glass placed over the leaves in a slanting position helps to protect them from moisture. Many plants take three or four years to flower, and some may be kept in store pots for five or six years without showing any tendency to flower, but they are never so fine planted out after being cramped in this way. After flowering they all die.

M. aculeata is a singularly beautiful plant, with purple petals, like shot silk, which contrast charmingly with the numerous yellow stamens. The flowers are 2 in. across, on stems about 2 ft. high.

M. cambrica.—For the wild garden or wilderness the Welsh Poppy is one of the most charming of plants. It is a cheerful plant in all seasons, and a determined coloniser, making its home of the wall, rock, and the ruin. In many places it grows freely at the bottom of walls, or even in gravel walks if allowed a chance. A plant so easily naturalised needs no special care in the garden, where it often comes up unbidden.

M. grandis.—A newly introduced kind from the mountains of Sikkim, and one of the few true perennials in the genus. This is fortunate, for though it has flowered under grass with Mr. Bulley for two years in succession, it has yielded no seed. It is a plant of tall habit, with uncut leaves and solitary purple flowers of beautiful glossy texture.

M. heterophylla.—The only kind found in America, where it grows over a wide area but is nowhere abundant, thriving

best in the light, dry soils of California. It is an annual, and succeeds in this country both as a pot-plant under glass, or in the border during summer, where it flowers and ripens seed freely. It is a variable plant, but mostly reaches 12 to 18 inches in height, with pale green leaves, deeply cut, and hairy. The flowers, upon long slender stems, are red, copper-coloured, or orange, with a deep maroon blotch in the centre, and a scent of Lily of the Valley. They are more lasting than in other kinds, and useful for cutting, coming in June from seed sown in heat early in the year or in the open a little later. Syn., *M. crassifolia*.

M. horridula.—A little plant found at a great height in the Himalayas, growing as almost stemless tufts of lanceolate leaves, covered densely with prickles ; the short unbranched stems bear solitary bluish-purple flowers about an inch and a half wide.

M. integrifolia.—A new kind, its pale yellow flowers being much admired. The plant grows at a height of 11,000 ft. to 15,500 ft. in the mountains of Thibet and S.W. China, where myriads of plants are to be seen bearing flowers which sometimes measure 10 inches across. In the size and number of their flowers, however, the plants vary, some being only 3 inches wide, while from 3 to as many as 15 perfect blooms may be open at once. Nor is there any regularity in the size and number of petals, for though mostly 5 in number, there are often more. The plant is a biennial, hardy, and with oval uncut leaves of pale green, about a foot long when fully grown, and more or less covered with soft, silky hairs. The stems vary in height, but the plants flowered in this country were from 12 to 18 inches high, flowering until the first keen frosts. It is a moisture-loving plant, thriving in peat or leafy soil in a half-shady place.

M. nepalensis has flower-stems 3 to 5 ft. high, which are not much branched, the nodding blossoms, borne freely, are 2 to 3½ in. across, and of a pale yellow.

M. paniculata.—A beautiful Himalayan plant with much-cut foliage and panicles of bright yellow flowers, which come true from the seed ripened sparingly in fine seasons.

M. principis.—A plant first found by Franchet in Thibet ; it comes near *M. punicea* but is not so large a plant, and its smaller crimson flowers are held erect instead of nodding.

M. punicea.—A fine kind. It comes near *integrifolia*, and is found growing with it at a great height in the mountains

of Thibet. The leaves are entire, tapering at both ends, and covered with long coarse hairs of a shining yellow colour. The massive flowers are borne singly upon slender stems of $1\frac{1}{2}$ to 2 feet, reaching at their best 6 inches wide, and com-

Meconopsis Wallichii.

posed of large drooping petals of carmine-red or reddish-purple. Even the wild flowers show a tendency to become double, which will doubtless increase under cultivation. The plants grow in moist meadows among grass and low shrubs.

M. quintuplinervia. — A perennial kind from Manchuria, of dwarf growth as a rosette of long-stemmed uncut leaves, covered with reddish hairs and traversed by five prominent veins. The nodding flowers come during summer upon hairy stems of 6 to 12 inches, and are cup-shaped, $1\frac{1}{2}$ inches wide, and pale violet or purple with a large cluster of golden stamens.

M. racemosa. — A rare plant but lately introduced to this country. Its flowers range in colour from pale lilac to deep purple, and have given good seed in the past autumn. China.

M. simplicifolia has a tuft of lance-shaped leaves, 3 to 5 in. long, slightly toothed, and covered with a short, dense, brownish pubescence. The unbranched flower-stalk is about 1 ft. high, and bears at its apex a single violet-purple blossom, 2 to 3 in. in diameter.

M. Wallichii is the finest kind, and a very handsome plant, between 4 and 5 ft. high. It forms an erect pyramid, the upper half of which is covered with pretty pale blue blossoms, drooping gracefully from slender branchlets. It is a most conspicuous plant in the rock-garden, where it withstands the winter without the least injury. Well-grown specimens have leaves 12 to 15 in. long, and a great number of pale blue flowers, opening terminally. Separate flowers do not last long, but a few expand at a time, and it is fully a month before they are all expanded at the base, by which time the seeds of those which opened first are nearly ripe.

The group is full of interest and beauty of the highest kind for gardens, and we may expect valuable additions to it.

MEDEOLA VIRGINICA. — A North American Liliaceous plant of no particular garden value.

MEDICAGO (*Medick*). — This is a large genus, but it contains few, if any, good garden plants. One or two are useful for planting on banks or slopes, on which their wide-spreading masses may be seen to advantage. For this purpose the most suitable are *M. falcata* and *elegans*, both vigorous herbs with yellow flowers, thriving in almost any kind of soil. They are not suited for choice collections, but would yield good effects in certain special cases.

MEGACARPÆA POLYANDRA. — A curious Cruciferous plant for botanical gardens.

MEGARRHIZA CALIFORNICA (*Californian Big Root*). — A twining Bryony-like plant, having an enormous

root. Only suitable for botanical gardens.

Megasea. See SAXIFRAGA.

MELANOSELINUM DECIPIENS.

An umbelliferous shrub from Madeira, with a round simple stem, bare below, and large, spreading compound leaves. The flowers are white, and borne in umbels. A useful subject for isolation on grass-plats, and requiring greenhouse or warm frame treatment in winter. Young plants are to be preferred for placing out. Seed.

MELANTHIUM TRIQUETRUM.—

A bulbous-rooted plant little known to cultivation. It has long, round leaves, like those of some of the Alliums, and its flowers, which are small and have delicate mauve petals and a purple centre, are borne on spikes from 5 in. to 6 in. long. It is a half-hardy plant—hardy, perhaps, in favoured districts.

MELIANTHUS (*Cape Honey Flower*).

—An effective half-hardy plant for the summer; *M. major* having finely-cut, large, glaucous leaves contrasting effectively with the garden vegetation, and being of the easiest cultivation, it has become

Melianthus major.

a favourite in sub-tropical gardening. Plants raised from seed early in the season make good growth by planting-out time, and by midsummer obtain a height of 3 to 4 ft. When it is desirable to have larger plants by planting-out time, it is best

to sow the seeds in autumn and to keep them growing through the winter, for a stronger and earlier development will result. The *Melianthus* is all but hardy on a well-drained subsoil in sheltered nooks in the southern and western counties, for though the stems may be cut down by frost, the roots survive and push up in spring. S. Africa.

MELISSA (*Common Balm*).—*M. officinalis* is a well-known old garden plant, 2 to 3 ft. high, emitting a grateful odour when bruised; the variegated form is sometimes used for edging, and the common one may be naturalised in any soil by those who admire fragrant plants. Division. Europe.

MELITTIS (*Bastard Balm*).—*M. Melissophyllum* is a distinct plant of the

Salvia Order, with one to three flowers about $1\frac{1}{2}$ in. long in May. The peculiarly handsome purple lip reminds one of some Orchids. *M. grandiflora* is a slight variety, differing in colour from the normal form. The plant is distinct, and merits a place by shady wood and pleasure-ground walks, as it naturally inhabits woods. Woody spots near a fernery or a rock-garden suit it; it grows readily among shrubs, and in the mixed border. It is found in a few places in England, and is widely distributed over Europe and Asia. Seed of division.

MENISPERMUM (*Canadian Moonseed*).—*M. canadense* is a hardy climber, of rapid growth, having slender, twining, large roundish leaves, in summer bearing long feathery clusters of yellowish flowers. It is useful for covering a wall quickly for summer effect or for arbours, trellises, and pergolas, and thrives in almost any soil in shade or sun.

Moonseed (*Menispermum*).

MENTHA (*Mint*).—Marsh herbs or rock plants of which the variegated form of *M. rotundifolia*, is common, and useful for edgings or for clothing any dry spots. Another is *M. gibraltaria*, a variety of the native *M. Pulegium*, used in summer for flat geometrical beds on account of its compact growth and deep green foliage, which retains its freshness throughout the season. It is one of the easiest plants to grow, and may be increased with wonderful rapidity, as it bears rapid forcing for early spring cuttings. Inasmuch as its growth hugs the soil, and throws out roots at every joint, all that is necessary is to keep cutting off little plants and potting them, or planting them in shallow boxes, and in a very short time they will in their turn bear cutting up in like manner. Being a native of S. Europe, it is somewhat tender, and is generally killed in winter.

M. Requienii is a minute creeping plant with a strong odour of Peppermint, and trails about among the tiniest plants in the rock-garden. I use it often for covering the ground beneath Tea Roses, and it spreads and grows everywhere. It is the smallest flowering plant grown in gardens.

MENTZELIA. — Lovely Californian plants, mostly of biennial duration, and requiring more care than most half-hardy plants. A successful cultivator of them writes to *The Garden*: "I find it necessary to sow the seed as early in the season as possible, and to grow the seedlings on in a frame, giving liberal shifts, and using a compost of fibry loam and a small quantity of leaf-mould and sand. After the final shift they should be plunged in a sunny border until autumn, and then removed to a frame for wintering. In the spring they should again be plunged in the open air, and by occasionally assisting them with weak manure-water, strong and healthy flowering specimens will be produced. When beginning to show flower they should be removed to a cool greenhouse or frame, as excessive humidity at this stage is injurious to them. They may indeed be grown entirely in the open air if the weather be favourable, but in our climate the former mode is by far the most satisfactory." The following is a selection of the prettiest kinds: *M. (Bartonia) aurea* L.—A showy golden-flowered hardy annual, 1 to 2 ft. high. Should be sown in April in groups or patches where it is to remain in light soil and warm situations, the plants being thinned to about 1 ft. apart. As the seed is very small, care should be taken not to bury it too deep. When well grown it might be used as a bold group, relieved here and there by tall plants. Chili. *M. lævicaulis* is a good kind, with whitish stem, 1 to 3 ft. high, both stems and leaves covered with short and stout bristles, the rich yellow flowers opening only in bright sunshine. *M. nuda* is 2 to 4 ft. high, with flowers resembling the last. *M. oligosperma* is a perennial, 1 to 3 ft. high, with bright yellow flowers 3 in. across, opening in sunshine. *M. ornata* is a biennial, 2 to 4 ft. in height, with creamy-white fragrant flowers $2\frac{1}{2}$ to 4 in. across. It belongs to the vespertine section, that is, to those in which the flowers expand towards evening. *Syn.*, *Bartonia*.

MENYANTHES (*Buckbean*).—*M. trifoliata* is a beautiful and fragrant native of Britain, found in shallow streams or pools, in very wet marshy ground, and in bogs; its strong creeping, rooting stems often floating in deeper water. The flowers are borne on stout stalks, which vary in length with the depth of the water, and are beautifully fringed and suffused with pink. *M. trifoliata* is easy to establish by introducing pieces of stems, and securing them till, by the emission of roots, they have secured themselves. In some moist soils it thrives in the ordinary border.

MENZIESIA.—Dwarf shrubs, resembling Heaths, and, like them, admirably suited for large rock-gardens or wherever there is a moist peat soil. They are all of neat growth, and bear pretty flowers.

M. cœrulea is a tiny alpine shrub, native of Scotch mountains and of northern European mountains. A pretty bush for the rock-garden or for choice beds of dwarf plants, 4 to 6 in. high, with pinkish-lilac flowers, flowering rather late in summer and in autumn. Europe.

M. empetriformis.—A dwarf Heath-like bush, seldom more than 6 in. high, with clusters of rosy-purple bells in summer. Though not common in gardens, it is one of the brightest gems for the choice rock-garden, and thrives in exposed positions in moist sandy peat soil, and should be associated with the dwarfiest rock plants. N. America. *Syn.*, *Bryanthus*.

M. ferruginea is a rarer kind with pale brown flowers. For the beautiful Irish Heath and its forms often included in this genus, see *Erica*.

MERENDERA.—*M. bulbocodium* is very much like *Bulbocodium vernum*, but flowers in autumn, having large handsome blooms of a pale pinkish-lilac. Suitable for the rock-garden and the bulb-garden till plentiful enough for borders. Increased by separation of the new bulbs and by seed. S. Europe.

MERTENSIA.—Beautiful Borageworts, often known as *Pulmonaria*. There is something about them beautiful in form of foliage and stem, and in the graceful way in which they rise in panicles of blue.

M. alpina is a beautiful dwarf kind, and should only be associated with the choicest alpine plants. The leaves are bluish-green; the stem 6 to 10 in. high, bearing in early summer one to three drooping terminal clusters of light blue flowers.

M. dahurica, although very slender and liable to be broken by high winds, is hardy. It is 6 to 12 in. high, has erect branching stems, and bears in June panicles of handsome drooping azure-blue flowers. It is very pretty, and suited for the rock-garden or borders, and should be planted in a sheltered nook in a mixture of peat and loam. Division or seed. *Syn.*, *Pulmonaria dahurica*.

M. maritima (*Oyster Plant*).—Though one of our British sea-coast plants, I find that it is very little known in gardens, and though a seaside plant and usually found growing in sea sand, it is amenable to garden culture. Given a light sandy soil of good depth, and a sunny position where its long and succulent flower-stems.

may spread themselves out, carrying a long succession of turquoise-blue flowers, it is a plant that we may expect to see year after year. It is a coveted morsel of slugs, and is best on an open part of the rock-garden.

M. oblongifolia is another dwarf species. The stems are 6 to 9 in. high, and they bear handsome clustered heads of brilliant blue flowers, and deep green fleshy leaves.

M. sibirica, a plant of much beauty of colour and grace of habit, grows and flowers for a long period in ordinary soil. The small bell-shaped flowers are borne in loose drooping clusters, gracefully terminating in arching stems. The colour varies from a delicate pale purple-blue to a rosy-pink in the young flowers. A hardy perennial growing best in a peaty bog. Division.

M. virginica (*Virginian Cowslip*).—The handsomest, bearing in early spring drooping clusters of lovely purple-blue

Mertensia virginica (Virginian Cowslip).

blossoms on stems 1 to 1½ ft. high, the leaves large and of bluish-grey. In many gardens it never makes the slightest progress; but a sheltered, moist, peaty nook is the best place for it. The finest specimens are grown in moist, sandy peat or rich free soil, with shelter near. It is a charming old garden plant, and one which unfortunately has never become common; in the southern country it is grown too dry.

MESEMBRYANTHEMUM (*Fig Marigold*).—Dwarf or trailing succulent plants, of which there are several grown in the open air, though none are hardy. The Common Ice Plant (*M. crystallinum*) is grown for

garnishing in most large gardens and is also used as a pot-plant; but it is most effective when planted out in the rock-garden or on an old wall. In a sunny situation, however, it will grow in any good soil. It will grow from 3 to 4 ft. in a season, and on warm days has a refreshing look. Its flowers, unimportant compared with the stems and foliage, are bespangled with crystal. Seeds should be sown in heat in March, and the seedlings planted out 6 to 8 in. apart. There are two varieties—one red and the other white. *M. cordifolium* is a perennial, the variegated form of which is used in carpet-gardening. *M. Pomeridianum* is a strong species with broad foliage and large purple and rose flowers. It is not so common as the last, but it deserves a place on a south border. *M. tricolor* is the most showy of the annual Mesembryanthemums. It is a neat plant with cylindrical foliage, growing in neat tufts 4 to 6 in. in height; its abundant flowers, of purple rose or white, afford good contrast. It should be sown in sandy soil in the open garden about the end of April; it dislikes transplantation, and lasts longer in the ground than in a pot. Those who possess a collection of Ice Plants in pots should turn the whole out on banks or the rock-garden and leave them there, taking cuttings off them yearly. Out-of-doors they attain beauty never seen in pots. Their foliage is singular and diversified, and the brilliant lustre of their flowers—white, orange, rose, pink, crimson—is unequalled. They are children of the sun, and a rock-garden devoted to a collection in an open sunny spot is worth seeing. A soil consisting of little besides sand and gravel suits them perfectly.

MESPILUS (*Medlar*).—*M. germanica* is a beautiful small tree or bush with large and handsome flowers, and a wide-spreading head and is beautiful in early summer when studded with great white flowers among its large pale green leaves. The only other species in gardens is *M. grandiflora*, also called *M. Smithi*. It is a perfect lawn tree, as its great rounded head droops gracefully. It flowers about the middle of May, and is then beautiful, with its numerous white flowers. In some nurseries (especially on the Continent) it is called *Cratægus lobata*.

MEUM (*Spiguel*).—*M. athamanticum* is a graceful fine-leaved perennial, dwarf in habit, 6 to 12 in. high, free in ordinary soils, and hardy. In dry seasons it might wither too soon for association with autumn-flowering plants, but it is pretty for the rock-garden, borders, or for mixed

arrangements of any sort. A British mountain plant, very aromatic. Division.

MICHAUXIA (*Michaux's Bellflower*). — *M. campanuloides* is a remarkable plant of the Bell-flower family, 3 to 8 ft. high, the flowers white tinged with purple, and arranged in a pyramidal candelabra-like head. Sometimes it flowers in the third or even in the fourth year, but is usually considered a biennial, and should be

Michauxia campanuloides.

treated as a hardy one. Seedlings should be raised annually, so as to always have good flowering plants. It flourishes best in a deep loam. Its stately form and tall stature are effective in the mixed border or in a nook in a bed of evergreen shrubs. Warm sheltered borders and borders on the south side of walls suit it best. Levant.

MICHELIA.—Very interesting trees and shrubs of the Magnolia order ; mostly from Asia and China. Little known in our gardens as yet, excepting one kind which is grown in conservatories. They are only likely to succeed in the southern most favoured parts of the country.

MICROLEPIA.—*M. anthriscifolia* is an elegant Fern, 6 to 12 in. high, hardy, deciduous, charming in spring and summer, and of easy culture. It thrives in the open as well as in the shade, and may be used with good effect as an edging to a sheltered border.

MICROMERIA (*Pepper Nettle*).—Dwarf plants of the sage family, with strong odours, chiefly from S. Europe, W. Asia and America ; as yet little known in gardens and mostly fitted for the rock-garden or dry banks. The cultivated kinds are *croatica*, *græca*, *juliana*, *Piperella*, and *varia*.

MIKANIA (*German Ivy*).—*M. scandens* is a slender twining perennial, with Ivy-like foliage and small flesh-coloured flowers. It is hardy in light warm soils

and is used for covering trellises. N. America. Compositæ.

MILIUM (*Millet Grass*). — Grasses, some of them graceful. Our native *M. effusum* is worth cultivating for its feathery plumes. It is suitable for associating with flowers in summer, and grows in any soil, preferring moist places. There are one or two other kinds worth growing.

MILLA.—The bulbous plants formerly known under this name are now described under the name of *Brodiaea*. The only true *Milla* is said to be *M. biflora*, a beautiful plant with large snow-white blossoms deliciously scented. It is rather difficult to cultivate, but it is well worth any care. Even if it be quite hardy, which is doubtful, it is too choice to risk in the open border.

MIMULUS (*Monkey-flower*). — The cultivated species are valuable showy border flowers, and are for the most part natives of California. They love moisture, and are suitable for damp places, such as bogs, moist borders, and the margins of streams and artificial water. The old *M. cardinalis* is showy when well grown, and is deserving of a place. There are several varieties of it. The common Musk (*M. moschatus*) is hardy and enduring, and is worth a corner in wet soil. *M. luteus* and its varieties, *variegatus*, *cupreus*, *Tilingi*, *guttatus*, and others, are typical of the beautiful hybrids which are now in gardens, and which combine the dwarf habit and hardiness of *M. cupreus* with the large flowers, richly spotted and blotched, of the other parent, the old *M. variegatus*. These hybrids, which are known as *M. maculosus*, bear exposure to the sun better than the parents. There is also a strain with Hose-in-hose flowers, sometimes called double. These sorts should be grown, and a packet of seeds affords a wonderful variety. The seeds of the *Mimulus* should be merely sprinkled on the soil ; if covered by it they may vegetate less quickly and abundantly. A little damp moss may, however, be laid over the surface, but should be removed as soon as the seeds have germinated. Very few of the wild kinds are satisfactory in gardens where a high standard of beauty is sought.

MINA.—Fast-growing climbers from Mexico, allied to *Convolvulus*, and, while perennials in their own country, mostly grown as tender annuals with us. *Mina lobata*, the best-known kind, is freely used for summer gardening, its three-lobed leaves of deep green being handsome upon arches or trellis. Sprays of tubular

flowers spring upon the upper leaf-axils, deep crimson in bud fading to pale yellow as they open, giving a parti-coloured effect. It is easily grown, flowers freely until frost, and continues until winter if taken under glass. *M. cordata* comes very near the older kind, save that its leaves are rounded and tapering like those of a *Convolvulus*, and the flowers have traces of a magenta-purple. Both kinds are raised from seeds sown in heat early in the year, and the tips of old plants rooted under glass come into flower earlier than seedlings.

MIRABILIS (*Marvel of Peru*).—Handsome herbaceous plants, the most familiar of which is *M. Jalapa*, a dense, round bush covered with flowers, nearly 3 ft. high, the flowers about 1 in. across, white, rose, lilac, yellow, crimson (of various shades), and purple—striped, mottled, and selfs. The plants may be treated as half-hardy annuals, raised from seed in a warm frame, potted on, and planted out in May. They are, however, perennial, and when the leaves are killed by frost the tapering black root must be lifted and stored in sand during the winter. The plants should be started in pots in spring and planted out as before; but after the second year the roots become unwieldy, and should be discarded. They require a warm soil and all the sunshine of our climate. The seeds ripen rapidly and readily; each flower produces one seed only, and as the seeds are large they can be gathered from the ground beneath the plants. *M. multiflora* is somewhat similar to *M. Jalapa*, but dwarfer, and the bright crimson-purple flowers are in large clusters, expanding in bright sunshine. It is a hardy perennial in light warm soils, and is a good border plant. *M. longiflora*, having long tubular flowers with carmine centres, is capital for the foot of a warm south wall. Mexico.

MITCHELLA (*Deer Berry*).—*M. repens* is a neat, trailing, small evergreen herb, 2 or 3 in. high, with white flowers in summer, succeeded by small bright red berries. It thrives in shady spots on the rock-garden or the hardy fernery, in sandy peat. Division. N. America.

MITRARIA (*Mitre-flower*).—*M. coccinea* is a bright charming little shrub from Chili, hardy in mild districts, but generally requiring winter protection. It is a small evergreen shrub, bearing in summer numerous urn-shaped flowers about 1½ in. long and of a brilliant scarlet, thriving in a mixture of sandy peat and loam, in a moist sheltered spot with perfect drainage.

MOLOPOSPERMUM.—*M. cicutarium* is a hardy perennial, 5 ft. or more high, with large handsome leaves which form a dense bush. It thrives in good garden

Molopospermum cicutarium.

soil and is useful for grouping with fine leaved plants. Division and seed. Car-niola.

MOLUCCELLA.—*M. laevis* is a singular plant of the Dead Nettle family. It is by no means showy and its only recommendation for the garden is the singular form of its calyces, which are bell-shaped and densely arranged on erect stems about 1 ft. in height. It is a fine subject for skeletonising, and the stems, bracts, and calyces may be skeletonised intact. For this purpose they should not be cut before autumn, when the plant is fully matured. Should be treated as a half-hardy annual. Eastern Mediterranean.

MONARDA (*Bee Balm*).—Border perennials of the simplest culture, thriving and flowering in any soil; and admirably suited for borders, and for naturalisation in open woods and shrubberies. The red kind scattered through American woods in autumn is very handsome. *M. fistulosa* (Wild Bergamot) is a robust perennial, 2 to 4 ft. high, the flowers variable; the usual colour pale red, and every gradation almost to white may be found in it. *M. didyma* (Oswego Tea) is

robust, about 3 ft. high, the deep red flowers, borne in head-like whorls, continuing a long time in summer. *M. Kalmiana* is a showy plant, often 4 ft. high, the deep crimson flowers in dense whorls. To see the true effect of this fine plant it must be planted in liberal numbers. Some of the kinds are poor in effect and should be avoided. In *M. purpurea* the deep purplish-crimson flowers are smaller. All are natives of N. America, and may be increased by division in spring or by seed.

MONTAGNÆA HERACLEIFOLIA (*Polymnia grandis*).—A handsome, half-hardy shrub with large, much divided, and elegantly-lobed leaves, about 3 ft. long, presenting luxuriant masses of foliage. The stem and leaf-stalks are spotted with white, and the leaves when young are covered with a soft white down. Like most large soft-growing things in this way, it is best planted out in a young state, so as to ensure a fresh and unstinted growth. Easily multiplied from cuttings, which plants freely produce if placed in heat in January, but it is only useful where sub-tropical plants are put out for the fine months in sheltered dells.

Montbretia. See TRITONIA.

MORINA (*Whorl-flower*).—*M. longifolia* is a handsome and singular perennial, with large spiny leaves, resembling those of certain Thistles, and with long spikes of whorled flowers, 2 to 3 ft. high. It grows well in ordinary well-drained soil, but prefers soil which is mellow, deep, and moist; and it is easily multiplied by sowing the seed as soon as ripe in light sandy soil. It is excellent for the mixed border, and for grouping with medium-sized perennials that have fine foliage. *M. Wallichiana* is probably the same, or a slight variety, and there are other kinds, the one named being of proved value and hardiness. Nepal. Seed.

MORISIA.—*M. hypogæa* is one of the most charming re-introductions of recent years among alpine flowers. It was first introduced by a Mrs. Palliser, from the Valentino Botanic Garden, Turin, from seeds presented to her by Professor Moris, who found the plant on the mountains of Sardinia, and in whose honour it is named. The flowers, as large as a shilling and of a bright yellow, are on short stalks rising very little above the tufted foliage, in April and May, and the contrast between them and the dark glossy foliage is effective. It seems to do best in a light gritty soil, and the seed should be sown directly it is ripe.—D. K.

MORUS (*Mulberry*).—Usually medium-sized trees of the temperate and sub-

tropical countries, of which the best kind for our country is the Black Mulberry (*M. nigra*), a distinct tree of great value and beauty giving showers of fruit in hot days, and having the charm of association with old gardens in southern and western countries where it was often grown. The Mulberry often attains great age, and when old gives deep shade, thriving best always in sheltered gardens in deep soils. It is hardy, coming late in leaf, and the leaves fall with the first touch of the frost. It grows better in the warm southern counties than in the cooler North, where the shelter of walls is needed if we wish for the fruit. The Mulberry is often a beautiful lawn tree though it may well take its place in the orchard or enclosed fruit garden, always, if possible, giving it a free, deep and rather moist soil. It is one of those trees cultivated from the earliest times, much longer than we have any idea of, and therefore spread all through the East, so that there is little certainty as to its native country—probably Persia and the adjacent regions.

It is not difficult to increase from cuttings or even pieces of branches, and by layers, but not by any means common to find good stocks of the trees in nurseries, owing partly to the slight demand, as in gardening waves of fashion often call attention for long periods to things of little value, and people cease to plant the good ones. A very much more cultivated species in Europe and other countries is the White Mulberry (*M. alba*) and its varieties, but as our country is too cold for silk cultivation this is of slight importance with us, and the same may be said of the other species, the one exception being, perhaps, the American Red Mulberry (*M. rubra*), a native of the northern United States, and this might find a place in tree collections.

MUHLENBECKIA.—These graceful free-growing evergreen trailers are useful as coverings for trellis-work or rocks or stumps. The kinds in cultivation are natives of New Zealand; the best known *M. complexa*, a very rapid grower, with long wiry and entangled branches, and small leaves. The white waxy flowers are rather inconspicuous. *M. adpressa* is larger and has heart-shaped leaves, and long racemes of whitish flowers. *M. varia* is a small kind, with fiddle-shaped leaves, and is very distinct from either of the above. In severe winters it is advisable to give a little protection like dried Fern, but this is not necessary in ordinary seasons. Cuttings.

MULGEDIUM (*Blue Thistle*).—*M. Plumieri* is a native of the Pyrenees, where it is 4 or 5 ft. high, but in our borders and in deep strong soils it is frequently as much as 8 or 9 ft. high. Its foliage is beautifully varied in outline, and it should be planted in the rougher parts of the wild garden, and left to itself, as nothing seems to interfere with its rapid growth. As an isolated plant on Grass its remarkable foliage at once arrests observation, while its blue flowers are pretty. *M. alpinum* is a smaller plant. Seed or division. Syn., *Lactuca*. Some of the kinds are very difficult to get rid of once planted in good garden soil, and the place for them is the wild garden or shrubbery.

over the roots. In February the roots are examined, planted in trenches, and subjected to an increased temperature, when new roots soon form and begin to grow afresh. In June, after being gradually hardened, the leaves are tied up, the plants are lifted with as good balls as possible, and placed in their summer quarters. *M. Ensete* is the kind generally used in the open air, and in form is one of the noblest plants. Any one with a warm house may grow it, and when planted out in June, in deep, warm, rich soil, and a sheltered position, it will grow well during summer; such, at least, is our experience in London and the home counties, but such tender plants must

Musa Ensete.

MUSA (*Banana*).—These fine tropical plants are seen in our parks during summer, but less frequently in private gardens. In the London Parks, Musas, especially the smaller ones, are often plunged in the ground in their pots during the summer, but the larger ones are planted out. When they are lifted in autumn, those in pots are stored in houses, but the larger ones are lifted with small balls of earth and placed on shelves in houses with a temperature of not less than 45°. Here they are laid on their sides, their leaves being kept close together, and remain throughout the winter, with only a mat thrown

ever have a limited use in our country. *M. Basjoo*, a graceful Japanese species that has some pretensions to hardiness, has been tried as a plant for the open, but it is not hardy enough for our winters except in Cornwall, where I have seen it very fine in the open air at Caerhays.

MUSCARI (*Grape Hyacinth*).—Pretty bulbs of the Lily family, all of the easiest culture and flowering in spring and early summer. Their proper position is either the front row of the choice border or the rock-garden, but they may be advantageously grown as window-plants in pots or boxes. In all cases they thrive best in

rich, deep, sandy loam, and are easily multiplied by separating the bulbs every third or fourth year. There are many names, but few really distinct kinds.

M. armeniacum is one of the best, and its beauty is enhanced by its flowering when most other kinds have finished doing so. Its flower-stems are 8 in. high, and are terminated by dense racemes 3 to 4 in. long, of bright dark blue flowers, with small whitish teeth. The foliage is much the same as the ordinary *M. racemosum*. Another beautiful kind is *M. Szovitzianum*, which comes into bloom early and continues in blossom till the latest kinds have done flowering. The blooms are a clear blue, the teeth of the corolla white; the spike oval and larger than in other species.

M. botryoides is a favourite bulb, with little white teeth on blue globose clusters, about 9 in. high, and suitable for the fronts of borders. The varieties *pallidum* and *album* are distinct and beautiful; and *pallidum* has pale sky-blue clusters. *M. Heldreichi* resembles *M. botryoides*, but is larger, and has a longer spike of flowers. It also flowers later.

M. comosum monstrosum (*Feather Hyacinth*) is distinct from any of the foregoing—1 ft. or more in height; its beautiful mauve flowers, cut into clusters of wavy filaments, bear some resemblance to purple feathers. *M. moschatum* has clusters of dull yellow flowers, inconspicuous, but its delicious fragrance amply atones for this. Another sweet-smelling Muscari is *M. luteum*, with flowers fading by degrees from a dull purplish hue to a clear yellow.

M. racemosum is a familiar old kind, with dark purple clusters and a strong smell of Plums, its long and weak leaves almost prostrate, while in *M. botryoides* and its varieties the leaves stand erect. It will hold its own anywhere, and will wander all over the mixed border, growing like a weed, and in any soil. It has near relatives in *M. commutatum* (with blue flowers, darkening by degrees into purple) and *M. neglectum*—also a handsome kind. There are several other varieties mentioned in catalogues, but the best are those mentioned above. Though coming chiefly from the south of Europe, they are all hardy, and grow in any position in ordinary garden soil.

MUTISIA.—Very curious and distinct half-shrubby climbers from Peru, Ecuador, and Brazil, and characterised by a climbing habit and tendril-pointed leaves. Other kinds are natives of the Chilian Andes, and have simple

leaves, rigid in texture, whilst the habit is, as a rule, bushy and not climbing. Almost every one of about forty species is remarkable for the size and beauty of its flower-heads. Plants which possess such qualities as these ought, one would think, to be well represented in English gardens. They are found at elevations sufficiently high to admit of their being grown out-of-

Mutisia.

doors in England, or at any rate in the warmer parts of the country, and yet the Mutisias are scarcely known in our gardens. Some few cultivators have been successful with *M. decurrens*; once or twice *M. ilicifolia* has been grown and flowered very well. *M. Clematis* is the least delicate of the garden Mutisias.

M. ilicifolia is a native of Chili, where it grows over bushes. The plant has thin wiry stems, and every part is covered with a cobweb-like tomentum. The leaves are about 2 in. long, the margins spiny-toothed, the texture leathery, and the midrib extending beyond the blade, branching and forming a strong twining tendril. The flowers are axillary, 3 in. across, with from eight to twelve ray florets coloured pale pink, or sometimes white with pink tips; the disc is lemon-yellow. It is a distinct, interesting, and beautiful plant.

M. decurrens.—Of this, the most beautiful of the three garden Mutisias, a fine plate will be found in *The Garden* for 1883, p. 553. Mr. Coleman has grown it well amongst Rhododendrons at Eastnor Castle; Mr. Gumbleton, Mr. Hooke, Mr. Ellacombe, and Kew have also had it in good condition. Most cultivators kill this species by planting it in a hot, sunny, dry position, where it gets baked, and soon becomes sickly-looking, even if it lives.

It wants a moist, cool soil, a sunny, airy position, and a few slender Pea sticks to clamber upon. The stems when mature are wiry, the leaves strap-shaped, with the blade extending a long distance down the stem, forming very conspicuous wings. The midrib is prolonged into a stout wiry tendril, which holds on firmly to anything it once clasps. The flower-heads are terminal, $4\frac{1}{2}$ in. across, with fourteen ray-florets, each half an inch across, spreading, and then curving elegantly downwards, their colour being brilliant orange. The disc is yellow, and the large involucre is bluish-green tinged with purple.

M. Clematis.—The first coloured picture of this species ever published in any English work was the plate in *The Garden*, July 27th, 1883. It is a tall herbaceous climber, 10 to 20 ft. high, with pinnate leaves, terminating in branched tendrils, the leaflets being covered on the under side with a fine silky down. The plant grows very freely, does not die off suddenly like the others, and when properly treated it flowers freely. It is probable that this species would thrive out-of-doors in Devon, South Wales, and South Ireland. It grows as fast as *Cobæa scandens*, and is said to be propagated in the same way, viz. by means of cuttings of the young growth. This species is a native of New Grenada, Peru, and Ecuador, at elevations of from 6,000 to 11,000 ft.—W.

MYOSOTIDIUM (*Antarctic Forget-me-Not*).—*M. nobile* is a lovely herbaceous plant about which very little is known. In its native isle it is a seaside plant, in damp sand. It is said not to be difficult to grow, but to be naturally short-lived. It has a thick root-stock, from which arise the large heart-shaped, shining green leaves, the stalks of which are grooved, and from 6 to 9 in. long; the flowers are borne on an erect stem which springs from the apex of the prostrate stem and rises to the height of 1 or $1\frac{1}{2}$ ft.; it is leafy all the way up, and is terminated by a loose corymb of flowers in colour exactly like Forget-me-Not, but the shade of blue varies. After flowering, the plants should be kept in a cool and light position in a frame, and be liberally watered in dry weather. It is a native of the Chatham Islands, a small group in the Pacific, lying 400 miles east of New Zealand. It was flowered in several gardens of recent years—by Mr. Watson, of St. Albans; the late Mr. Niven, of Hull; and very finely by Mrs. Rogers in Cornwall in the open air.

MYOSOTIS (*Forget-me-Not*).—Beautiful perennial and biennial marsh and alpine plants, children of the mountain and marsh

land from many parts of Europe and our own land, and of high value and charming in all ways for gardens.

M. alpestris (*Alpine Forget-me-Not*), a compact plant, a cushion of the loveliest blue flowers, thriving on the rock-garden, in moist gritty soil. It should be surrounded by half-buried pieces of sand-

Myosotis alpestris.

stone. There are various forms, some very dwarf, with white and rose flowers. Princess Maud is a robust variety with rich deep blue flowers.

M. azorica (*Azorean Forget-me-Not*) is a beautiful somewhat tender kind, with dark blue blooms, 6 to 10 in. high, and, coming from the extreme western Azores, will not survive except in warm corners of the rock-garden. It grows freely in light soil, and may be raised from seed or cuttings. The var. *Impératrice Elizabeth* is a form or hybrid from it.

M. dissitiflora (*Early Forget-me-Not*), a beautiful and early flowering plant, 6 to 12 in. high, with large handsome flowers deep sky-blue, continuing till midsummer. It is best in broad masses in open spots of the rock-garden, or wherever spring flowers are much valued.

M. palustris.—Although common in wet ditches and by streams and canals throughout Britain, *M. palustris* should be grown in the garden among shrubs in peat beds, or for edgings, or as a carpet to taller subjects, in small beds or borders in moist soil. There are forms of this, one with white flowers, another with larger flowers than the type, whilst one is called

semperflorens, from its long season of flowering.

M. lithospermifolia.—I think this has the largest flowers of any of the true Forget-me-Nots, flowering freely at a height of 8 in.; the flowers striking for their size, the leaves distinct and small, but otherwise resembling those of our British *Lithospermum purpureocœruleum*. The plant is gay from its abundance of flowers and their large size.—W.

M. Rehsteineri.—Under this name I have received one of the prettiest Forget-me-Nots, an effective close-to-the-ground creeper, practically forming a dense cushion of blue for several weeks in April and May. The plant thrives and spreads like a mossy Saxifrage, but keeps flat to the ground. This will be a charming surfacing plant, through which the rarer Snowdrops and Crocuses may spear during winter and early spring.—W.

M. sylvatica (*Wood Forget-me-Not*).—A beautiful woodland plant and of great value for the garden and wild garden. It should be abundant in a wild state by wood walks, in copses, &c., and sows itself freely in half-shady places. For the garden, sow seeds in beds in August every year. Britain. Seed. There are a white, a rose-coloured, and a striped variety.

MYRICA (*Sweet Gale*).—The Myricas, though not showy flowering shrubs, are desirable on account of their scented foliage. The native Sweet Gale or Dutch Myrtle (*M. Gale*) should be wherever sweet-smelling plants are cared for. It is a thin bush, 2 or 3 ft. high, having fragrant leaves. In a moist spot, such as a bog, it spreads by underground shoots and makes a large mass. The North American species, *M. cerifera* (Wax Myrtle), *M. pennsylvanica*, and *M. californica*, are less common. The last is a good evergreen of dense growth, with fragrant leaves, green through the winter. It is a vigorous plant, especially in light soils, and is hardy, but is little known outside botanical collections. The Wax Myrtle is met with in old gardens, where it was planted for its spicy foliage. I find our native Sweet Gale free and vigorous in stiff soils where few things grow well. *M. (Comptonia) asplenifolia* (*Sweet Fern*).—A quaint little shrub 2 to 3 ft. high, Fern-like in leaf, the leaves long and cut into rounded lobes, and aromatic. It spreads freely in sandy soils, and may be increased by layers, suckers, or seeds. A pretty plant in the sandy woods of many other parts of N. America. In gardens its place is among small shrubs and on the margins of peat beds.

MYRICARIA (*German Tamarisk*).—*M. germanica* is an elegant shrub, hardly differing from the common Tamarisk of our sea-coasts, with feathery foliage and many long plume-like clusters of small pink flowers. It grows 6 or 8 ft. high in warm sandy soils, and, like the true Tamarisk, is a good shrub for dry banks where few shrubs would flourish.

MYRRHIS (*Sweet Cicely*).—*M. odorata* is a graceful native plant, with a peculiar but grateful odour and sweet-tasting stems, 2 to 3 ft. high, with white flowers in early

Myrrhis odorata (Sweet Cicely).

summer, in compound umbels. Suitable for naturalising near wood walks and in open shrubberies in any soil, and may be used among fine-leaved perennials. Division.

MYRTUS (*Myrtle*).—In southern and coast counties the Myrtle is hardy enough to be planted as a bush, for if its shoots are killed by frosts it often recovers the following season. But the common Myrtle is most generally grown as a wall-shrub, and house walls could not have a more beautiful covering, especially if some pretty Clematis or other graceful climber be allowed to ramble amongst the Myrtle. There are many varieties of the common Myrtle, every one with sweet-smelling leaves, and all with white flowers. The chief sorts are the Dutch, Italian, Roman, Rosemary or Thyme-leaved, Nutmeg, Box-leaved, and Andalusian. Besides these there are some with variegated

leaves, the leaves being striped with gold or silver, or spotted and blotched. In planting a myrtle against a wall, choice should, if possible, be given to a space protected from northerly and easterly winds, which in early spring are injurious to the leaves. In old gardens the Myrtle is often grown in tubs or pots for placing on lawns or terraces in summer, and is put under protection during winter.

NANDINA (*Heavenly Bamboo*).—*N. domestica* is a distinct and graceful shrub with dark leathery leaves, often flushed with red towards autumn. The flowers are small and whitish, in panicles, the berries about the size of peas, of a fine red. In our climate, it does not produce these freely, but it thrives in southern and western gardens, and is best grouped with American plants on peaty or free soil, best in half-shade.

NARCISSUS (*Daffodil*). — Beautiful bulbous flowers of mountain and alpine pastures, plains, or woods, thriving admirably in most parts of our islands; if anywhere, better in the cooler northern parts and in Ireland, though excellent in cool soils in the south. They are to the spring what Roses, Irises, and Lilies are to summer, what Sunflowers and Chrysanthemums are to autumn, and what Hellebores and Aconite are to winter. No good garden should be without the best of the lovely varieties now known. Narcissi vary so much in form, size, colour, and in time of flowering, that a most attractive spring garden could be made with them alone; provided one had suitable soil, and a background of fresh turf, shrubs, and trees. The best of the commoner kinds should be planted by the thousand, and, indeed, in many cases this has been done with the best results. On grassy banks, on turfy bosses near the roots of lawn-trees, or in meadows near the house, their effect is delightful. All the best Narcissi, and practically all the forms of the yellow and the bicolor Daffodils, may be planted in June, July, or August, in three ways—in the lawn or meadow, in the beds and borders of the garden, or in 6 or 8 in. pots. Five bulbs should be planted in a pot, and covered over with coal-ashes or sand until January, when they may be placed in a sunny frame, pit, or greenhouse, or even in a sunshiny window, and a crop of flowers can be secured earlier than on the open ground. The main points in beginning the culture of Narcissi are to get sound and healthy bulbs as early as possible after June, and to plant or pot

them at once in good fibrous, sandy, or gravelly loam, or in any virgin soil. They like fresh deep-tilled loam, and the strongest of the bicolor and star Narcissi do not object to soils rich in manure; but it is as well to remember that no manure should be used in its raw or crude state, and that wild species and wild-collected varieties suffer and often fail if planted at once in heavily manured soils.

In naturalising the Daffodil on the Grass, the Poet's Narcissus, or the Star Narcissus

Narcissus Horsfieldi.

(*N. incomparabilis* in all its forms), do not begin as late as November or December by planting the sweepings out of the bulb-stores, since such bulbs are weak and flabby, and are liable to rot in the frozen ground. The time to begin planting is June and July, and it is a good rule to refuse to plant in quantity after August or September.

In grouping border Narcissi it will usually be found advisable to lift and replant the clumps every three or four years, but if any delicate varieties do not flower well, or if they show signs of weakness or of disease, they should be lifted not later than July, and, after being cleaned, at once replanted, in fresh and good soil, and, if possible, in sandy or gravelly loam free from fresh manures. It is better to dig and replant Daffodils *too soon* than *too late*. The best time is when the leaves turn yellow in June or July. On

well-drained loams resting on gravel, the bulbs lose both leaves and roots in June or July, and may be taken up and removed with advantage; and, indeed, where good round presentable sale bulbs are grown, the rule is to dig them every summer as soon as the leaves wither. Whenever an amateur's stock of bulbs is divided, it is wise to replant some in fresh ground, and any surplus may be naturalised in grass. The rate of increase on good soils is surprising, such splendid sorts as *N. John Horsfield*, *N. Empress*, *N. Grandee*, *N. Emperor*, and *N. Sir Watkin* actually trebling themselves the second year after planting. The depth at which the bulbs should be

Narcissus calathinus.

planted varies according to the texture and the drainage of the soil. In strong or wet and retentive soils, shallow planting, say 3 to 5 in. beneath the surface, is ample, but on light, sandy, and well-drained soils, or on what are known as warm soils, the depth may vary from 6 to 12 in.—in a word, the bulbs should be as far as possible below the drought and frost line. The best grown private collections of these flowers I have seen are those at Great Warley, Essex, and at Totley Hall, near Sheffield, where the best kinds are grouped boldly by the thousand.

If cut flowers are desired, then bold groups on borders, in beds, or on Grass sheltered by hedges or shrubs are desirable. The first crop can be obtained from pots or boxes in the greenhouse, and these will be followed by fully formed and bursting buds, in sheltered

and sunny places. These buds will open large, fresh, and fair if placed in pots of water in a warm greenhouse or a sunny frame or window. In March and April comes the prolific harvest of golden open-air blossoms. In cutting Daffodils or Narcissi for indoor decoration, cut the flowers when the buds are opening, or even just before, and let the stalks be long, as the flowers group better with long stalks. Do not cut the leaves of choice kinds, but use leaves of common sorts with choice flowers. Put each kind in a separate glass, but put together as many of the same kind as you like.

Such delicate southern kinds as *N. Bulbocodium*, *N. triandrus*, *N. calathinus*, *N. juncifolius*, and most of the varieties of *N. Tazetta* may be grown in front of sunny walls on prepared peaty or on sandy borders, or else in glasshouses in the garden; but even in such places their flowers often suffer from spring storms, and the surest plan is to adopt pot-culture in a sunny frame. *N. viridiflorus*, *N. serotinus*, *N. intermedius*, *N. elegans*, *N. pachybulbus*, *N. Broussoneti*, &c., are interesting to collectors; but the difficulties of their culture are out of all proportion to their beauty, and those who only wish for large and beautiful flowers had better ignore them. Practically, we have only six species of *Narcissus* worth cultivating—*N. Bulbocodium*, *N. pseudo-narcissus*, *N. poeticus*, *N. Tazetta*, *N. jonquilla*, and *N. triandrus*. Then for naturalisation, or for ordinary garden culture, these six may be reduced to three groups—*N. pseudo-narcissus*, or the Ajax Daffodils; *N. poeticus*, or the Poet's *Narcissus*; and the natural hybrid between these two species, the ubiquitous *Star Narcissus*—*N. incomparabilis*. These kinds are really the only free and hardy open-air Narcissi, and are the best for the meadow or the lawn.

Of the newer seedlings, perhaps the finest are *N. "Ellen Willmott"* and *N. Madame de Graaff*, which first flowered at Leyden in 1883. *N. Glory of Leyden* is a yellow counterpart of it. The two were offered, one bulb of each, for 7 guineas only a year or two ago. They are so vigorous, and they increase so fast in good soil, that buyers were amply repaid, high as these prices appear. *N. Weardale Perfection*, *N. Monarch*, and some others are so fine and so rare that they are practically not to be had, anything less than 10 guineas having been refused for a single bulb of *N. Weardale Perfection*. These are only show flowers, however, and many others not much less

handsome may be had by the hundred or the thousand at a moderate price.

Narcissi flower in continuous succession from February until June ; and when pot-culture and warm-house treatment is adopted, the double Roman Narcissus and the Italian paper-white Narcissus flower in November, and there are always some Narcissi in flower from that time to June.

HYBRID NARCISSI.—The species which have best lent themselves to the hybridiser's art are *N. pseudo-narcissus*, *N. poeticus*, *N. montanus*, *N. triandrus*, *N. jonquilla*, and *N. Tazetta*. The type hybrids are *N. incomparabilis*, *Bernardi* (both found wild), *Nelsoni*, *Barrii*, *Burbidgei*, *Humei*, *Leedsii*, *Milneri*, *tridymus*, and *odorus*. There are wild and garden hybrids between *N. Bulbocodium* and *pseudo-narcissus* ; *N. triandrus* and *N. pseudo-narcissus* ; *N. jonquilla* and *N. pseudo-narcissus* ; *N. juncifolius* and *N. pseudo-narcissus* ; *N. Tazetta* and *N. pseudo-narcissus* ; *N. Tazetta* and *N. poeticus* ; *N. poeticus* and *N. pseudo-narcissus* ; and *N. montanus* and *N. poeticus* ; and also *N. pseudo-narcissus* and *N. montanus* ; while derivative hybrids have been obtained between some of these hybrids and some of the parent species. It is remarkable that while wild hybrids and garden seedlings usually enjoy richly manured soils, wild species and the white varieties of the Daffodil, *N. triandrus* and *N. Bulbocodium*, usually die out on deep richly manured borders, but frequently live on poor stony or sandy soils, on dry grassy banks, or amongst the roots on the sunny sides of hedges, shrubs, stone walls, and trees.

N. biflorus (*Primrose Peerless*) is similar in habit to *N. poeticus*, but has creamy-white flowers, two on a scape, and the rim of the primrose corona is scarious but colourless (*i.e.* not purple). *N. biflorus* is now known to be a natural hybrid between *N. poeticus* and *N. Tazetta*, having been found wild with its parents near Montpellier by Mr. Barr ; and also raised from its parents in the garden by the Rev. Mr. Engleheart. *N. biflorus* is naturalised in England and Ireland, but is a native of Europe. It is one of the easiest of all the kinds to naturalise, and spreads rapidly, but is usually supposed not to bear seed. *N. Dr. Laumonier* (Wilks) is a very fine seedling of this group.

• **PRINCIPAL SPECIES OF NARCISSI.**

N. (Corbularia) Bulbocodium (*The Hooped Petticoat Daffodil*) represents a kind having slender rush-like leaves. In Spain it grows in wet meadows during winter and spring, but is dried up throughout summer

and autumn. The types are golden-yellow in Spain and Portugal, sulphur-yellow in S. France, as at Biarritz and Bayonne, one variety in the Pyrenean district (*N. Grællsii*) is whitish, but in Algeria grows the exquisite snowy-white *N. monophyllus*. Hybrids between *N. Bulbocodium*, *N. triandrus*, and the Daffodil have been obtained in gardens, and are also found wild. The main varieties are conspicuous, a large, rich, golden-yellow kind with green rushy leaves ; *tenuifolius*, a small golden form, having a six-lobed rim to the corona, and very long rush leaves which lie on the ground ; *nivalis*, abundant in Portugal and near Leon in Spain, a small golden kind with short erect leaves ; *præcox*, a large early-blooming form, found by Mr.

Narcissus biflorus.

Barr in Spain ; *citrinus*, a pale French form, varying much in size ; *Grællsii*, the European white ; and *monophyllus*, the African white. These are dainty bulbs for pots or for choice borders on warm dry soils. They can rarely be naturalised in our country.

N. cyclamineus (*Cyclamen Daffodil*).—A dainty but not showy species, easily grown in a peat-earth rock-garden or in pots of peaty compost. It seldom exists from year to year in the open air. It has lived on Grass in peat, and, no doubt, could be naturalised easily enough on sandy peat soils which are wet in winter and spring, and dry in summer and autumn. In April, 1892, I saw a most lovely specimen low down in a damp little

grassy bay beside a mill-race at Mount Usher in Wicklow. *N. cyclamineus* likes the side of a stream, and is found by streams in Portugal. Like *N. triandrus*, it is readily raised from seed, and the seedlings flower the third year. It is 6 to 8 in. high, and the scapes are about the same length, each bearing a bright golden reflexed flower. It has sap-green leaves. There are large and small forms, and a bicolor variety seems to have been known long ago. *N. cyclamineus*, although but

being : Sir Watkin or Welsh Peerless, Gloria Mundi, Queen Sophia, C. J. Backhouse, Princess Mary, Gwyther, splendens, Beauty, Autocrat, Frank Miles, Cynosure, James Bateman, King of the Netherlands, Commander, Figaro, Goliath, Mabel Cowan, Mary Anderson (delicate, but of a splendid colour), Fair Helen, Lulworth, St. Patrick, and Queen Bess. Mr. Engleheart has a large series of shapely seedlings with richly coloured crowns, such as "Southern Star," Lettice

Narcissus Sir Watkin.

lately re-discovered, was figured in French books early in the seventeenth century. Like *N. Johnstoni*, it came from Oporto in 1884-85.

***N. incomparabilis* (Star Daffodil).**--To this group belong *N. incomparabilis*, *Barrii*, *Burbidgei*, *odorus*, *Backhousei*, *Nelsoni*, *Sabinei*, *tridymus*, and the Pyrenean wild hybrid, *Bernardi*, which is found wherever *N. variiformis* and *N. poeticus* occur together. Of *N. incomparabilis* there are over a hundred named kinds, the best

Harmer, Red Prince, Beacon, and White Queen. There are three or four handsome double forms of *N. incomparabilis*, long known in gardens. The most abundant of these is *incomparabilis* fl.-pl. (Butter and Eggs). There is a white variety, with vermilion chalice segments, known as Eggs and Bacon or Orange Phoenix; and a pale sulphur double called Sulphur Kroon, which is exquisite if well grown. Sulphur Kroon is often known as Codlins and Cream.

Of Barr's Peerless (*N. Barrii*, hybrids), the best are Conspicuous and Sensation, but Golden Star, Crown Prince, Flora Wilson, Miriam, Barton, Orphée, General Murray, Albatross, Sea Gull, Maurice Vil-morin, and Dorothy E. Wemyss are all good, and are useful for extended culture on Grass or for cut flowers.

The Burbidge hybrids are like the *Barrii* forms, but have small crowns. Their chief value lies in the freedom and earliness of their bloom, as they open days before even ornatus—the early April form of *N. poeticus*. The best varieties are Burbidgei (type), Agnes Barr, Beatrice Heseltine, Baroness Heath, Constance, Crown Princess, Ellen Barr, John Bain, Little Dirk, Model, Mrs. Krelage, and Mary.

Of Leeds' silver star forms the best are exquisite on good sandy soils, and their whiteness and delicate purity and grace render them most acceptable as cut flowers. The best are: *N. Leedsii* (type), amabilis, Beatrice, Hon. Mrs. Barton, Katherine Spurrell, Duchess of Westminster, Madge Matthew, elegans, Minnie Hume, superbus, Princess of Wales, Magdalena de Graaff, Gem, Grand Duchess, Acis, and Palmerston. Hume's hybrids are deformed Daffodils, the best being Giant and concolor. Sabine's hybrid (*N. Sabinei*) is a bold white bicolor, with a shortened trumpet, and so are the so-called Backhouse hybrids—Wolley Dod and William Wilks, a shapely and effective flower of good substance and with vigorous leaves.

More starry, but with smaller cups, are Nelson's hybrids; tall, free, and distinct habit; the best, Nelsoni major, minor, pulchellus (perfect shape), Mrs. C. J. Backhouse, aurantius (orange-red cup), and William Backhouse. Collected bulbs of *N. Bernardi* are very variable in size and form, and some, like E. Buxton, have fine orange-red cups, which resemble Nelson's aurantius. *N. tridymus* is a variable hybrid between the Daffodil and *N. Tazetta* with two to three flowers on a scape.

***N. jonquilla* (Jonquil).**—Long known in gardens, and imported from Italy and Holland for forcing in pots. Much grown at Grasse, Cannes, &c., for its perfume. *N. stellaris* has narrow perianth lobes, and *N. jonquilloides* is a robust form from Spain. The varieties *gracilis* and *tenuior* are now supposed to be hybrids between the Jonquil and some other species, or between *N. intermedius* and *juncifolius*; *N. intermedius* itself being a hybrid between some form of *N. Tazetta* and the Jonquil. The Jonquil, when

strongly grown on a warm border, is handsome and very sweet, and *N. gracilis* is the latest of all single Narcissi, as it blooms with *N. poeticus* fl.-pl. in May or early June. The double Jonquil is rarely seen doing well in open ground, but as a pot plant it is handsome. S. France and Spain.

***N. juncifolius* (Rush Jonquil).**—A small plant, suitable only for sheltered borders, for stone edgings, and for pot-culture in a cold frame. It is very variable, and *rupicola*, *minutiflorus*, and *scaberulus* are well-known variations. Its small Jonquil-scented flowers have very large cups, often widely expanded, which are crenelate at their edges. The var. *rupicola* flowers and seeds annually in the rock-garden at Edinburgh Botanical Gardens, and seems hardier than the type.

***N. odorus* (Great Jonquil).**—This plant, although found wild in S. France, Portugal, and N. Spain, is now believed to be a hybrid = *N. jonquilla* × *N. pseudo-narcissus*. The leaves are rushy, and two or three yellow starry flowers are borne on each scape. The best kinds are *N. odorus* (Campernelle), and *rugulosus*, a more robust form, with larger flowers. A double form, very handsome on warm soils, is known as Queen Anne's Jonquil.

***N. poeticus* (Poet's or Pheasant's-eye Narcissus).**—One of the oldest, sweetest, and most popular of garden flowers, and erroneously supposed to be the Narcissus of the Greek poets. It is widely distributed in France and Germany, and extends to the Pyrenees. In upland meadows of the Pyrenees it is very abundant in June and July. It flowers from the beginning of April until June. The older forms of *N. poeticus* are now far surpassed by Mr. Engleheart's new seedlings, such as Dante, Petrarch, and many others. *N. ornatus* is now grown by the million for Easter decoration. *N. grandiflorus* is a very large floppy variety, *N. poetarum* has a saffron-red crown, and *N. tripodalis* has reflexed segments and a bold crimson-scarlet ring. The typical *N. poeticus* is a tall plant, with a small shapely flower, but is not often seen. *N. Marvel* has a bladder-like spathe like an Allium, and a pale and shapely flower. *N. patellaris* has a broad crown and a saffron rim, and blooms late; but the form usually met with early in May is *N. recurvus*, the Pheasant's-eye of cottage-gardens. *N. recurvus* has a green eye and a crimson-fringed crown. All the forms, especially ornatus and recurvus, naturalise perfectly, and of recent years bulbs have been dug on the Pyrenees by the thousand for natural-

Narcissus Emperor.

isation. They are so variable in habit, size, shape, and colour that any number of varieties could be selected from them. The June-flowering double form of *N. patellaris*, or *Gardenia Narcissus*, is very fine. It does well on deep sandy borders. It is a shy flowerer, and many of its buds go blind, so that half the stock should be transplanted every year in August. *N. stellaris*, the latest single form of *N. poeticus*, flowers in June. Some very fine and shapely seedlings of *N. poeticus* have been raised by Mr. Engleheart.

N. pseudo-narcissus (*Common Daffodil*).—There are several hundred varieties of the Common Daffodil, either wild or cultivated. The only native of Britain is the common English kind, which extends from Cornwall to Fife, and is specially plentiful in the south-eastern counties. In Normandy, Daffodils by millions light up the woods in April, while many fine forms are wild in Spain and in the Pyrenean region, and the richest of golden Daffodils come from Spain and Portugal. The Rev. C. Wolley Dod found *N. maximus* growing between Dax and Bayonne, probably naturalised. Nearly all Daffodils do well on Grass, if the soil be at all suitable; and as regards our wild English Daffodil, the Grass is the only place in which to grow it permanently. Daffodils are usually divided into three groups: first, golden Daffodils, such as *N. maximus*, *Tenby*, and *spurius*; secondly, bicolors, such as *John Horsfield*, *Empress*, *Grandee*, &c.; thirdly, sulphur and white kinds, such as *Exquisite*, and the white Daffodils, such as the wild Pyrenean and *N. moschatus*. Nearly all the golden kinds are robust and easily grown, and the bicolor group are even more so, but, speaking broadly, the delicate sulphur and the white sorts are tender and unsatisfactory, except on the most favourable soils. The following are the best in each group:—

Golden Daffodil Group—*Abcissus* (*muticus*), *Ard Righ*, *Emperor*, *Countess of Annesley*, *Bastemil*, *Captain Nelson*, *spurius*, *coronatus* (*General Gordon*), *Golden Spur*, *Distinction*, *obvallaris*, *Henry Irving*, *Glory of Leyden*, *Golden Prince*, *Golden Plover*, *Golden Vase*, *Her Majesty*, *John Nelson*, *spurius*, *major*, *maximus*, *M. J. Berkeley*, and *Mrs. Elwes*. *Nanus* and *minor* are dwarf varieties, *minimus* is the smallest of all the Daffodils. *Shakespeare*, *Hodsock's Pride*, *Fred. Moore*, *Wide Awake*, *Marchioness of Headfort*, *P. R. Barr*, *rugilobus*, *Santa Maria*, *Samson*, *Sir W. Harcourt*, *Townshend*, *Boscawen*, *Stanfield*, *Croom a Boo* (*Ard Righ* with a frilled trumpet), *Weardale Perfection*,

"*Ellen Willmott*," *Monarch*, and many others are not as yet much grown.

Bicolor Group—*Empress*, *John Horsfield*, *Grandee*, *Dean Herbert*, *Michael Foster*, *Alfred Parsons*, *George C. Barr*, *Harrison Weir*, *J. B. M. Camm*, *John Parkinson*, *Mrs. Walter Ware*, *Mad. Plemp*, *T. A. Dorien Smith*, and *variiformis*. *Carrie Plemp*, *Princess Colibri*, *Duchess of Teck*, and *Victoria* are new kinds.

White and Sulphur-flowered Group—*Moschatus*, *albicans* (*Leda*), *cernuus* (very variable), *Cecilia de Graaff*, *Colleen Bawn*, *cernuus pulcher*, *C. W. Cowan*, *Dr. Hogg*, *Exquisite*, *J. G. Baker* (*volutus*), *F. W. Burbidge*, *Lady Grosvenor*, *Galatea*, *Mme. de Graaff*, *Mrs. F. W. Burbidge*, *Mrs. J. B. M. Camm*, *Mrs. Thompson*, *Helen Falkiner*, *pallidus*

Hybrid Narcissus Snowdrop.

præcox (the variable sulphur Daffodil of *Biarritz* and *Bayonne*), *pallidus asturicus*, *Princess Ida*, *Sarnian Belle*, *tortuosus*, *Wm. Goldring*, *W. P. Milner*, *Minnie Warren*, *Countess of Desmond*, *Robert Boyle*, *Silver Bar*, *Mrs. Vincent*.

The best of the double Daffodils are—*Telamonius plenus* (*Van Sion*), very free and robust, naturalised everywhere; double English, *minor plenus* (*Rip van Winkle*); *lobularis plenus*; *Scoticus plenus*; *plenissimus* (*Parkinson's great rose double*); *capax plenus* (*Eystettensis*), an exquisitely pretty and pale six-rowed double, but requiring a warm sandy soil, and remarkable as being a distinct double, of which the single type is unknown; *Cernuus*, *C. bicinctus*; the last do well in warm, stony soils, and, like other delicate kinds, enjoy the company of tree, shrub, or Rose roots.

Johnstoni (*Johnston's hybrid Daffodil*) was found by Mr. A. W. Tait near Oporto

in 1885, and figured in *Bot. Mag.*, 7012 ; it is a natural hybrid, between *N. pseudonarcissus* and *N. triandrus*, and is variable, Mr. Tait having in March 1892, sent me a bicolor form (*Garrett* × *N. triandrus albus*). The best forms are *N. Johnstoni* (type), *Queen of Spain*, *Mrs. Geo. Cammell*, *Pelayo*, and Mr. Tait's new bicolor form to which I have above alluded. The Rev. G. H. Engleheart has repeated crosses between the parent species, and has produced a pale sulphur or white *Johnstoni* (*Snowdrop*) and others.

N. Tazetta (*Polyanthus* or *Bunch Narcissus*).—This is the classical *Narcissus* of Homer and other poets, Greek and Roman—the flower of a hundred heads that delights all men, and lends a glory to the sea and the sky. *Tazetta* is focused in the Mediterranean Basin, but extends from the Canary Islands to the north of India and to Japan. It has long been naturalised in the Scilly Isles and in Cornwall ; but its early habit of growth, acquired in more sunny climes, often with us causes the flowers to be injured by frosts and storms. These *Narcissi* are hardy on warm dry soils, and as pot-plants many of them are handsome, while in deep, warm, sandy borders, which are sheltered by sunny walls or by plant-houses, they frequently do well, but as a rule bulbs must be imported from France, Italy, or Holland every year. The earliest are the double Roman and the paper-white (*N. papyraceus*). One variety from China may be grown in a sunny window if placed in water, and the bulbs submerged and held in position by gravel or stones. The growth of this variety is rapid, and good bulbs produce five to eight spikes. Its shop name is "Sacred *Narcissus*" or Chinese "Joss Lily."

The best varieties are *Grand Monarque*, *States-General*, *Newton*, *Scilly White* (*White Pearl*), *Soleil d'Or*, *Bathurst*, *Baselman major* (*Trewianus*), *Gloriosus*, *Sulphurine*, *Czar de Muscovie*, *Grand Sultana*, *Grand Primo Citroniere*, *Luna*, *Her Majesty*, *Queen of the Netherlands*, *Lord Canning*, and *Golden Era*.

N. Baselman minor is now proved by Mr. Engleheart and others to be a hybrid between *N. Tazetta* and *N. poeticus*, and a similar hybrid has been found wild near Montpellier.

N. triandrus (*Ganymede's Cup*).—A distinct and elegant species which is rarely happy out-of-doors except on warm, moist, and sheltered borders, or in nooks of the rock-garden, but which as a pot-bulb has no superior for delicate beauty, its flowers rivalling in texture those of the Cape *Freezias*. The late Mr. Rawson, of

Fallbarrow, Windermere, grew it in pots, and his specimens bore fifty to a hundred flowers. His plan was to rest it thoroughly after the leaves faded, and then to top-dress the bulbs, and rarely or never to re-pot them. As a rule *N. triandrus* is short-lived, but it naturally reproduces itself from seeds, which bloom the second or third year after sowing. The principal varieties are *N. albus* (*Angel's Tears*), *N. calathinus* (a robust form from the Isle de Glennans), and *L'Ile St. Nicholas*. On the coast of Brittany *N. calathinus* grows among rocks and short sandy sward close to the sea, and within reach of its spray during rough weather. *N. pulchellus* has a primrose perianth and a white cup, and is very pretty. In the late Mr. R. Parker's nursery at Lower Tooting, in 1874, it was very strong and healthy in an open-air bed resting on the gravel, and some of its scapes bore seven or nine flowers. No other *Narcissus* has a cup paler than the perianth segments. *Pulchellus* has recently been found wild in Portugal and Spain.

NEW HYBRID AND CROSS-BRED NARCISSI.—Every year at the Drill Hall and elsewhere we see new and improved seedlings by the score, and any one may raise seedlings for themselves if they will take the trouble to cross-fertilise the flowers either as grown in pots in cool greenhouse or cold frame, or in open-air borders. In some gardens, as at Chirnside and Kilmacurragh, series of natural cross-bred kinds have appeared spontaneously, and this is doubtless how *White Minor*, *St. Austin*, *Countess of Desmond*, and many other Irish forms appeared.

DISEASES AND INSECTS.—As *Narcissi* may be grown on dry warm soils, or in grassy lawns and meadows, the insects and fungoid diseases that would affect them on deep-dug and highly manured borders are few and far between. Neither cattle nor sheep molest them, and game and poultry, and even the most voracious of rabbits and the most impudent of town-sparrows leave the flowers alone. That their leaves and roots are poisonous, or acridly narcotic, may account for this. In some gardens and nurseries the larva of the *Narcissus Fly* (*Merodon equestris*) infests old bulbs, and whenever bulbs are imported from abroad or are dug for replanting, this larva should be searched for and exterminated. The bulbs affected may generally be known by their necks feeling soft when pinched. All such bulbs should be cut open and the larvæ extracted and killed. Such means are the only cure, as no insecticides will kill the pest without destroying the bulbs. The

pest checks both root and bulb growth, but after the larvæ are removed the rare bulbs recently infected may be planted for stock, for although the heart be eaten away, the lateral buds at the base of the bulb-scales often produce young bulbs.

N. poeticus and its varieties have rarely been infected by a leaf fungus (*Puccinia Schrœteri*), and so far its ravages have been limited.

Bulbs of *Narcissus* are now and then found to be afflicted with black canker or "black-rot," probably caused by *Peziza cibovioides*, but so far little serious injury has been done. The most insidious disease that affects *Narcissi* is one to which Mr. C. W. Dod some few years ago originally drew attention, under the name of "basal rot." The stunted flowers come up prematurely, while the leaves have a diseased appearance, and are much dwarfed and contorted. The base of the bulb rots away, while no roots are formed from the disc, and the wet and flabby bulb-coats are more or less discoloured, as if parboiled. This disease is most prevalent among white Daffodils, white single and double; but yellow kinds such as *Ard Righ* and *maximus* are affected on wet and cold soils, and even *N. Tazetta*, *N. Leedsii*, and *N. jonquilla* are also affected. In many cases this disease is checked by annual digging and re-planting in July or August; and sometimes bulbs, affected on deep rich borders, have recovered on being transplanted to Grass or beds of Moss and Briar Roses. Cold and wet, or even richly manured soils, seem especially conducive to this disease, and the only remedy is to alter the conditions of growth as soon as the leaves have died away. A celebrated northern grower of *Narcissi* tells me that some sorts that formerly failed on level borders do well on the drier and warmer grassy banks to which he transferred them. Facility in altering conditions of growth is often the best way to save plants that show signs of disease or failing in any way. It is a great consolation to know that many of the best and most showy kinds, if broadly and naturally grown on the Grass of meadow or of outlying lawn, are rarely, if ever, afflicted seriously with the above pests.—F. W. B.

NEILLIA (*Nine Bark*).—*N. opulifolia* is a hardy shrub generally known as *Spiræa opulifolia*. It is usually 3 to 5 ft. in height, but in good soils and in sheltered places it makes a bush 8 or 10 ft. high, and as much through. It blooms about midsummer, the small white flowers being

borne in dense feathery clusters. A more important shrub for ornamental planting is the variety *aurea*, with golden leaves. The yellow tinge of the foliage is extremely bright, and, at a distance, looks like a glowing mass of yellow bloom. This variety is a hardy and vigorous shrub suitable for planting anywhere. Other kinds as yet little known in gardens are *N. Amurensis*, *N. thyrsiflora*, and *N. Torryii*.

NELUMBIUM (*Yellow Sacred Bean*).—*N. luteum* is the hardiest known Sacred Bean, and therefore the one most interesting for northern gardens. Its large blossoms are a pale yellow, and its large round leaves arise boldly out of the water 3 to 4 ft. I have seen it flower strongly in the Garden of Plants at Paris: it remained out all the winter in a fountain basin in a sheltered and warm nook in the open air. It would probably flower out-of-doors in a sunny and sheltered spot in the south of England. It is rare, but may be procured from some nurseries, or from America. The beautiful *N. speciosum* is another noble aquatic, and is well worth a trial wherever there is a contrivance for heating the water of a small pond or tank in the open air.

NEMESIA.—Pretty hardy annuals of the simplest culture, *N. floribunda* growing about 1 ft. high, and bearing in summer fragrant *Linaria*-like blossoms, white with yellow throats. *N. versicolor* has blue, lilac, or yellow and white blossoms; and its variety *compacta*, blue and white flowers. If sown in ordinary soil in masses in early spring and then well thinned, the plants will have a pretty effect for several weeks after June. In *N. strumosa* the flowers display a variety of colours, white, pale yellow, and shades between pink and deep crimson. It grows 12 to 15 in. high, and has five or six stems, each of which bears a head of flowers, blooming from summer until late in autumn. Sow in heat in March, and transplant the seedlings in May, or sow in the open ground after the middle of May. S. Africa.

NEMOPHILA (*Californian Bluebell*).—Pretty Californian hardy annuals of much value for our gardens. The species from which the cultivated varieties have been derived are *N. insignis*, *N. atomaria*, *N. discoidalis*, and *N. maculata*. *N. insignis* has sky-blue flowers, and its varieties are *grandiflora*, *alba*, *purpurea-rubra*, and *striata*. *N. atomaria* has white flowers speckled with blue. Its varieties are *cœlestis* (sky-blue margin), *oculata* (pale blue and

black centre), and alba nigra (white and black centre). *N. discoidalis* has dark purple flowers edged with white, and the flowers of its variety *elegans* are maroon margined with white. *N. maculata* has large white flowers blotched with violet and its variety *purpurea* is of a mauve colour. These kinds are all worth growing. They thrive in any soil, and are of the simplest culture. In spring some pretty combinations may be effected by arranging the masses in harmonising colours. All *Nemophilas* are well suited for edgings and for filling small beds, as they are compact in growth. The insignis section should always be preferred to the others. Seeds should be sown early in August for spring-flowering, and in April for summer-blooming. To secure a good display of flower, however, the best time to sow is in August, and the soil should be a light one, where the seed can germinate freely, and where the plants will not become too robust before winter sets in. If the seed be sown where the plants are to flower, the results will be most satisfactory; but if transplanting be necessary, it should be done early in the winter. A ball of earth should be attached to each plant, and to secure this thin sowing is indispensable. These plants often grow better and give prettier effects in the cooler northern parts of the country and in Scotland. Hydrophyllaceæ.

NEPETA (*Cat Mint*).—Herbaceous perennials, of which *N. macrantha* has rather showy purple flowers, but is too tall and coarse for the border. *N. Mussini* is an old plant, flourishing in ordinary garden soil, and was once used for edgings to borders, a purpose for which its compact growth suits it well; but none of these plants are among the best for choice borders.

NEPHRODIUM.—North American ferns, some hardy, and very handsome, and these thrive under the same conditions as our native ferns. The chief sorts are *N. Goldieanum*, *N. intermedium*, *N. marginale*, and *N. noveboracense*. Several Japanese and Chinese species thrive without protection in mild localities, but they cannot be recommended for general culture. *N. fragrans* is a sweet-scented little form. It is somewhat delicate, but thrives in a sheltered situation.

NERTERA (*Fruiting Duckweed*).—*N. depressa* is a pretty creeping and minute plant, thickly studded with tiny reddish-orange berries, and with minute round leaves which are suggestive of the Duckweed of our stagnant pools. It forms

densely matted tufts in the open air, best perhaps on level spots in the rock-garden. It is also often grown in pans, and out-of-doors in some places may require protection in winter. *N. depressa* may be propagated by dividing old plants into small portions and placing them in small pots in a gentle heat until they start into growth, and then removing them to a cooler atmosphere. Rubiaceæ. New Zealand.

NICANDRA.—*N. physaloides* is a pretty Peruvian half-hardy annual, about 2 ft. high, of stout growth, bearing in summer numerous showy blue and white bell-like flowers, and thriving in an open position in light soil. Seed should be sown in heat in early spring or in the open air about the end of March, and the seedlings should be transplanted in May. One plant is sufficient for a square yard. Solanaceæ.

NICOTIANA (*Tobacco*).—Stout half-hardy annuals of rapid growth, and good subjects for grouping with other stately plants. The varieties differ chiefly in the stoutness and the height of their stems, and in size of their leaves and flowers, these differences depending largely on cultivation. The best growth is got in rich ground and sheltered positions. Seed must be sown in February in a warm house or frame. Prick off the plants as soon as they appear, and pot them in a genial heat of, say, 60°. Then about the end of May fine plants will be ready for putting out from 6 or 8 in. pots. They will start off at once, and not cease growing until frost comes. The most useful of all is *N. affinis*, used largely in gardens large and small, in distinct groups or with other things. It is much smaller in leaf and habit than such kinds as *N. macrophylla*, and therefore more suitable for small gardens.

N. colosseæ is a large-leaved kind which has been grown in recent years, but it is eclipsed by its variegated form which is one of the most graceful plants for beds or borders.

N. Sanderæ is a hybrid form of rich and varied colour, of easy culture for the flower-garden.

N. wigandioides is well adapted for subtropical bedding in positions where it will be surrounded by dwarfer plants.

NIEREMBERGIA.—The only quite hardy *Nierembergia* is *N. rivularis* (White Cup), one of the handsomest of all. The stems and foliage trail along the ground like those of the New Holland Violet, while barely pushed above the foliage are open cup-like creamy-white flowers, usually nearly 2 in. across. They continue during

the summer and autumn, and have a pleasing effect in the distance, as they suggest Snowdrops at first, and are quite as pretty when closely viewed. To ensure success with *Nierembergias* have heavy, firm soil, a level surface, and sunny aspect.

Nierembergia rivularis.

The tender *Nierembergias* are *N. frutescens*, a sub-shrubby plant of erect growth, and *N. filicaulis*, or *gracilis* as it is called, which has slender drooping branches. Both have pretty white flowers pencilled with purple, and are suitable for the rock-garden in summer or for drooping over the edges of vases. Propagate by cuttings in spring in heat.

NIGELLA (*Fennel Flower*).—Hardy annuals of the Crowfoot family, all curious and pretty with feathery Fennel-like foliage and bluish or yellowish blossoms. *N. sativa*, *N. orientalis*, *N. damascena* (Devil in a Bush), and *N. hispanica* are the kinds cultivated, *N. hispanica* being the prettiest, growing about 1 ft. high, and with showy blue flowers from July onwards. There is a white variety and a variety with deep purple blossoms. All the *Nigellas* should be sown in March, in light warm soil in the open border. They should be sown in the place which they are to occupy, as they do not succeed so well if transplanted. If sown in autumn, the seedlings often survive the winter and flower early and well.

NOLANA (*Chilian Bellflower*).—Pretty hardy annuals from S. America—*N. paradoxa*, *N. prostrata*, and *N. atriplicifolia* among the best. They have slender trailing stems, and flowers generally blue.

N. atriplicifolia has beautiful and very showy blue flowers with a white centre,

Nigella damascena.

and there is a white variety (*N. a. alba*). The *Nolanas* are suitable for borders or for the rock-garden, as they thrive in any warm open situation in good light soil. As seedlings do not transplant well, seed should be sown in the open in March, and the plants well thinned out. *Nolanaceæ*.

NOTOSPARTIUM (*Pink Broom of New Zealand*).—*N. Carmichaelliae* is much like some of the Brooms, hence its name, the leafless, graceful shoots studded late in June with small bright rosy flowers in clusters towards the point. Its graceful growth is well seen in the bolder arrangement of the rock-garden. In New Zealand it grows 20 ft. in height, and seems to be fairly hardy here, though not a shrub for cold climates or exposed places.

NUPHAR (*Yellow Water-Lily*).—Bold waterplants nearly allied to the Water Lily, but not so handsome except in the foliage. The most familiar Nuphar is the common Yellow Water-Lily (*N. lutea*), which inhabits many of our lakes and slow-running rivers, in company with the Water-Lily. It has a very interesting little variety called *pumila* or *minima*, which is found wild in some of the Highland lakes, and

which has the same vinous perfume as the type. *N. advena* is the N. American ally of our yellow Water-Lily, and resembling it, but larger and with leaves which stand erect out of the water, and is a much finer plant. *N. Kalmiana*, also a N. American kind, much resembles the small variety of *N. lutea*, and is an interesting plant to

Notospartium Carmichaeliæ.

grow in company with it. The cultivation is quite simple—placing the rootstocks in water 2 to 3 ft. deep, when they will soon root in the mud; but they are apt to increase too rapidly, and may prove troublesome to get rid of.

NUTTALLIA (*Osoberry*).—*N. cerasiformis* is a hardy shrub, and one of the earliest to flower. Hardly before winter is past its abundant drooping racemes of white flowers appear, and they usually do so before the leaves. When in bloom it bears a resemblance to the Flowering Currant (*Ribes sanguineum*), and forms a dense bush, 6 to 12 ft. high, growing in any kind of soil; is hardy, but not showy, and scarcely pretty. California.

NYCTERINIA. — Pretty, half-hardy annuals from the Cape of Good Hope. *N. selaginoides* grows about 9 in. high, forming dense compact tufts of slender stems, in late autumn covered with small white, orange-centred blossoms fragrant at night. *N. capensis* is about the same size as *N. selaginoides*, and is of similar growth, its flowers larger, and not of so pure a white. *N. selaginoides* and *N. capensis* require to be sown early in heat, and to be transplanted in May in light, rich, sandy loam in warm borders. *N. Lychnidea* is a small shrubby perennial with yellowish-white blossoms, thriving in warm borders in summer. It should be propagated either by cuttings in autumn, or by seeds in spring. Scrophulariaceæ.

NYMPHÆA (*Water-Lily*).—A beautiful family of water-plants distributed over many parts of the world, some of the northern kinds hardy. Our own native Water-Lily was always neglected and rarely effective, except in a wild state; but when it is seen that we may have in Britain the soft and beautiful yellows and the delicate rose and red flowers of the tropical Water-Lilies throughout summer and autumn, we shall begin to take more interest in our garden water-flowers, and even the wretched formless duckponds which disfigure so many country seats may have a reason to be. The new hybrid kinds continue blooming long after our native kind has ceased, and from the middle of May to nearly the end of October flowers are abundant.

CULTURE OF HARDY WATER-LILIES.—These lovely water flowers are not difficult to manage. A simple way of planting is to put the plants with soil in some shallow baskets and sink these to the bottom, and before the basket has rotted the plant will have fixed itself to the bottom. Or in ponds where there is a rich muddy bottom I plant by tying a drain-pipe or a piece of waste iron to a root and throw it in where the water is between 18 in. and 2 ft. deep. The best season for planting is the spring, and plants put in in April or May make sufficient progress to flower before summer is gone. They are often grown in brick and cement tanks, sunk in the ground to a depth of from 2½ to 3 ft. These, with a foot of soil and the rest water, would grow excellent Water-Lilies, and the plants do not want a great depth of water over their crowns. It would be well to arrange that at least a foot might cover them in winter, and then they are virtually safe from frost. They grow better in the mud of ponds and lakes

than under the more artificial conditions of the cemented tank. But if neither ponds nor tanks are available, these Water-lilies can still be easily grown, for, as M. Latour-Marliac says, like Diogenes, they can content themselves in a tub.

"The enemies of Water-lilies are water-rats and swans and other water birds, especially moorhens, which often pull them to pieces. Moorhens are very destructive to the flowers, and should be closely watched. There is, however, another enemy. We noticed it first by seeing leaves detached and floating. On the water becoming clearer one could see what appeared to be small bits of stick an inch or so long attached in numbers to the leaf-stalk. It was the grub of the caddis fly with its house upon its back. In the hollow stick it was safe from the fish, and, fastening upon the

establish colonies of these flowers, of charming effect from June to September. The water is best when open to the sun, renewed by only a small inflow, and if possible sheltered from rough winds by the lie of the land or by a belt of shrubs. The water should be cleared of coarse weeds and in most cases the natural mud is the best soil in which to plant. In artificial pools a layer of soil may be prepared by mixing loam with a little sand and some of the rich deposit of grit, leaves, and mud so often left behind by water when in flood. This is the natural food of the Water-lily, and manure only excites rank leaf-growth and predisposes to disease. Little mounds may be made by laying a few sods together, but if the depth of water makes this difficult the plants may be simply lowered into place—planted firmly in baskets—and the mud

Hardy American Water-lily (*N. tuberosa*).

young and tender leaf-stalk, the grubs fed away until the leaf was eaten asunder. Strongly-established plants are not likely to suffer, but a watch should be kept on young plants if rare varieties." The common water rat or vole is an active destroyer of the flowers, and where it inhabits water, as it commonly does all ponds and streams, nearly all the flowers will be destroyed if this animal is not constantly kept down.

In the recent story of our open air gardens there have been no gains so good as those which have transformed our waters into gardens of beautiful, hardy plants. Wherever there exists a streamlet, we may arrange a water-garden, and in the many places where pieces of water already exist, nothing is easier than to

pressed around them. May is a good time for planting, and (for established plants) the flower season begins in June, reaches its height in August, and in good years lasts into October. After growing for three or four years, some kinds get too thick and these may be raised and divided late in April; others we have had in the same place for ten years with no loss of health or bloom.

A crowded water-garden is often a matter of necessity, but where space is at command the plants are best in bold groups and far enough apart to keep the kinds distinct. The depth of water may vary from a foot to as much as 7 feet, but only the strongest kinds will thrive in water as deep as this. The flowers vary as to opening and closing, and while on

bright days they mostly fold away about four in the afternoon, on dark days they sometimes keep open until evening. But it is, perhaps, after a sharp shower, when leaves and flower-cups are thickly set with diamond drops, that the water-garden is at its best. If the fading flowers and damaged leaves can be removed from day to day (by the help of a flower-cutter and long-handled rake), the flower season will be longer, but this cannot well be done save in small tanks. As soon as they open, the flowers may be arranged very prettily in shallow bowls, lasting

germinating, and the seedlings are so liable to degenerate that this way of increase is not much followed. The flowers sink upon the third day, and, ripening under water, open half-way when mature to allow the seeds to escape. They are at first held together by a mass of jelly-like matter and float for several hours, and during this time may be skimmed from the surface and sown at once in pans of mud. Care must be taken not to disturb the soil when adding water, and if placed in a warm and sunny corner the seedlings are not long in starting.

Bud of hybrid Water-lily, *N. Marliacea carnea* (natural size), gathered from open water at Gravetye, Sussex, at the end of October.

fresh for several days and fragrant. If care is taken to bend back the sepals when the flowers are cut, the blooms remain open until they wither.

Though some of the finer *Increase.* hybrids make few side crowns and thus increase slowly, others may be freely divided, the offsets being cut away with a bit of the old stem attached. Some kinds—mostly of the *odorata* and *tuberosa* sections—are easily increased from seed, but many kinds are sterile, in others seed is slow in

Weeds must be kept under, *Pests.* such things as the Water Starwort and Floating Pond Weed giving trouble, the last pest with its brittle roots being especially difficult to get out. In early summer the grubs of the caddisfly gnaw the young leaves and stems, and water snails so load them with eggs as to cause curling and distortion, but as a rule the plants outgrow these troubles with the warmer days, and have more to fear from rats and water-fowl when in full bloom. In small ponds these may be

kept under, but in larger sheets of water they often do harm, gnawing the buds before they open, and even carrying them off to build their nests. Green-fly also appears upon the leaves and flowers above water, and grubs of various kinds attack them, but spraying with a weak solution of quassia will generally clear the emergent leaves and flowers, while a few drops of a mixture of three parts of colza to one of paraffin, will spread over the water and check the foe.

Nymphaea alba.—The White Water-lily, found in many parts of our country and throughout Europe to Siberia. The flowers, of 4 to 6 inches across, float upon the water amid rounded leaves of bright green, very variable as to size, and reddish while young.

N. alba var. *candidissima*.—A large-flowered form sometimes called the Hampton Court Lily. Its white flowers are broader in petal, coming early and continuing late, and thrust well above the water. Its growth is strong, needing ample space. Leaves of yellow-green while young, the leaf-lobes much curved and overlapping. At certain times and in certain soils, the sepals are flushed with rose-colour.

N. alba var. *delicata* has flowers flushed with pale rose. *N. alba maxima* large flowers. *N. alba minor*, a small-flowered variety with blooms of great purity, and prettily incurved. *N. alba* var. *plenissima*, a form with large, nearly double flowers. *N. alba* var. *rubra* is a scarce plant, best known as the Swedish Water-lily, and classed as a form of *alba*, though distinct in its smaller leaves of different shape, slightly rolled inwards at the edges, olive-green above and dull reddish below. The flowers are smaller, fuller, and more refined, with broader and blunter petals. It blooms early but soon goes to rest. With so short a season it spreads slowly, is averse to removal, and also to hot weather. The flowers vary from pale pink to a deep magenta, deepening towards the centre of the flower and from day to day. Seeds freely, but the seedlings mostly revert, only the tiny slow-growing plants coming true. Syns., *N. Caspary* and *N. sphaerocarpa*.

N. Froebeli.—An improved form of the Swedish Water-lily raised at Zurich, and of deeper colour and stronger growth. Of good size and fragrant, its flowers are of deep crimson with orange stamens, coming freely to the end of September. It is one of the finest dark kinds, thriving in exposed open water, and effective in the distance.

N. Andreana.—Bears cup-shaped flowers of brick-red colour shaded with orange, and held well above the water. The leaves are blotched with chestnut-brown, their lobes overlapping, and with such long stalks that they float out far apart. The flowers come so freely that a score or more are sometimes open together on one strong plant.

N. Arc-en-ciel.—A distinct hybrid with

blending shades of pale salmon streaked with rose, and crimson spotted sepals. The leaves are variegated in white, rose, and shades of green and bronze.

N. Arethusa.—A plant of strong growth and very free, coming near *Laydekeri fulgens* in its bright crimson colour, but larger in flower and more robust.

N. atropurpurea.—One of the darkest of all, with very large flowers of deep port-wine colour, with pale yellow stamens and petals incurved at the tips. Of good growth, free, with dark leaves shaded with red on their under surface.

N. Aurora.—So named from its changing tints, which vary from a pale rosy-yellow on opening, to orange or reddish tones on the third day, different plants showing much variation in depth of colour.

N. Brakeleyi rosea.—A new hybrid, with large flowers of clear carmine. It is strong and free, fragrant, and blooms far into the autumn.

N. candida.—A plant coming from Styria, and so near *alba* as to be often called the Bohemian form of it. The flowers are small and very white, with a reddish-brown centre and seeds very large.

N. Carrisbrookii.—A new kind raised in California, and described as bearing flowers of bright flesh pink, and fragrant.

N. chrysantha.—A handsome kind of medium growth, and deep yellow flowers passing to orange-red, with a cluster of bright red stamens; leaves edged and marbled with bronze.

N. colossea.—Very large in leaf and flower, blooming with the earliest and lasting well into the autumn. Leaves rich green above and brown beneath, the fragrant flowers of pale pink, the outer segments of pale olive-green, and pale-yellow stamens. Thrives in open water in deep pond mud, even when exposed in large lakes.

N. Ellisiana.—One of the best, rich in colour and conspicuous at a distance. Large broad-petalled flowers of reddish-crimson with orange-red stamens. A plant of robust growth and free in flower.

N. flava.—Though this will pass a mild winter uninjured, and may even survive for several years in the warmest parts of Britain, a severe frost is fatal. Instead of a thick rhizome this has a mass of fibrous roots, and spreads as freely as any Strawberry by means of long runners which root as they go: the roots are never quite at rest, and possibly this has something to do with its tenderness. Under glass it is pretty and distinct, but it starts late in the open, and only blooms well in warm seasons.

N. fulva.—Bears medium-sized star-shaped flowers, curiously incurved at the tips of the petals, and sweetly scented. Its colour is rose upon yellow, with yellow stamens, the red growing deeper towards the centre and brightening with age. Leaves spotted with brown above, and suffused with red beneath.

N. Gladstoniana.—Has white flowers of great size, sometimes 8 inches across. They are free from all trace of colour and stand well above the water on stout stems, the whole plant being of free and open habit. One of the first to bloom in spring, and the last flowers are only cut down by autumn frosts.

N. gloriosa.—Bears massive flowers 7 inches across, rich dark red with orange-coloured stamens, and fragrant. Being slow to spread and difficult of increase, it should be left for several years undisturbed, and while of strong growth, it sometimes dies off suddenly. The flowers are very full, and floating, the lower petals often prettily tipped with rosy-white during the heat of summer, becoming deeper and more uniform towards the autumn. This is the only kind always bearing five sepals.

N. graziella.—A new French seedling of peculiar orange-red colour streaked with green, flowering without a break till quite the end of the season.

N. James Brydon.—A distinct sort with flowers of 4 to 6 inches wide, of a soft rose-crimson; petals finely rounded and curving inwards, with a paler, silvery sheen beneath, and stamens of bright orange. An excellent kind, quite hardy.

N. James Gurney, with fair-sized flowers of deep rose, coming near *N. Ellisiana*.

N. Laydekeri fulgens.—A flower of fine colour and cupped, the rounded petals of crimson-purple showing paler within and enclosing a cluster of vivid red stamens. Like all of this group, it is a good plant for tanks.

N. Laydekeri lilacea.—Very free in its small flowers of soft rosy-lilac tipped with clear pink, their colour deepening to rosy-crimson on the third day. They are held well above the water, shining with an almost silvery lustre in bright sunlight, and scented like a tea-rose. The plant does best in shallow water, and is one of the earliest to show flower.

N. Laydekeri purpurata.—A telling flower, larger than others in this group, and very shapely with its long pointed petals. They are early, free, and fragrant, of a conspicuous shade of wine-red with orange-red stamens.

N. Laydekeri rosea.—One of the most useful of hardy Water-lilies, with fragrant, pale pink flowers, passing through several shades to deep rose as they fade away. It does best in shallow water and gives so few offsets that several plants should be grouped to secure the full effect of the changing flowers.

N. Laydekeri rosea prolifera.—In this form the one fault of the parent—its difficult increase—is met by a free yield of offsets from the fleshy rhizome. These bloom when small, surrounding the parent with a succession of flowers, and providing increase. From this point of view it is a valuable gain.

N. luciana.—Like *odorata caroliniana* in all save the deeper and uniform rose-pink of its medium-sized flowers.

N. lucida.—With massive flowers opening starwise and rosy-vermilion in colour, paling towards the edges and the tips of the petals

and deepening [towards the cluster of orange stamens. The leaves, borne upon very long stems, are bold and finely blotched with chestnut-red above and reddish streaks beneath.

N. Marliacea albida.—A superb plant, thriving in deep water, where it should be sometimes thinned to avoid overcrowding; its massive white flowers of 8 or more inches across, are pushed well above the water, and last into October. They are of glistening purity, fragrant, and very full of petals guarding the cluster of golden anthers. The guard petals are long and broad, but inside they grow shorter and narrower towards the centre. In large groups its general effect is fine.

N. Marl. carnea.—A noble hardy plant, in colour a soft flesh-pink, deepening towards the base of the petals and paling gradually to white. It grows well in shallow or deep water, flowering late, and showing its vanilla-scented flowers well above the dark leaves.

N. Marl. chromatella.—The first yellow kind sent out, a free and fine plant, but apt to get crowded, and when this happens it does not flower so well. Being vigorous it is a good plant for deep open water, where its large flowers of canary-yellow show finely against the dark brown leaves, and remain open for a long while each day.

N. Marl. flammea.—A handsome, though inaptly named, flower of medium size, being a deep wine-red rather than flame-colour, with red stamens and petals flaked with white towards the tips. Leaves streaked with reddish-brown.

N. Marl. ignea.—One of the brightest in its uniform carmine-red, deepening slightly towards the crown of vivid orange-red stamens; sepals pale olive-green edged with rose beneath, and paler above. Though not large, the flowers are good in colour, composed of eighteen cupped and shapely petals.

N. Marl. rosea.—Another stout grower, thriving in deep water, to which its long slender stems are suited. Flowers rose colour, changing to flesh-pink, broader in petal and fuller than in *M. carnea*, with the colour deepening towards the tips. Young leaves purplish-red, changing to deep green.

N. Marl. rubro-punctata.—Flowers of great size borne freely and through a long season. Petals rosy-purple, tipped and flaked with pink; stamens orange-red.

N. odorata.—The white American Pond-lily, common in the eastern States and with all the beauty of our own, and fragrant. It varies much in size and colour, and (being of moderate growth) is well suited to tanks. The leaf may be anything from 5 to 10 inches across, nearly round, and purplish when young, changing to pure green and reddish beneath. Flowers of 3 to 5 inches, composed of narrow pointed petals, long in the bud.

N. odorata caroliniana.—The leaves are green above and red beneath, and though nearly a foot across when fully grown, the plant is only of moderate growth and not too vigorous for a tank. Though easily divided,

the plant is best left alone for several years, gaining in size of flowers, which become 6 or more inches across, composed of very narrow pale pink petals, deepening in colour towards the centre. The flowers vary through several shades of colour, according to soil and climate, the following varieties being fairly constant: *nivea*, with very double pure white flowers, narrow petals and rich yellow stamens; *perfecta*, with semi-double flowers of the small narrow petals, but more rounded at the tip and deep flesh or salmon in colour; and *sal-monea*, a strong form with flowers of decided salmon-pink.

N. odorata delicata.—A small neat form, with rosy-tinted flowers.

N. odorata exquisita.—Finely-shaped rosy-carmine flowers of medium size, with narrow, pointed petals and golden stamens; they are the darkest of this group, and stand well out of the water. Leaves green above and intense red below.

N. odorata gigantea.—The larger, southern form of *odorata*, found from North Carolina to Florida, and known as the Rice-field Water-lily. It is of great vigour, delighting in deep water and flowering early in the season, but not in the autumn. The leaves are very large, sometimes measuring as much as 16 inches across, and dark green tinged with purple towards the edges, which are often partly rolled inwards. The flowers—4 to 7 inches across—are pure white with green sepals, slightly incurved, and nearly scentless.

N. odorata maxima.—A wild form, also known as *superba*, differing widely from the parent in its larger cup-shaped flowers, with spreading petals very broad at the base, and free from any trace of colour. Found only in New Jersey.

N. odorata minor.—A pretty little plant of slow growth, and one of the best for tanks and shallow water. The starry white flowers are 2 to 3 inches across, with purplish sepals and sweetly scented, though forms occur that are almost without scent, and others with flowers more or less incurved. The leaves are small, bright green above, and deep red beneath. A native of the shallow bogs of New Jersey. Syn., *N. pumila*.

N. odorata rosacea.—A good form coming near *exquisita* but more vigorous, with bright rosy flowers about 4 inches across, paling to salmon-yellow towards the crown of golden stamens; petals narrow and pointed.

N. odorata rosea.—The Cape Cod Water-lily—a plant of moderate vigour, with petals of a uniform bright rose colour with yellow stamens, and fragrant. It begins early, and seeds so freely that (unless the dead flowers are kept cut) its season is short. The flowers also lose colour quickly when fully expanded, and will sometimes burn in hot sunlight. Leaves rather small, deep red on both sides while young, becoming dark green. Massachusetts.

N. odorata sulphurea.—A beautiful plant, distinct from all other kinds in the cactus-shape

of its flowers. It is a plant of strong growth, forming many crowns and a profusion of clear yellow vanilla-scented flowers, from July into the autumn. Though not much above medium size, they are conspicuous, rising well out of the water, and the long pointed buds open early in the day. The leaves rest on the water unless crowded, and are evenly rounded, and finely blotched and marbled. It is slow in starting to flower, hardly beginning until July.

N. o. sulphurea grandiflora.—A fine form, with the same starry cactus-shaped flowers, but much larger, fuller, and of paler yellow. Though its parent is one of the latest, this kind is the first in bloom and bears the largest flower, opening out very flat, with narrow, crowded petals of elegant effect. It is free in flower when well established, and makes many crowns, with bold foliage of paler green, less mottled above, but covered beneath with reddish blotches.

N. Robinsoni.—A star-like flower of distinct colour, a reddish-purple deepening towards the centre, which shows traces of an orange ground, paling again towards the tips of the petals. The flowers are of medium size, with pointed and sharply tapering petals, and they last longer than almost any other kind when open. Leaf dark green, blotched with chestnut above and on the stems, and reddish below.

N. sanguinea.—The deepest in colour of the smaller Water-lilies, with flowers which deepen from clear carmine to deep ruby crimson, with dark orange-red stamens.

N. Seignoureti.—One of the older hybrids, its colour being indistinct. The flowers are dull yellow washed with rose, and are held several inches above the water. A compact grower, with small but dense leaves, finely spotted.

N. suavissima.—With deep rose-pink flowers, very full of narrow petals, and fragrant.

N. tetragona.—The smallest of Water-lilies, with little flowers $1\frac{1}{2}$ to $2\frac{1}{2}$ inches across and pure white with yellow stamens, opening for three or four days from noon till about 5 P.M. The leaf is as large as the palm of the hand and shaped almost like a horse-shoe, with the lobes wide apart; coloured dark green above and reddish below. This kind and its forms thrive well in tanks, forming no offsets and spreading slowly, though free to flower from May to the end of September. It is grown from seed. N. Asia and parts of N. America.

N. tetragona var. *Helvola*.—A seedling with pale yellow flowers 2 inches across, open during the afternoon and slightly raised above the water. The leaf is oval and yet smaller than in the parent, and freely blotched with brown. It thrives in shallow water with a long season of flower, while a dozen or more blooms may often be counted at once upon a strong plant. In hot sunlight they sometimes come flushed with rose.

N. tetragona var. *himalayensis*.—A small-flowered seedling, with floating blooms of

about an inch, coming from May to October. It seeds freely, and the seedlings bloom well in their second year.

N. tuberosa.—The vigorous Water-lily of the United States, thriving in deep water, lifting its flowers high out of the water, and spreading rapidly by long tuberous offsets. It should, therefore, be planted by itself in deep water, but only flowers freely under a warm sky or in hot summers. They are creamy white, without a trace of colour in the sepals or petals, which are longer and broader than in any other wild kind, and scentless. They vary from 4½ to nearly 9 inches across, and bear larger seeds than any other kind. Leaves large, 8 to 12 inches across, and rising from the water when crowded or near the surface. This wild plant is so vigorous that it is best not planted in the same pond with the finer hybrids. Syns., *N. blanda* and *N. reniformis*.

N. tuberosa var. *maxima*.—A form found in Lake Hopatcong, New Jersey, growing in deep water, and supposed to be a wild cross between *tuberosa* and *odorata*. It is of smaller growth and blooms later than the parent, with cup-shaped pure-white flowers, prettily shaded with green upon the outer petals. The flower-stalks bear long hairs and a few faint brown streaks.

N. tuberosa var. *Richardsoni*.—An American seedling with double pure-white flowers standing well out of the water; they are of finely rounded petals, curving inwards, the outer row and the sepals slightly drooping. Its subdued growth and distinct globe-shaped flowers make it one of the most distinct of white Water-lilies.

N. tuberosa var. *rosea*.—A supposed natural cross with the rosy Cape Cod Water-lily. It is nearly as vigorous as its parent, with large pink flowers rising above the water, and opening widely to show the crown of bright red stamens. A good plant for deep water.

N. vomerensis.—Its floating flowers are intermediate in size, snow-white, fragrant, and borne freely through a long season. It grows well in pots and in small fountain-basins, coming fairly true from seed.

N. William Doogue.—An American hybrid with large flowers of soft pink, very broad in petal, much cupped, and evenly coloured throughout. A charming plant and quite hardy.

N. William Falconer.—A flower of striking colour, one of the best dark Water-lilies. The blooms are large (6 or 7 inches) and deep crimson, shaded with purple, and yellow in the centre. The young leaves are bright red, changing to deep green, with veins of reddish purple.

Nymphaea species:—*acutiloba*, China; *alba*, northern temperate regions; *albo rosea*, Amazonum, Brazil; *amplex*, W. Indies; *Basiniana*, Siberia; *bella*, E. Indies; *blanda*, S. Amer.; *capensis*, S. Africa; *elegans*, Texas; *flava*, Florida; *flavo-virens*; *fragrantissima*, tropical Africa; *Gardneriana*, Brazil; *gigantea*, Australia; *gracilis*, Mexico; *hirta*, Sumatra; *Jamesoniana*, Ecuador; *lasiophylla*, Brazil; *Lotus*, Asia and trop. Africa; *Maximiliani*, Brazil; *Mexicana*, Mexico; *nitida*, Siberia; *nubica*, trop. Africa; *odorata*, N. Amer.; *oxypetala*, Ecuador; *Parkeriana*, Guiana;

pauciradiata, Siberia; *punctata*, Central Asia; *rosea*, E. Indies; *Rudgeana*, Guiana; *rufescens*; *stellata*, Asia and trop. Africa; *stenaspidota*, Brazil; *Sumatrana*, Sumatra; *terminerva*, Brazil; *tetragona*, Asia; *triseptola*, trop. America; *tuberosa*, N. Amer.; *tussilagifolia*, Mexico; *undulata*, Mexico; *vivipara*; *Wenzelii*, Amoor; *Zanzibariensis*, trop. Africa.

NYSSA (*Tupelo Tree*).—A small group of trees little planted, but having certain good qualities. One of the most brilliant sights I remember was a Tupelo tree at Strathsfieldsaye in Hampshire in autumn, a tall slender tree, in splendid colour of leaf. The trees are mostly natives of North Eastern America, a very cold country, so that there can be no doubt about their hardiness; and the fact that they grow in swampy places should make them easy to find a place in this river and estuary veined land.

Nyssa villosa.

N. sylvatica is the Sour Gum or Tupelo, a tree over 100 feet high in deep swampy ground in Maine and Canada, southwards and westwards.

N. biflora (*Water Tupelo*) is a somewhat smaller swamp and waterside tree, of N. Jersey and southwards.

N. aquatica (*Tupelo Gum*) rises sometimes to a height of 100 feet, and is rather of southern and western distribution. The two first-named species are the most important for our country.

CENOTHERA (*Evening Primrose*).—These are amongst the prettiest of hardy flowers, and are easily grown in all soils. From June onward they are in their beauty, many varieties becoming more full of flowers in late summer. They have large bright yellow or white flowers, in many kinds so freely and continuously borne as to make them of great value. Their name notwithstanding, many are open by day; as for instance, *C. linearis*, *speciosa*, *taraxacifolia*, and *trichocalyx*. Many of the finest Evening Primroses are natives of States west of Mississippi, such as California, Utah, Missouri, and Texas. They all bloom the first season from early seedlings. Some of the true perennials, and particularly the prostrate ones, are shy seeders, but the tall ones seed freely. The largest kinds are very beautiful in any position, but from their height and boldness they are suited for the wild garden and for shrubberies. Sowing themselves freely, they are apt to become too numer-

ous and somewhat "starved," so that they are best when confined to large groups. In any flower garden not confined to flat beds only, an isolated bed of them looks well. Amongst them we have tall erect sorts like *Æ. Lamarckiana*, prostrate, as in *trichocalyx* and *cæspitosa*, and white flowers, as in the last-named two, while *coronopifolia* and *speciosa* often change with age to pink or rose. Few plants have finer yellow blooms than *missouriensis* and *Lamarckiana*; and, moreover, they are very large—4 to 6 in. across. Nearly all are more or less fragrant, particularly *cæspitosa*, *marginata*, *fragrans*, and *eximia*.

Æ. biennis is a handsome biennial, 3 to 5 ft. high, with large bright yellow flowers. Its variety *grandiflora* or *Lamarckiana* should always be preferred to the ordinary kind, as the flowers are larger and of a finer colour, having a fine effect in large masses, and it is well suited for the wild garden.

Æ. fruticosa (*Sundrops*).—This and its varieties are among the finest of hardy perennials, 1 to 3 ft. high, with showy yellow blossoms. There are about half-a-dozen distinct varieties, the best being *linearis*, or, as it is usually called, *riparia*, about 1½ ft. high, bearing an abundance of yellow blossoms. It is one of the best of yellow Evening Primroses for small beds, for edgings, or as a groundwork for other plants, and it goes on flowering even after the first frosts. It is always prudent to lift a few or strike a potful of cuttings in case of accident, though in spring the old plants may be divided to any extent. Given sandy loam, these plants thrive in borders or in the margins of shrubberies. N. America.

Æ. glauca is a handsome N. American species similar to *fruticosa*. It is of sub-shrubby growth, becomes bushy, and bears yellow flowers. The variety *Fraseri* is a still finer plant, and where an attractive mass of yellow is desired through the summer there are few hardy plants of easy cultivation so effective. In a large rock-garden a few plants here and there give good colour, and the plants bloom long.

Æ. marginata.—A dwarf plant, never more than 12 in. high, with flowers in May, 4 to 5 in. across, from white gradually changing to a delicate rose; as evening approaches, coming well above the jagged leaves, retaining their beauty all night, and emitting a Magnolia-like odour. It is a hardy perennial, and is increased by suckers from the roots, and by cuttings, which root readily. An excellent plant

for the rock-garden and for borders. *Syn.*, *Æ. cæspitosa*. *Æ. trichocalyx*, a similar species, but probably only an annual, is a beautiful plant well worth growing.

(*Enothera marginata*.)

Æ. missouriensis.—A handsome herbaceous plant from N. America, with prostrate downy stems and clear yellow flowers, sometimes 5 in. in diameter, and borne so freely that they may be said to cover the ground with gold. There is no more valuable border flower, and when well placed in the rock-garden it is effective, especially if the luxuriant shoots are allowed to hang down. As seed is rarely perfected, the plant is better increased by careful division, or by cuttings taken in April. As a border plant it does not grow so freely in cold clayey soils as in warm light ones. The blooms open best in the evening. *Syn.*, *Æ. macrocarpa*.

Æ. speciosa.—A handsome plant, with many large flowers, at first white, changing to a delicate rose. The plant is erect and its stems almost shrubby, 14 to 18 in. high. A true perennial, valuable for borders, or the rougher parts of the rock-garden in good loam. It is a native of North America, and is increased by division, cuttings, or seeds, but does not seed freely in this country.

Æ. taraxacifolia, a Chilean plant, is

one of the finest of those Evening Primroses characterised by a low trailing growth and large blossoms, which attain their fullest expansion towards evening. It has a fine effect in rich deep soil in the rock-garden, where its trailing stems can droop over the ledge of a block of stone. The flowers, $2\frac{1}{2}$ to $3\frac{1}{2}$ in. across, are pure white, changing to a delicate pink.

Æ. triloba is a handsome hardy annual species, of dwarf growth, with large and showy yellow blossoms. It is also called *Æ. rhizocarpa*. Other showy annuals are

An Evening Primrose (*Enothera Lamarckiana*).

Æ. sinuata and its variety *maxima*, *Æ. macrantha*, *odorata*, *bistorta*, *Veitchiana*, and *Drummondii*. These are all worthy of culture, requiring the treatment of half-hardy annuals, and ordinary garden soil.

OLEARIA (*Daisy Trees*).—Pretty ever-green bushes, natives of Australia and New Zealand. The only drawback is their not proving really hardy, except in warm localities in the southern counties. They may exist in other districts, but

gardens are the worse not the better for the presence of shrubs not really hardy in them, or perhaps in a half-dead or flowerless state, or requiring protection, which has a tendency to make gardens needlessly ugly for half the year.

O. insignis.—The plant is dwarf, branched, the branches as thick as the little finger; the leaves from 3 to 5 in. long, 2 in. broad, rounded at the ends, thick and hard, shining green on the upper surface. With this exception the whole plant is covered with a thick, felt-like coating of pale brownish tomentum. The flowers are on erect peduncles, which are as thick as a goose-quill and from 6 to 9 in. long; the flower-heads are a little over 2 in. across; remaining fresh on the plant for about six weeks. This plant is one of the most interesting and prettiest of the composites which are found in New Zealand. It is a native of Middle Island, where it is said to grow on the driest rocks.

O. Haasti.—This is pretty hardy in various parts of England, growing to a large size in the more favoured localities, and if planted in groups it has a good effect when covered with its Aster-like flowers, and even out of bloom it is attractive. In New Zealand, where it is found at altitudes of about 4,000 ft., it forms a small shrubby tree. The flowers are very numerous, in terminal corymbs, the ray florets $\frac{1}{4}$ in. long, white, the disc yellow. The plants usually bloom in August, and remain in perfection several weeks. Other kinds grown against walls and on warm soils with some success are *ramulosa*, *ilicifolia*, *myrsinoides*, *nitida*, *macro-donta*, *stellulata*, *Traversi*, *Gunniana*, *dentata*, *argophylla*, *insignis*.

OMPHALODES (*Navelwort*).—Pretty dwarf rock or mountain plants belonging to the Borage order.

O. linifolia, a beautiful Portuguese hardy annual, 9 to 12 in. high, with glaucous-green leaves and pure white flowers from June to August; it may be grown in ordinary soil, the seeds sown in April or in September and October; the plant often sows itself.

O. Luciliæ, a lovely rock-plant, with flowers a pretty lilac-blue, and glaucous grey foliage. It is hardy, and succeeds in the rock-garden, but the soil must be thoroughly drained, for though the plant requires abundance of water during growth, it suffers from stagnant moisture. To protect it against slugs, which are too fond of it, strips of perforated zinc, about 3 in. wide, bent so as to form rings round the plants, are used. Division or by seeds. It grows freely in some light soils, as in Wheeler's nursery at Warminster. Asia Minor.

O. nitida is pretty, new to gardens, and said to be as easy to grow as *O. verna*; with loose panicles of blue flowers.

O. verna (*Creeping Forget-me-not*).—A pretty little plant, bearing in early spring handsome flowers of a deep clear blue with white throats. The plant is useful for borders and the rock and spring garden: no plant is more worthy of naturalisation; in cool, thin woods it runs about like a native plant; it thrives by woodwalks, and also in open places, and in any position is one of the prettiest plants. There is a

as “flowering Ferns,” from the fertile frond being contracted so as to give it the appearance of an unopened spike of flowers. The fronds are a beautiful fresh green, especially in spring. Though not very fastidious as to soil, it succeeds best in a cool and moist situation, such as the base of the rock-garden, or in the American garden, especially if a little sheltered by neighbouring plants. If the fronds are

Olearia Haastii.

white variety, not so pretty as the blue kind.

ONOBRYCHIS (*Sainfoin*).—A few graceful plants belong to this genus, but they are not of much garden value, and those in cultivation are best suited for the rock-garden.

ONOCLEA (*Sensitive Fern*).—*O. sensibilis* belongs to the group known

allowed to remain on the plants until they appear to be ripe, it will be found that the spore-cases are open and the spores shed, as they drop while the fronds look quite green, therefore the best way is to cut off the frond as soon as indications of bursting are perceived, and to lay it in a sheet of paper for a few days, when all the spores will drop out. N. America.

ONONIS (*Rest Harrow*). — Hardy plants of the Pea family, of which the wild Liquorice (*O. arvensis*) is one of the prettiest of our wild plants, and is worthy of cultivation on banks and in the rough rock-garden, forming dense tufts covered in summer with racemes of pink flowers. The white variety is also good, and is worthy of a better position than the common form, which grows in any soil. No plants are more readily increased from seed or by division. It is distinct from the spiny *O. campestris*, which has stems nearly 2 ft. high, and sometimes more. *O. rotundifolia* is a distinct and pretty plant, which is hardy, and easily cultivated,

Omphalodes Lucilæ.

flowering in May and June and through the summer; it attains a height of 12 to 20 in. according to soil, and is suitable for the mixed border or the rougher parts of the rock-garden. Seeds or division. Pyrenees and Alps. These are the best of about half-a-dozen garden species, which also include *O. fruticosa*, *Natrix*, and *viscosa*.

ONOPORDON (*Cotton Thistle*). — Handsome vigorous thistle-like plants mostly biennial, and valuable for their stately port and showy flowers. They thrive in exposed places and among shrubs in sheltered ones, and may be effectively used in a variety of ways. Moderation in their use, however, is desirable, as in some situations they seed so freely as

to require judicious keeping down. *O. Acanthium* (Down Thistle) is a bold and vigorous native plant, with very large, stout branching stems, often more than 5 ft. high, covered with long, whitish web-like hairs, and bearing large heads of purplish flowers. The habit of *O. illyricum* is more branching, the leaves and stems are much more spiny, the stems are stiffer and the leaves are greener and more deeply cut. *O. arabicum* is 8 to 10 ft. high, is erect and very slightly branching, and both sides of the leaves, as well as the stems, are covered with white down. *O. græcum* is also a handsome plant.

ONOSMA (*Golden Drop*). — *O. taurica* is an evergreen perennial, 6 to 12 in. high, soon forming dense tufts, and bearing in summer drooping clusters of clear yellow

Onosma taurica (Golden Drop).

almond-scented blossoms. The best place for it is the rock-garden, drained, with a good depth of soil, so that the plants may root strongly between the stones, the soil a good sandy loam, mixed with broken grit. Seeds or cuttings. Greece.

ONYCHIUM. — *O. japonicum*, an elegant Japanese Fern, often grown in the greenhouse, is hardy in the outdoors fernery. In severe winters, however, some common Brake may be thrown over it. The fronds are finely divided, an intensely dark green, from 1 to 2 ft. high, and useful for bouquets, or for placing loosely in vases with cut flowers.

OPHIOGLOSSUM (*Adder's-tongue*). — *O. vulgatum* is a native Fern not often seen in gardens; found in moist meadows; and the best position for it therefore is in colonies in the hardy fernery or the moist stiff soil in the rock-garden. *O. lusitanicum*, a dwarf variety, is interesting, but capricious, and difficult to cultivate.

OPHIOPOGON (*Snake's-beard*). — Her-

baceous perennials, about $1\frac{1}{2}$ ft. high, the flowers, usually small, lilac, appearing late in summer and in autumn in spikes, 2 to 5 in. long, rising from grassy tufts of evergreen foliage. They thrive in borders or margins of shrubberies in sandy loam, but are scarcely ornamental. *O. japonicus*, *Jaburan*, *spicatus*, *Muscari*, and *longifolius* are the best known, and usually in botanical collections. In Italy they are used to form green turf, in lieu of Grass, which perishes from the heat. Division. Japan and India.

OPHRYS.—Small terrestrial Orchids, singularly beautiful, and among the most curious of plants. Many have been in cultivation, but these being tender plants, chiefly from S. Europe, they must have protection, and require much attention. A few native species, however, can be grown in gardens, and of these one of the most singularly beautiful is the Bee Orchis (*O. apifera*). This varies from 6 in. to more than 1 ft. in height; it has a few glaucous leaves near the ground; flowers in early summer, the lip of a rich velvety brown with yellow markings, bearing a fanciful resemblance to a bee. It is usually considered difficult to grow, but it may be easily kept on dry banks in the rock-garden, in a firm bed of calcareous soil, or of loam mixed with broken limestone. It thrives best if the soil be surfaced with some very dwarf plant, or with an inch of cocoa-fibre and sand, so as to keep it moist and compact about the plants. Other interesting species for a collection of hardy Orchids are *O. muscifera* (Fly orchis), *arachnites*, *aranifera* (Spider orchis), and *Trolli*.

OPUNTIA (*Prickly Fig*).—There are several of these succulent plants in cultivation, but few are hardy enough for the open air in our climate. The hardiest are *O. vulgaris*, *missouriensis*, *humilis*, *brachyantha*, and *Rafinesquei*; the finest being *O. Rafinesquei*, an evergreen well worthy of culture, bearing in summer large showy yellow blossoms on fleshy branches. It thrives in a sunny corner of the rock-garden in good dry soil, sheltered from any passing danger to the stems, for it is rather fragile, and anything brushing against it would injure it, but by the skilful placing of a few rough stones it is easy to prevent injury without shading the plant. To prevent splashings, the ground might be surfaced with a dwarf mossy Saxifrage or Sandwort. Snails and slugs are fond of this plant, and in the spring, and even in mild winters, may destroy it. A dressing of soot will keep away these pests. To in-

crease the plant, the cutting, a single joint, is potted in sandy soil, and the pot placed in a sunny airy spot under glass and watered very sparingly, and in a short time it will form roots, and commence to push out young shoots. The hardier kinds are from N.W. America, where the winters are severe.

Recently, the German traveller, Dr. Purpus, and various American botanists have found in the mountains of Arkansas, Texas, Colorado, and Arizona a rich variety of hardy Cacti thriving at elevations of 5,000 to 8,000 feet. The entire collection contains upwards of 100 kinds of Cacti (species and variety) of proved hardiness throughout Central Europe, many of them plants of real beauty and value for our rock and wall gardens. The Darmstadt collection fills a large rock-garden formed of limestone blocks, and Dr. Purpus considers the use of limestone essential for these plants, all being found on soils of this nature. In many botanical gardens in Germany a feature is made of these hardy Cacti, and their value is well seen at Giessen, Jena, Leipzig, Magdeburg, Dusseldorf, and many other places. Many of the *Opuntias* produce beautiful flowers from the middle of June to October, which in many cases are remarkable for their bright colour.

The following kinds may be considered hardy for Central Europe:—

Opuntia arborescens, tree-like in its wild state with a stout stem 30 feet or more in height, covered with clusters of sharp spines, and many rose or rosy-purple flowers. In Central Europe it spreads on the ground instead, and is the least hardy of outdoor kinds. *Opuntia camanchica*, with its seven varieties, some so distinct that they might be classed as separate species. Thus, *albispina*, with large brown-yellow flowers and long white spines upon the joints; *pallida*, with very pale yellow flowers; *rubra*, a beautiful little plant with rosy or deep pink flowers, and golden stamens; *spinocentra*, with large yellow flowers; and *gigantea*, *orbicularis*, and *salmonea*.

The *Opuntia polyacantha*, or *missouriensis*, bears pale yellow flowers upon large flat joints, studded with fine spines set in bunches of yellow down. It is a creeping plant in cultivation since 1814, but until lately always under glass. There are two beautiful varieties of it: *erythrostemma*, with yellow flowers and red stamens; and *salmonea*, with salmon-pink flowers. *Opuntia fragilis* is an old greenhouse plant of drooping habit, its short,

rounded joints thickly set with white spines and little yellow flowers. Its variety *caespitosa* is more compact, with larger yellow flowers shading to brown in the centre, and bright red stamens. *Opuntia mesacantha* is a little tuft of spreading, spiny growths, with bright yellow flowers in summer. *Opuntia Greenii* bears beautiful pale lemon-yellow flowers. *Opuntias Rhodantha* and *xanthostemma* are, perhaps, the finest of all. The first exists under five distinct forms :—*O. Rhodantha*, with large rosy-lilac flowers of rich silky texture, the stamens bright red, and the style green ; var. *brevispina*, in which the joints are large and of a dark grey-green, covered with short spines and bearing very large flowers of intense carmine colour ; *flavispina*, with smaller, pale green joints and with larger spines, which in their early stages are yellow with green tips, the flowers large and rose-coloured ; *pisciformis*, so called from the fish-like joints studded with flowers of pale pink with bright red stamens ; and *Schumanniana*, with the largest flowers two inches or more across and bright crimson, upon erect growths of a pretty blue-green colour. *Opuntia xanthostemma* bears flowers of carmine-purple which with the golden stamens are striking in effect ; it also exists in several varieties, as follows : *elegans*, with large rosy glossy flowers glistening when newly expanded ; *fulgens*, with flowers of glowing carmine ; *gracilis*, with smaller pale pink flowers ; *orbicularis*, with rounded growths and many pale pink flowers of 2 to 3 inches across ; and *rosea*, with numerous blush-pink blossoms. Other kinds such as the *Opuntias arenaria*, *arkansana*, *cymochila*, *hybrida*, *macrorrhiza*, and *phaeacantha*, have now lived in the open air for several seasons ; all the plants we have named, with others, thrive in the open air with complete success. To do well they must have a sunny spot, as open to the winds as their own mountain tops, but dry, well drained, and with a sufficient layer of limestone soil. H. C.

ORCHIS.—These terrestrial Orchids are beautiful, and well worth cultivation among hardy flowers. Those who do not want a full collection will find the species mentioned below easily grown if placed under good conditions at the outset ; some of our native Orchids are worth a place, but few succeed with them, chiefly because the plants are transplanted at the wrong season. The usual plan is to transplant just when the flowers are opening, but at this period of growth the plant is forming a tuber for the following year, and, if this

is in any way injured, it dies. If, instead of this way, the plants are marked when in flower and allowed to remain until August or September, when the tubers are matured, the risk of transplanting is lessened, provided the plant be taken up with a deep sod. The ground where the plants grow may be surfaced with such plants as the Balearic Sandwort, Lawn Pearlwort, and the mossy Saxifrages. The situation for Orchids should be an open one, and the soil a deep, fibry loam in a drained border. The following are the kinds most worthy of culture :—

O. foliosa.—A handsome Orchid, one of the finest of the hardy kinds, 1 to 2 ft. or more in height, with long spikes of rosy-purple blossoms in May, lasting long in bloom. It delights in moist nooks at the base of the rock-garden, or in the bog-garden in deep light soil. Madeira.

O. latifolia (*Marsh Orchis*).—A fine native kind, 1 to 1½ ft. high, with long spikes of purple flowers in early summer. It thrives in damp boggy soil, in peat or leaf-mould. There are several beautiful varieties, the best being *præcox* and *sesquipedalis* ; the last being one of the finest of hardy Orchids, about 1½ ft. high, and a third of the stem is covered with purplish-violet flowers.

O. laxiflora is a pretty species, 1 ft. to 18 in. high, with loose spikes of rich purplish-red flowers, opening in May and June, and thriving in a moist spot in the rock-garden. Guernsey and Jersey. Division.

O. maculata (*Hand Orchis*).—One of the handsomest of British Orchids, finest in rich soil, and if well grown in moist and rather stiff garden-loam its beauty will surprise even those who know it well in a wild state. The variety *superba* is a fine plant, and should be secured.

Other beautiful kinds, but more or less difficult to establish in gardens, are *O. papilionacea*, *purpurea*, *militaris*, *mascula*, *pyramidalis*, *spectabilis*, *tephrosanthos*, and *Robertiana*.

OREOCOME CANDOLLEI.—An effective plant of the Fennel order for the margins of shrubberies, or groups of fine-leaved hardy plants. It grows 5 feet in height, with large leaves finely divided, of a fresh green colour, and the flowers, which rise well above the foliage, are in umbels, and white. It grows well in any ordinary garden soil, and is quite hardy. Himalayas.

ORIGANUM (*Dittany*, *Hop Plant*).—*O. Dictamnus* (*Dittany of Crete*) is a pretty plant, somewhat tender, and best grown under glass rather than in the open air, though during mild winters it may

survive. It has mottled foliage, and small purplish flowers, in heads like the Hop, hence the name Hop-plant. *O. Sipyleum* is similar, and is quite as pretty. In the open air these plants should have a warm spot in the rock-garden.

ORNITHOGALUM (*Star of Bethlehem*).—Bulbous plants, some of them

tum—natives mostly of S. Europe, N. Africa, and Asia Minor. The fine *O. arabicum* is not to be grown out of doors, save in very warm gardens in the south.

Ornus. See **FRAXINUS**.

OROBUS (*Bitter Vetch*).—Often pretty plants of the Pea order, flowering usually in spring. They are suitable for the

Orchis foliosa (Madeira Orchis).

handsome, others not very distinct, but all useful in the Grass and in borders, in any good garden soil—one or two kinds among the hardy species important for choice borders and bulb beds, *i.e.*, *pyramidale* and *latifolium*. Among other kinds worth growing are *nutans* (free in grass), *narben-nense*, *sororium*, *exscapum*, and *umbella-*

mixed border, for the rougher parts of the rock-garden, or for naturalising. We mention only the distinct kinds.

O. aurantius is a handsome plant, 18 to 24 in. high, with orange-yellow flowers in early summer. *O. tauricus* is a nearly-allied species, also with orange flowers. Both require to be well established before

they bloom freely, and they are useful for borders in ordinary soil.

O. lathyroides is a lovely border plant, 18 to 24 in. high ; its bright blue flowers borne in dense racemes ; increased freely by seeds, and thrives in ordinary soil.

O. vernus (*Spring Bitter Vetch*).—One of the most charming of border flowers. From black roots spring healthy tufts of leaves with two or three pairs of shin-

Spring Bitter Vetch (*Orobis vernus*).

ing leaflets ; the flower-buds appearing soon afterwards, almost covering the plant with beautiful purple and blue blooms in April.

Besides the type there are varieties :—*tenuifolius*, with narrow leaflets and flowers similar, though the habit is more lax ; *flaccidus*, similar to *tenuifolius*, but brighter and denser, and with broader leaves ; *cyaneus*, the most attractive, larger and possessing a strange intermixture of colours, some a bright blue, others a greenish-blue. Then there is a double-flowered kind and a pure white variety, all thriving in deep warm soils.

Some other species useful for borders and the rock-garden are—*O. pubescens*, *O. canescens*, *O. varius*, and *O. Fischeri*, but *O. vernus* and its forms are the handsomest. All are of easy culture in ordinary garden soil, and are increased by seeds or division of the root.

ORONTIUM (*Golden Club*).—*O. aquaticum* is a handsome aquatic perennial of the Arum family, 12 to 18 in. high ; in early summer its narrow spadix is densely covered with yellow flowers, which emit a singular odour. The plant may be grown on the margins of ponds and fountain-basins, or in the wettest part of the bog-garden. North America.

OSMANTHUS.—Handsome ever-green shrubs, few hardy in our islands ; but some of these are of value :

O. aquifolium.—In a botanical sense all forms of the Osmanthus in Britain are of this species. They can scarcely be called varieties, for it is not unusual to see a plant with two so-called varieties on one branch. For convenience and brevity's sake, however, and especially as they keep true to character in the majority of instances, the common nursery names are here kept up. *O. aquifolium* is a native of China and Japan. In some of its forms it is curiously like the Holly, and is frequently mistaken for it. It is, however, of looser growth and less thickly furnished with leaves, and is also of dwarfer, more shrubby habit. What is generally accepted as the typical form of this species is the one with the largest and broadest leaves. In this the leaves are 3 in. to 4 in. long, of oblong or oval shape, pointed or toothed, but not so deeply as the smaller-leaved forms known as *ilicifolius*. They are of a deep green colour and of very firm texture. This plant is, according to my experience, the least hardy of this set. It flowers in autumn, and the blossoms are fragrant.

O. ilicifolius.—This is by far the most common and useful kind, and is, moreover, a valuable shrub for town planting. The leaves are usually much smaller than those of the plant just described and may be easily recognised by their deep lobing. The largest specimen at Kew is 9 ft. high, with a spreading base and foliage of the deepest and glossiest green. The leaves average $1\frac{1}{2}$ in. to 2 in. in length and are cut half-way to the midrib into several sharply pointed lobes. Some of the leaves, however, are quite entire, others lobed on one side only, but most of them have the upper half lobed, the lower half entire. The following have been given varietal names :—**AUREO-MARGINATUS**.—Leaves similar to those of the green plant, but margined with creamy yellow. **ARGENTENEO-MARGINATUS**.—Leaves like those of the preceding, but edged with white instead of yellow. **LATIFOLIUS** **MARGINATUS**.—Leaves larger than those of either of the preceding, the margin creamy white :—**PURPURASCENS**.—The young leaves of this variety are tinged with purple, especially on the under side. It is undoubtedly the best of all the Osmanthus for outdoor work, being much hardier than the variegated forms. At Kew there is a group of this purple-leaved variety near the Palm House, amongst which is planted *Lilium candidum*, and nothing could more happily set off the beauty of this Lily. **O. MYRTIFOLIUS**.—There is an Osmanthus

at Kew the lower part of which is ilicifolious, the upper part myrtifolious. The origin of the latter is therefore conclusively proved. It appears, however, to be itself constant, and when grown on its own roots I have never noticed any reversion. It makes a neat bush, with leaves like those of the Myrtle in shape, but larger and firmer in texture.

O. rotundifolius.—This is the dwarfest and slowest growing of all the Osmanthus, and is, moreover, one of the most distinct. Its leaves are very stiff and leathery, and distinguish the variety by their more or less obovate outline. The margins are not distinctly serrated, but have a very shallow irregular lobing. The leaves are each from 1 in. to $1\frac{1}{4}$ in. long and a little more than half as wide.

The Osmanthus may all be propagated by cuttings, and although it takes longer to obtain plants on their own roots, they are much to be preferred to those grafted on the Privet. Cuttings should be taken in August when the wood has become firm, and they may be struck in a cool propagating frame. An open soil of fair quality and depth is better than a very rich one for all the forms, but more especially for those that are variegated.—W. J. B.

OSMUNDA (*Royal Fern*).—So-called "flowering" Ferns made familiar by our native Royal Fern (*O. regalis*), which is found in many bogs and marshy woods, and is well worth cultivating, as it is the largest and most striking of our native Ferns, sometimes attaining a height of 8 ft. It should be planted in moist peaty soil, and the most suitable spots are half-shady places on the banks of streams or of pieces of water. It may also be planted in the water. When exposed to the full sun it does well, with its roots in a constantly moist, porous, moss-covered soil, if sheltered from strong winds. In shady positions and in deep bog soil it attains a great size.

The various North American Osmundas may be associated with it. *O. cinnamomea* is an elegant N. American Fern with pale green fronds; the variety *angustata* is smaller, and the fronds are less inclined to droop. This species, like *O. regalis*, is deciduous. *O. Claytoniana* is another deciduous species, and has vivid green fronds, 2 to 3 ft. high. *O. interrupta* is the same. *O. gracilis* is a native of Canada, somewhat resembling a dwarf form of our Royal Fern, the fronds about 2 ft. high. *O. spectabilis* is a slender form of *O. regalis*; its fronds are smaller, and the young ones come up

reddish-purple. North America. These exotic species are of the simplest culture in the hardy fernery, in moist peaty soil.

OSTEOMELES ANTHYLIDIFOLIA.—A small evergreen shrub from 5 to 6 ft. high, mostly grown upon walls in this country, but fairly hardy in the south-west. It has silvery leaves divided into a number of small leaflets, and clusters of white flowers like the hawthorn, followed by red-brown berries. Native of China and the Northern Pacific islands.

OSTROWSKYA (*Great Oriental Bell-flower*).—*O. magnifica* is a remarkable and handsome hardy plant found by Dr. Regel

Ostrowskia magnifica.

on the higher mountains of Chanat Darwas, in Eastern Bokhara, and is like a huge *Platycodon* in aspect, but distinct, the flowers being of great beauty, several inches across, of a delicate purple, veined, and varying from seed; the leaves are in whorls. The plant likes a deep sandy loam, as the carrot-like roots when of full size go down to a depth of 2 ft. They must be carefully handled as they are very brittle. The *Ostrowskia* does not apparently thrive equally in all places, and is often disappointing. Seeds germinate readily in a cold frame, but a few years elapse between sowing and flowering.

OTHONNA (*Barbary Ragwort*).—*O. cheirifolia* is a distinct Composite plant, with whitish-green tufts, 8 in. to 1 ft. high, or on rich soils perhaps more. It is a spreading evergreen, flowering sparsely on heavy and cold soil, but on light soils often blooming freely in May; the flowers

yellow, about $1\frac{1}{2}$ in. across, but not pretty. It is useful from its distinct aspect on the rough rock-garden or in the mixed border. Cuttings. Perishes in severe winters, at least on clay soils. Barbary.

OURISIA.—*O. coccinea* is a bright dwarf Chilean creeper, bearing in early summer scarlet blossoms in slender clusters, 6 to 9 in. high. Though hardy, it is reputed difficult to grow, and it should be placed against a block of soft porous stone in a moist place, such as the foot of a wall with an east aspect. Its creeping stems will soon run over the stone, and it will flower freely.

OXALIS (*Wood Sorrel*).—Dwarf and often pretty perennial or annual plants, for the most part more happy and free in temperate countries, but some hardy with us on warm borders and on the rock-garden. They all thrive best in a sandy soil in the warmest and driest place in a garden. The following are the best kinds for our gardens:—

O. Bowieana.—A robust species, forming rich masses of leaves, 6 to 9 in. high, and umbels of rose flowers continuously throughout the summer, suitable for warm borders at the foot of a south wall. In cold soils it seldom flowers, but on very sandy, warm, and well-drained soils it flowers abundantly, and when this is the case it may be used with effect as an edging to beds of autumn-blooming plants, and where it does well it is one of the most precious of hardy flowers. Division. Cape of Good Hope.

O. floribunda.—A free-flowering kind, hardy in all soils; for months in succession it bears numbers of dark-veined rose-coloured flowers. The white-flowered variety flowers as freely as the rose-coloured form, and both are very useful for the rock-garden and for margins of borders, and are easily increased by division. *O. floribunda* appears to be the commonest kind of *Oxalis* in cultivation. America.

O. lasiandra.—A distinct and beautiful kind, with large dark green leaves, and in early summer umbels of bright rose-coloured flowers, and useful for warm borders and the rock-garden. Mexico.

O. lobata.—A stemless little plant with three deeply-lobed bright green leaflets, and blossoms about $\frac{3}{4}$ in. across, rich yellow, the centre delicately pencilled with chocolate. A free-flowering bright little plant during sunshine, thriving in warm sandy loam on well-drained borders. It survives mild winters unprotected. Chili.

O. luteola is one of the prettiest,

forming a compact tuft; the flower-buds $\frac{1}{2}$ in. in length, and a soft creamy-yellow, but when open they are as large as a half-crown, and pure white, shading to yellow towards the centre; it is not hardy, but in light sandy soil will survive a winter if protected.

O. Acetosella (*Stubwort, Wood Sorrel*).—The prettiest of the kinds known so far for our gardens is our native Wood Sorrel, which bore in old times the better name of "Stubwort"—a name which should be used always. This grows itself in such pretty ways in woody and shady places that in many gardens there will be

Oxalis Acetosella.

no need to cultivate it. Where it must be cultivated it will be happy in the hardy fernery or in shady spots in the rock-garden, or under trees, or the lawn, or in any shady or half-shady places in ground not dug.

There are other species worthy of a place, especially on very dry sandy soils, and among them are *O. Smithi*, *rosea*, *Deppei*, *speciosa*, *arborea*, *violacea*, *versicolor*, *incarnata*, *tetraphylla*, *venusta*, and *corniculata*. *O. corniculata rubra* is sometimes used for bedding, and should always be encouraged where there are old quarries and rough rocky places, especially in a calcareous district, for this handsome plant speedily covers the most unpromising surfaces. In gardens, however, this Wood Sorrel becomes a troublesome weed. If a collection be grown, it should be borne in mind that it is very difficult to preserve the correctness of the names, for the minute bulblets become mixed up with the earth, and the elasticity of the seed-pods permits the seeds to scatter in all directions.

OXYDENDRUM (*Sorrel Tree*).—A handsome flowering tree reaching a height of over 50 ft. in its native country, with rather large fine leaves and many racemes of white flowers; thriving in

our country, at least on peaty soils, and flowering freely in summer. Ohio and Pennsylvania to Florida, both in mountain and coast lands. The tree is as yet far from common, and the best way at first is to group it with the American shrubs in peaty and free soils. I have planted it in rich leafy soil in most spots in woods, where even small plants so far hold their own among the stoutest sedges of such spots.

OXYTROPIS.—Plants of the Pea family, nearly allied to *Astragalus*, the best of which is *O. pyrenaica*, a dwarf species, with pinnate leaves covered with silky down, barely rising above the ground, the flowers a purplish-lilac, barred with white,

Ozothamnus rosmarinifolius.

and borne in heads of from four to fifteen in early summer. It is a native of the Pyrenees, rare in gardens, and increased by seed or division. It should be planted on well-exposed and bare parts of rock-gardens, in firm, sandy, or gravelly soil. *O. Halleri* has charming, compact flowers, of a decided self colour—as deep a blue as that of the *Gentians*, and proves a manageable plant in the rock-garden in deep moist loam. *O. uralensis*, a dwarf species from the Ural Mountains, has rosy-blue flowers in compact heads, about 4 in. high. Other kinds are—*O. montana*, *fœtida*, *strobilacea*, *campestris*, and its several varieties; all of these are dwarf, and thrive in sandy loamy soil in open spots in the rock-garden.

OZOTHAMNUS.—*O. rosmarinifolius* is a neat little evergreen shrub from Tasmania, almost hardy in the south and coast districts, with small, Rosemary-like leaves, and about the end of summer bearing dense clusters of small white flowers. It thrives in any light soil, and should be planted in an open sunny spot or on a warm bank. *Syn.*, *Helichrysum*.

PACHYSANDRA (*Mountain Spurge*).—A little sub-evergreen plant from the rocky woods of North America, 6 to 12 inches high, and nearly allied to the Common Box. Its prostrate stems bear deeply toothed leaves of dull green, with small crowded spikes of white or purplish flowers in early spring, when they are

much sought by bees. A better plant than *P. procumbens*, just described, is *P. terminalis* from Japan. This is a true evergreen, with thick glossy leaves of dark green, sometimes variegated, and forms a neat carpet in the rock-garden. Both plants are hardy, and mostly do best in a moist spot and in half-shade, though the Japanese kind will also grow in full sunlight. Easily increased by division.

PACHYSTIMA.—A group of low evergreen shrubs, like the *Euonymus*, the two best known being from the mountains of North-west America. *P. myrsinites*, the only kind in our gardens, is 1 to 2 ft. high, with box-like leaves and inconspicuous reddish flowers followed

by berries. Well drained and sunny places of the rock-garden in full sun. Seeds, layers, or cuttings.

PÆONIA (*Pæony*).—Among the most beautiful of hardy perennial plants, with much beauty of colour and often fragrance. Though there are several species in collections, the most important are the hybrids obtained by inter-crossing. Pæonies are divided into two groups—the tree or shrubby kinds, comprising the varieties of *P. Moutan*; and the herbaceous kinds. The hybrid sorts have been obtained chiefly from *P. officinalis*

most beautiful of recent date are : **SINGLE KINDS** : Argus, Armida, Autumnus, Bridesmaid, Countess of Warwick, Duchess of Sutherland, Emily, Frank Bramley, Giganteus, Miss Ida Chamberlain, Mrs. J. Gundry, Mrs. Templeman, Philip H. Miller, Stanley, The King, The Queen. **DOUBLE KINDS** : Agnes Mar Kelway, Arethusa, Beauté Française, Comte de Paris, Coronation, Dean Hole, Dr. Bonavia, Duc de Wellington, Duchesse de Nemours, Edulis superba, Ella Christine Kelway, Eten-dard du Grand Homme, Festiva Maxima,

Pæonia lutea.

and other European kinds, together with the Chinese species *albiflora*, *sinensis*, and *edulis*. The European varieties flower early and the Chinese late, so that the flowering season is prolonged.

HYBRIDS.—Among these there is much variety of colour—white, pale yellow, salmon, flesh-pink, and numerous intermediate shades from carmine to brightest purple. Among the oldest varieties the most remarkable are grandiflora, double white; Louis Van Houtte, papaveriflora, rubra triumphans, sulphurea plenissima, rosea superba, Zoé, Mme. Calot, Gloria Patriæ, and Prince Troubetskoy. The

Glory of Somerset, Henri Demay, James Kelway, Lady Alexandra Duff, Lady Curzon, La Tulipe, Leonard Kelway, Leonie, Limosel, Madame Vilmorin, Monsieur Rousselon, Octavie Demay, Prolifera tricolor, Queen Victoria, Reine des Françaises, Sainfoin, Souvenir de Gaspar Calot, Triomphe de Paris, Venus. There are many others—for example, the forms of *P. officinalis* (such as *anemonæflora*, *rubra*, and *Sabini*, and the rosy, crimson, and white double-flowered varieties); also *P. albiflora*, *peregrina*, *paradoxa*, and especially the small *P. tenuifolia*, with its feathery foliage and large

deep red blossoms. There is a double form of this species, and a variety called *latifolia* with broader foliage, and one of the earliest of Pæonies to flower. Then there is *P. lobata*, with fine single flowers of salmon-scarlet; and *P. corallina*, a native plant, with single reddish-purple flowers followed by handsome pods of red and black seeds. But the most distinct of all is *P. Wittmanniana*, with single pale yellow flowers early in May. Until recently this was the only known Pæony with yellow flowers, and the new *P. lutea* belongs rather to the Tree Pæonies. These as well as the varieties are perfectly hardy, and need no protection against frost, however severe.

CULTURE.—A good moist loam, enriched with cow manure, is the soil best suited to them. They can be planted at any time, but from October to April is the best time. Have the ground well prepared by manuring and by trenching to the depth of about 3 ft., and plant them at least 4 ft. apart in each direction. They will not flower well before the second or third year. An open position renders them robust, and they need not be shaded from the sun until they flower, when some slight shade will prolong and preserve their delicate tints. As soon as the buds are well formed, water the plants judiciously now and then with liquid manure. When the tufts have become very strong, and have impoverished the soil, separate and transplant them in fresh ground.

POSITION.—Most gardens contain spots so shaded that few plants will thrive in them. In such places Pæonies would grow luxuriantly; and their colour would often be more intense, while they would last much longer than if fully exposed to the sun. Where distant effect is sought, no plants answer so well, and when planted on either side of a Grass walk, their effect is admirable, especially in the morning and about sunset; when planted in masses, they are invaluable for lighting up sombre nooks. If grown only for their flowers or their buds, or for the purpose of increasing them, they may be placed in nursery lines in some rich part of the kitchen-garden.

Besides being used for the garden proper, there are few plants more fitted for the wild garden; and the most brilliant and one of the boldest things in wild gardening is a group of scarlet Pæonies, or any of the hardy species in meadow Grass, in early summer. This may be managed so that they come into the garden landscape, so to say, and

are seen at a considerable distance from certain points of view. So placed, they could not be in the way when out of flower, as they sometimes are in the mixed border.

P. Moutan (*Tree Pæony*).—Another noble plant of great beauty for its varieties, which are very numerous. It is hardy, and, when properly planted, requires little care; precious for borders and for lawns. Its blossoms are gorgeous in early spring, and its young leaves assume every shade of colour, from violet-crimson to green. Tree Pæonies are not particular as to soil or position; they grow as well in sand as in strong loam, though they prefer a good strong soil. If the soil is too sandy, decomposed manure and loam, or if too clayey, manure, sand, and similar materials should be added. Moutans are gross feeders, and amply repay occasional top-dressings of half-decomposed cow manure. Of the scarcer and better varieties nurserymen generally send out plants one or two years old, which are grafted on the roots of *P. edulis*. In a chosen place, dig out a pit 1½ ft. deep and 2 ft. in diameter; put in a few inches of half-decomposed cow manure, and mix it well with the soil, insert the plants with the grafts buried a few inches under the ground, where they will, in time, throw out roots of their own. The plants do not flower well until the third year, but afterwards blossom freely. Being of slow growth, they are not often increased by division, but by grafting upon the roots of the herbaceous varieties. This grafting is performed in August. The grafts are placed in frames, where they unite, and in the succeeding year are transplanted in rows in the nursery.

September and October are the best months for planting Moutans, but if planted from pots they may be put out in spring, when all danger of frost is over. Good plants set in autumn produce many flowers the second or third year after planting, and soon become a most attractive feature of the garden. They flower the first of any Pæonies, and put forth their blooms early in May. Until the second half of this century only white, rose, salmon, and lilac sorts were known; and we are indebted to Mr. Fortune for his Chinese varieties, most of which have scarlet, violet, and magenta flowers. Von Siebold, too, introduced a number of Japanese varieties, which, however, form a different race, and are mostly single or semi-double. The following list contains the best varieties

of single and double kinds: SINGLE TREE PÆONIES:—Beatrice Kelway, Cecil Rhodes, Christine Kelway, Ella C. Stubbs, Henry Irving, Jean de Reszke, Julius Cæsar, Karl Haag, Lady Sarah Wilson, Miss Beatrice Jones, Mrs. W. Kelway, Princess of Wales, Queen Alexandra, Queen of Denmark. DOUBLE TREE PÆONIES: Bijou du Chusan, Blanche Noisette, Debugny, Dr. Bowring, Glory of Shanghai, James Kelway (semi-double), La ville de St. Denis, Lilacea pallida, Louise Mouchelet, Madame Rattier, Madame Stuart Low, Maxima plena, Reine Elizabeth, Triomphe de Vandermael, Zenobia. Some of the most strikingly beautiful are well worthy of glass—that is, having a sash or two put over them in spring to save them from late frosts and rainy weather. Plenty of air must be admitted, and the flowers gain in an astonishing degree, both in size and colour.

A new plant, *P. lutea*, has lately come from the mountains of China, with the woody stems of a Tree Pæony and handsome yellow flowers. Whether hardy in the open air with us is still uncertain, the plant being rare.

Species *P. albiflora*, Siberia; *anomala*, do.; *Biebersteiniana*, Caucasus; *Brownii*, N.W. Amer.; *corallina*, Europe and Asia Minor; *coriacea*, Spain; *decora*, As. Minor; *fimbriata*, Eastern regions; *mollis*, Siberia; *moutan*, China; *obovata*, Manchuria; *officinalis*, Europe; *paradoxa*, S. Europe; *peregrina*, East; *subternata*; *tenuifolia*, E. Europe, N. Amer.; *triter-nata*, Russia; *Wittmanniana*, Caucasus.

PANAX SESSILIFLORUM.—This really belongs to *Acanthopanax*, but is sold under the above name. It is one of the few shrubby Aralias hardy in Britain, coming from Manchuria, where it grows as a tall dense shrub with large trifoliate leaves and rounded heads of dull purple flowers. The chief beauty of the plant lies in the glossy black berries, which hang far into the winter. Syn. *Acanthopanax sessiliflorum*.

PANCRATIUM.—Graceful Lily-like plants of the amaryllis order, the only really hardy kind being the South European *P. illyricum*, 1 to 2 ft. high, which bears in summer umbels of large white fragrant blossoms. It thrives in a warm exposed border of sandy loam soil, well drained, the bulbs protected by litter in winter. The plants are better for transplantation about every third year, as soon as the leaves are decayed in autumn. Increased by offsets. *P. maritimum* is also hardy in the south, if planted at the foot of a warm wall in light soil; its large white flowers, in clustered heads, are very fragrant and semi-transparent in texture. The hardiest

of the other species are *P. parviflorum*, *littorale*, and *rotatum*, but these only succeed on warm soils in mild localities, and are best in a frame or a cool greenhouse.

PANICUM.—Grasses, chiefly tropical, though a few are hardy enough for outdoor cultivation and easy to grow in ordinary garden soils.

P. altissimum is a handsome hardy perennial Grass, forming dense erect tufts, 3 to 6½ ft. high, according to climate and soil, the flowers being a dark chestnut-red.

P. bulbosum.—A stout kind, with a free and beautiful inflorescence, about 5 ft. high; the flowers spread gracefully. It is suited for grouping near the margins of shrubberies.

P. capillare.—A hardy annual, growing in tufts from 16 to 20 in. high, pretty in full flower, the tufts being then covered with large pyramidal panicles of graceful airy form and purplish in colour. It grows in any soil, often sows itself, and is suited for borders or beds, being one of the most graceful of grasses.

P. virgatum.—A handsome hardy Grass, 4 to 6 ft. high, forming close tufts of leaves 1 to 3 ft. long, with graceful branching panicles of dull purple, the spikelets drooping and curiously twisted. Admirable for borders or for isolation in the picturesque flower garden or pleasure-ground. Its colour, though quiet, is pretty throughout the autumn, and not without effect even in winter. Division.

PAPAVER (Poppy).—Some of the most brilliant of hardy flowers, and of the simplest culture. There are a few good perennials, but the majority are annual and biennial. They range from the tiny alpine Poppy to the stately Eastern Poppy and its varieties. All are easily raised from fresh seeds, but these do not keep long and must be sown where they are to flower, for most kinds will not bear transplanting. Most Poppies re-sow themselves, and sometimes too freely, and these self-sown plants are always the first to flower. Where seed is not wanted, the pods should be removed as fast as they form, to prolong the show of flowers. The following are the best garden kinds:—

P. alpinum (Alpine Poppy).—A plant of dwarf habit from the limestone rocks of the Alps, about 6 inches high, with finely cut grey-green leaves and large white flowers of silky texture, yellow at the centre, with sometimes a green spot at the base of each petal. When in good condition, from May to September, this little plant is charming, but it is apt to perish, unlike a true perennial, especially if disturbed. It does best in the rock-garden, in rather poor soil, with good drainage and full sunlight, and will thrive in walls and rocky clefts; it will sometimes “sow itself,” coming easily from seed. It varies much in colour, with scarlet, pale rose, and yellow

forms, and one in which the petals are fringed. There is a hairy variety also, with showy orange flowers; this grows best in granite soils. *P. Pyrenaicum* is like this, but taller, and with similarly varied colours.

P. nudicaule (*Iceland Poppy*).—A dwarf robust kind, with leaves deeply lobed, and large rich yellow flowers on stems of 12 to 15 inches. It thrives in rich light soils, and is useful for cutting, if young flowers are

miniata is a good dwarf kind for the rock-garden, with deep orange flowers.

P. orientale.—The most showy of poppies, and among the noblest of hardy plants, being robust, long-lived, with stout hairy leaves and stems, and of easy increase by seeds or division. A fine distinct form of *P. orientale* is *P. bracteatum*, and the two have been freely crossed with good results. *Bracteatum* is the better plant, rising with masses of luxuriant

White Poppies.

gathered early in the day. Though a perennial, it is a short-lived one, and worth little after its second season. Coming readily from seed and blooming in its first year, it is more often grown as an annual, flowering from May to October if kept from seeding. The flowers give many pretty shades, from orange to pale red, yellow, and white, the petals with a satin sheen and crumpled. One of the prettiest forms is a soft pale yellow, but others equally fine may be raised from the best "Excelsior" strain offered in the catalogues. The var.

foliage and huge blood-red flowers with bold dark blotches, 6 to 9 inches across, and carried on stout stems with blooms set among large leafy bracts, the flowers coming a little earlier and lasting longer. Other forms are *concolor*, an unspotted variety; and *triumphans*, of dwarf habit. The named garden hybrids in red, orange, salmon, pale pink, purple, and maroon, with many intermediate shades, are useful for bold effects in border or among shrubs.

NAMED HYBRIDS.—The best of these are

Blush Queen, Loveliness, and Medusa, in carmine and pale pink; with Psyche, Vesta, and Silver Queen coming nearest white. Rosea, Rose Queen, and The Shah are fine shades of deep rose approaching crimson; with Pride of Livermere, an immense flower of blood-red, and Waterloo, a dark crimson suffused with violet, the leaves remarkably woolly. Salmon Queen, Lady Roscoe, Brightness, and Hesperia give charming shades of salmon-red, and Prince of Orange, Mogul, Fire-King, Trilby, and Duke of Teck flowers of crimson or scarlet. Mahony and Darkness are in shades of deep maroon; Distinction is rosy-lilac shading to maroon; and Princess of Wales a peculiar satin-grey tint shot with pink. There are now many seedlings in such soft "art shades," and though not pleasing to all tastes, these flowers gain in value for decoration by their milder poppy smell, this being a serious fault with the more showy kinds. Other distinct varieties are Grenadier and semi-plenum with duplicate petals; Fringed Beauty, in which the crimson-scarlet petals are deeply cut; Tulip, with long tapering buds of lasting character; and Mrs. Marsh, a fine flower with a showy blending of scarlet and white. Dividing is best done after flowering in autumn, and the choicer kinds may be raised from root-cuttings.

P. pavoninum (*Peacock Poppy*).—An annual from the sandy plains of Turkestan, where it makes neat little tufts of about 12 inches, free in flowers of crimson-scarlet with an inside ring of black. The flowers are peculiar in bearing two horns upon the sepals; the brilliant flowers and compact growth of the plants make this one of the best of annual poppies.

P. pilosum.—A perennial Poppy from the mountains of Greece, with tall much-branched stems and hoary leaves. The flowers are borne very freely, several together upon a stem; they are about 3 inches across, and of a pretty soft shade of reddish-buff, with a pale spot at the base of the petals. A good kind for grouping on dry banks. A cross between this plant and *P. rupifragum*, known as *pilosum hybridum*, is a pretty little perennial of fine habit, with orange-salmon flowers, excellent for cut-work.

P. Rhæas (*French Poppy*).—Annual flowers raised from the scarlet Poppy of our fields, in varied colours; single and double forms, some self-coloured, and others variegated or fringed. A well known strain is that of the "Shirley Poppy," now much varied as to colour, the latest gains being pretty salmon tints. These little plants should be sown thinly in light rich soil, and thinned to prevent crowding. There are several double-flowered strains, known as French, German, and Ranunculus flowered Poppies. A new variety, *japonicum*, from Japanese gardens, has smaller and fuller flowers, more varied as to shape.

P. rupifragum.—Little hairy plants like a perennial Shirley Poppy, of delicate appear-

ance, 1 to 2 feet high, with a neat habit, and useful for cutting. The flowers are 2 to 3 inches across when fully open, and a soft orange or terra-cotta colour. The variety *atlanticum* bears bright scarlet flowers. Crossed with *orientale* this species has given *P. Ruporient*, with blooms of a soft cherry-red. Morocco and S.W. Europe.

P. somniferum (*Opium Poppy*).—An annual stately and showy, with large flowers, the foliage grey-green, the flowers variable in form and colour, rank in smell, and useless

Opium Poppies (*Papaver somniferum*).

for cutting, but of good effect when grouped boldly. The plants mostly grow 2 to 3 feet high, with single flowers ranging from white to deep crimson, and double ones with heavy scarlet, white, or striped flowers, of great beauty. Good single kinds are Maid of the Mist, white with finely fringed petals; The Bride, also white; Flag of Truce, Miss Sherwood, with pale pink edges; Danebrog, a very handsome flower in scarlet and white; and Mephisto, scarlet and black. The double forms are yet more varied, including those known as the Carnation and Pæony-flowered Poppies, the first with fringed petals, and the second with very full broad ones. Favourite double kinds coming fairly true are Mursellii and Mursellii splendens; Mikado, in white and crimson;

Mary Campbell, very full and finely fringed; White Swan, also white; and Cardinal, with fiery red flowers, very large and full, with fringed petals. Crossed and recrossed with the Eastern Poppy, yet another race has recently sprung from this species in France, and a dwarf one comes from China. *P. setigerum* is a hairy form of the Opium Poppy, with violet flowers. The Opium Poppy and its

Parnassia palustris (Grass of Parnassus).

varieties are treated as hardy annuals in the same way as the garden form of the Corn Poppy.

***P. umbrosum*.**—A brilliant annual, about 2 feet high, like the common field poppy, but of a darker red, and with a jet black blotch at the base of each petal conspicuous both inside and out, making masses of this plant showy in early summer. A compact form has arisen under cultivation, and one with double flowers. Seeds should be sown in autumn, in order to secure strong plants for the ensuing summer. Caucasus.

P. arenarium is a showy annual from the Caucasus, bearing purple flowers with dark spots. Other handsome poppies, such as *Heldreichii* and *spicatum*, both from Asia Minor, with orange and brick-red flowers respectively, are perennials of easy culture.

Paradisæa. See ANTHERICUM.

PARNASSIA (*Grass of Parnassus*).—Pretty perennials for the bog-garden. In our moist heaths and bogs *Parnassia palustris* is frequent, and a very pretty plant it is—handsome enough to cultivate in moist spots, where it will grow

as in its native haunts. Three other kinds, natives of North America, are quite as showy. *P. fimbriata* has large flowers with peculiar fringe-like appendages, its kidney-shaped leaves resembling those of *P. asarifolia*, another hardy species, about 9 in. high, which bears similar white flowers without fringes. *P. caroliniana* differs from *P. asarifolia* in having oval or heart-shaped leaves; it flowers about the same time, usually from the beginning of July till the end of August. These hardy Parnassias thrive best in a moist peaty soil or a spongy bog. Seed, division. Saxifrage order.

PAROCHETUS (*Shamrock Pea*).—*P. communis* is a beautiful little creeping perennial with Clover-like leaves, 2 to 3 in. high, bearing in spring Pea-shaped blossoms of a beautiful blue. It is of easy culture in warm positions on the rock-garden and the choice border, and where the climate is too cold to grow it in the open air it may be grown in a cold frame or in baskets in the greenhouse. Division or seed. Nepaul. Leguminosæ.

PARROTIA (*Iron Tree*).—Low Hazel-like trees, natives of Northern India and Persia, less remarkable for their beauty of flower than for fine colour in autumn, when the leaves give a mixture of crimson, orange, and yellow, unique among hardy trees. The best known is the Persian, *P. persica*, which is hardy at least in southern England. It does best in light soils and grows well against walls with a south or south-east aspect. Seeds, layers, or greenwood cuttings.

PARRYA.—A small group of dwarf perennial herbs from high mountain or arctic regions, with thick rootstocks, narrow leaves, and showy flowers in white, rose, or purple, and rather like a dwarf *Hesperis* in effect. They are easily grown in the rock-garden in ordinary soil, and increase by division. Very few kinds are in cultivation, though several are well worth growing, such as *P. integerrima*, with pretty purple flowers in April and May; *P. nudicaulis*, a charming plant with large lilac flowers in early summer; and *P. Menziesii*, from N.W. America, with soft rosy or deep purple flowers in spikes of 6 inches.

PASSIFLORA (*Passion-flower*).—The hardy blue Passion-flower, *P. corulea*, so often seen as a wall-climber in southern districts, from its beauty and distinctness deserves to be grown wherever the climate permits. It is not so suitable for arbours or trellises as for walls; the heat from the walls aids in ripening the wood, and so enables it to withstand the winter. A southern aspect

Passiflora Constance Elliot.

is best for it, though it grows against west or east walls, only requiring a good soil, and, perhaps, a slight protection during winter. In places where it fruits freely the bright orange colour continued far into autumn is an added merit. To ensure fruiting, several plants should be planted not far from one another. The white variety, *Constance Elliot*, is as hardy as the older kind. No other variety of *P. cærulea* is so distinct, and no other Passion-flower is hardy enough for outdoor walls. The blue kind may be grown from seeds, and flowers from the second year; the white one strikes easily from cuttings. The blue Passion-flower first came from Brazil two hundred years ago.

PAULOWNIA.—*P. imperialis* is a fine flowering tree from Japan, not suitable for our climate generally, though in a few places it succeeds. It comes into flower and leaf so early that the buds and often the young leaves are injured by late frosts; otherwise there may be a lovely bloom. It is fine in leaf as well as in bloom; the leaves are a foot in length, and have even exceeded 20 in. The flowers are in erect spikes, and shaped like those of a *Bignonia* of a delicate mauve purple, blotched inside with a deeper tint. In countries a little warmer than Britain this tree is very beautiful and much used in public gardens and even in street planting. At maturity the *Paulownia* assumes a dense rounded head, but rarely exceeds 30 ft. in height, although in some south-coast gardens there are trees of 40 feet.

If the young trees are cut back annually, they make strong shoots bearing enormous leaves, with the advantage of being much hardier than the tender greenhouse plants used in summer to give such effects. The tree is best on a light deep loam.

Pavia. See *ÆSCULUS*.

PELARGONIUM (*Stork's Bill*).—Nearly all Pelargon-

iums are natives of the southern hemisphere, or have originated as cross-bred varieties in European countries. They are often wrongly termed Geraniums, but although allied to that family they are distinct from it, Geraniums being chiefly natives of the northern half of the globe, and all of them hardy plants. The genus *Pelargonium* contains many species, which botanists have divided into sections, and many kinds will grow and flower in the open air during summer, although unable to withstand our winters.

Of all varieties of the flower garden the "zonals" are the most useful, and they are supposed to be descended from two distinct species, *P. zonale* and *P. inquinans*. As bedding out plants they are of great value; and the ease with which they yield improved forms has led to the intro-

also good outdoor plants, the free exposure intensifying their rich tints.

No plants are more easily increased than these: cuttings may be inserted at any time, and root freely in sandy soil, in the open air during summer and autumn and under glass during winter and spring. But the principal stock of plants is got by cuttings inserted in pots, pans, or boxes in the open air during the early autumn, and such make the best plants. During winter the protection of glass and the exclusion of frost are essential.

ZONAL PELARGONIUMS FROM SEED may also be treated as annuals, and will bloom in less than ten months from the time of sowing; but the seed should be sown as soon as it is ripe, say during August. Enough seed can always be had

Pelargonium Dr. André.

duction of many beautiful varieties, in colours ranging from white to intense scarlet, purple and violet. On account of the brilliancy of their flowers, these plants have sometimes been too freely used in the flower garden, but such matters are now better understood. Among the Zonal varieties there are many with variegated and beautiful foliage, especially in that section known as Tricolors, and these, on account of their not succeeding well in all soils, are less grown out-of-doors than they deserve. Where they succeed, however, they form very attractive beds, when grown for the sake of their foliage, the trusses of bloom being removed from time to time as they appear. The varieties known as "bronze zonals" are

by retaining a few plants for the purpose, in front of a greenhouse, in any light, airy spot. If new varieties are sought, there should be artificial fertilisation; but this is unnecessary if the plants are merely for planting out in the parterre. If the plants used for seed be all of the same sort, the seedlings will be tolerably true—*i.e.* the same variety as the parent. The pots should be of convenient size (say 6 in. in diameter), and filled to within $\frac{1}{2}$ in. of the rims with light turfy soil; the seed may be sown rather thickly, gently pressed into the soil, and slightly covered with it. Water with a fine rose, cover the pots with a piece of glass, and place them in a temperature of about 65°; the seeds will

soon vegetate, and the piece of glass should then be removed; the plants when large enough should be pricked off into seed-pans and kept near the glass in a reduced temperature during the winter. Early in the following March they should be potted singly into 3-in. pots and placed in a cold pit, or a similar structure where frost is excluded, until the time arrives when they may be safely planted out. During the first part of the season such plants may bloom less freely than those from cuttings, but their neat habit and healthy foliage will compensate for this.

Many sorts remarkable for their fine flowers are so poor in habit as to be useless for bedding-out; and few of the many beautiful double varieties of Zonals can be recommended for outdoor culture, unless as standards, with clean stems, $2\frac{1}{2}$ or 3 ft. in length. In this form they are sometimes effective, for the drawing of sustenance through a slender stem induces a very free-flowering habit. Strong stakes are needed to support the heavy heads, and the principal branches should be secured to circular hoops. Single varieties may also be grown into standards, and in their case seedlings are likely to form specimens sooner than plants from cuttings. Before frost, all standards should be well cut back, taken up, and repotted in pots not larger than may contain the roots; they should be staked and afterwards placed in a temperature not under 60° until they root. Treated thus annually, such plants are often in perfect health even when twelve or fourteen years old.

Next in importance to the Zonals for outdoor culture are the Ivy-leaved kinds or the varieties of *P. lateripes*. More particularly is this the case since their crossing with the Zonal varieties, which has produced many beautiful sorts useful for outdoor culture. They should be treated like the Zonals, but being rather more tender they need a little more warmth in winter.

Among other Pelargoniums few are suitable for outdoor culture, or for bedding, their growth in the open air, in even light or poor soil, being too luxuriant. Each section will now be considered separately, and the varieties that succeed when planted out will be mentioned. There are, however, so many varieties of Zonals, and the older varieties are so often replaced by others, not always improvements, that it will only be necessary to give a short list of sorts known to be really good. It must, however, be borne in mind that some sorts succeed

in certain soils and situations which are not good in others.

The following are a few of the many Zonal varieties suited for outdoor culture or for massing in the flower garden or elsewhere: Beauty, Beckwith's Pink, Dr. Orton, E. F. Crocker, Eleanor, George Potter, Henry Jacoby Improved, James Kelway, John Gibbons, King Edward VII., King of Bedders, Lady Bailey, Mons. Myriel, Mrs. W. Browne, Mrs. Holford, Mrs. R. Cannell, Olive Carr, Omphale, Paul Crampel, Phyllis, Queen of Whites, Sam Jacoby, Snowdrop, Surprise, Swanley White, Vesuvius, and West Brighton Gem. These are all with single flowers, but a few of the double kinds are also useful, such as Double Jacoby, Hermione, F. V. Raspail, Gustav Emich, Jean Viaud, King of Denmark, and Ville de Poitiers. Several of these are also excellent for blooming under glass during the winter, among the best in this way being Countess of Dudley, F. V. Raspail Improved, Hall Caine, Hermione, King of Denmark, King Edward VII., Lady Roscoe, Mary Beaton, Mrs. Chas. Pearson, Mrs. Lawrence, Prince of Orange, Sirdar, and Ville de Poitiers.

The bronze Zonal varieties are as well suited for bedding-out as the green-leaved kinds, being in all respects as vigorous. Their flowers vary in colour. The bright golden ground colour and rich leaf zones of some of them, however, show to greater advantage when the blooms are removed. The following are a few of those that may be considered the best bedders: Black Vesuvius, Distinction, Golden Harry Hieover, Her Majesty, Jubilee, L'Enfer, Maréchal Macmahon, Swanley Bronze, White Distinction, and Zulu.

There are also some useful bedding varieties with yellow zoneless leaves, such as Creed's Seedling, Crystal Palace Gem, Golden Christine, Robert Fish, and Verona. Happy Thought is a singular variety, each leaf having a large disc of a creamy-white colour, while the margins are green, but it is inclined to grow rather too robust in rich soils. Freak of Nature, which is rather similar, is better in this way, being dwarf and more spreading.

Though the variegated Zonals, or golden Tricolors, do not succeed equally well as bedding plants in all kinds of soil, the following varieties will, with ordinary care, give satisfaction: Brilliant, Enchantress, Golden Brilliantissimum, Lady Cullum, Macbeth, Masterpiece, Mr. Harry Cox, Mrs. Pollock, Mrs. Turner, Peter Grieve, Prince of Wales,

Sophie Dumaresque, and William Sandy.

The drawback with the silver tricolor sorts, when planted out in the open air, is that the green portion of the leaves often expands faster than the white or coloured margins, so that the centres of the leaves become somewhat puckered. The following are among the best for this purpose: Dolly Varden, Empress of India, Eva Fish, Lady Dorothy Neville, Lass o' Gowrie, Miss Farren, Mrs. Clutton, Mrs. Miller, and Proteus.

Among silver-margined zoneless sorts, Mangle's Variegated, a very old variety, is still useful, together with Boule de Neige, Brilliantissimum, Dandy, Flower

Pelargonium "Pretty Polly."

of Spring, Mrs. J. C. Mappin, and Sir John Holder. Madame Salleroi and Silver Crown are very neat dwarf kinds for edgings, and Lady Plymouth and variegated Prince of Orange are with scented leaves.

Of the Ivy-leaved sorts, and their hybrid varieties, the following are useful as bedding plants for their double flowers of fine colour: Achievement, Col. Baden-Powell, Galilee, Her Majesty the Queen, Madame Crousse, Mrs. Hawley, Souvenir de Chas. Turner. Bridal Wreath and Dolly Varden are older single-flowered kinds, and Duke of Edinburgh and Aureum marginatum varieties with variegated leaves. There is now coming out a new series of hybrids combining the fine glossy foliage and bright flowers of the ivy-leaved kinds with the sturdy erect habit and often the

distinct leaf-marking of the zonal section. The plants are as yet too untried for us to say much as to their garden value, but such kinds as Chingford Beauty, belonging to this class, seem to promise well for the future.

Comparatively few of the Cape species or of their hybrid varieties are of much use as bedding plants: a few, however, are sometimes used with effect. Some of these are—Diadematum, Lady Mary Fox, Lady Plymouth, Pretty Polly, Prince of Orange, Rollison's Unique, Crimson Unique. A new and pretty cross (between *P. quercifolium*) in this section, and one of the tender large-flowered Cape varieties) is named Clorinda, with fine foliage and large rosy flowers. It is, however, more adapted for the greenhouse than the open air. Most of the sweet-scented sorts, when planted out-of-doors during the summer, yield an abundance of fragrant flowering shoots for cutting for the house.

PENNISETUM. — *P. longistylum* is one of the most elegant of Grasses, 1 to 1½ ft. high; the flower-spikes, borne on slender stems, are from 4 to 6 in. long, of singular twisted form, and enveloped in a purplish feathery down. It is useful for cutting, as it lasts a long time, is perennial and hardy, growing in free garden soil. Easily raised from seed, or root division in early spring. *P. fimbriatum* is a similar species, equally desirable. *P. japonicum* is a taller kind with long narrow leaves and a dense rounded spike. *P. macrourum*, like a miniature Pampas Grass, is a tall perennial from the mountains of S. Africa, with spikes of flower a foot long. *P. latifolium* from S. America is a noble plant in the summer-garden, but will not stand our winters in the open.

PENTSTEMON (*Beard Tongue*).—Varied in colour, profuse in flower and of graceful habit, Pentstemons have a value for our flower-beds and rock-gardens that few other plants possess, especially as their beauty covers five months, commencing in June with the charming blue *P. procerus*, and finishing with the endless varieties of *P. Hartwegi* in shades of rose, scarlet, and crimson, whose beauty holds its own even in November, after more fragile plants have perished. Within recent years much has been done to improve the Pentstemon by selection of varieties of *P. Hartwegi* and *P. gentianoides*, which, however, with all their wide range of colour, lack the beautiful clear blue of some of the species, and have a somewhat monotonous effect. These

garden varieties, or so-called hybrids, may be ranged under two series—those from *P. Hartwegi* belonging to the red-flowered set, and those from *P. gentianoides* to the purple-flowered.

As regards culture, the species have the reputation of being difficult to manage, as some of the shrubby section die when apparently in health. To ensure success, drainage is often essential, as they fear moisture at the roots more than cold. The best soil is friable loam, with a mixture of well-decayed leaf mould and sharp sand. It is well to have a few plants in cold frames, to fill any gaps in the borders. They may be grown from cuttings or seeds. The former mode applies chiefly to the shrubby kinds, which strike freely in spring; and, in favourable seasons, seeds are borne by those from which it is not easy to get cuttings. Any attempt to multiply some kinds by dividing the tufts will result in the loss of the plants, but *P. barbatus* and *P. confertus* endure this mode of increase. Seed should be sown in February or March on a gentle hot-bed under a frame, in seed-pans well drained with broken plaster and filled with a compost of peat soil and sand. In April the seedlings should be pricked out under a frame, and these, planted out in May, will usually flower by autumn. Another mode is to sow in May or June in the open air, in ground enriched with leaf-mould. The seed-beds should be covered with chopped Moss, to preserve a uniform temperature and humidity. In August the seedlings should be potted and removed to a greenhouse or conservatory for the winter. Not infrequently all or part of the seed sown at either of these seasons lies dormant until the following year. Foxglove order.

The following are the cultivated species. Some are not sufficiently hardy for border culture, though they succeed well enough against a warm wall.

P. acuminatus.—A pretty plant growing rigidly erect to 12 or 18 inches, with thick greyish leaves clasping the stem and a compact spike of mauve or violet flowers, wide at the throat and nearly an inch long.

P. antirrhinoides.—A plant of wiry growth, freely branched and varying much in height. Leaves small, oval or nearly so, and broad flowers in clusters of three, clear yellow, and fragrant. Tender in this country save in warm light soils. California.

P. azureus.—A beautiful plant of 1 to 2 feet, forming a neat tuft of narrow grey leaves and loose spikes of azure-blue flowers shading to reddish-purple at the base. N. California. *Jaffrayanus.*—One of the best dwarf kinds, about a foot high, with reddish stems bearing

large flowers of rich blue in showy clusters of three to five blossoms.

P. barbatus.—A tall erect plant, very showy in a dry season and one of the best and hardiest kinds. Its spikes of narrow tubular flowers, varying from light pink to bright carmine, rise from a dense spreading tuft of bright green leaves. A flesh-coloured form is known as *carneum*, and there is also a white form. Other varieties are *Torreyi*, with deep scarlet flowers, longer in the lip and coming rather later than in the parent; and *Antwerpensis*, of looser procumbent habit, the stems rooting where they touch the ground, and bearing small flowers of vivid scarlet. Syn. *Chelone Barbata*.

P. breviflorus.—A distinct plant with short tubular flowers of yellow or light red, with darker red lines within, appearing late in autumn upon slender many-flowered stems.

P. Bridgesii.—A scarce Californian plant of 12 to 18 inches, with narrow grey leaves and spikes of bright red flowers, rather like those of *P. Barbatus*, but shorter in the tube. Minor botanical differences have caused some authors to place it in a sub-genus, *Saccanthera*.

P. caeruleus.—A dwarf kind rarely exceeding 9 inches, with large flowers varying from light blue to lilac and white, or more rarely flushed with rose. The plant is sub-shrubby in habit with grey foliage, and is one of the most beautiful for the rock-garden.

P. campanulatus.—A Mexican species of about 2 feet with diffuse spreading habit, branching freely from a woody base; stemless leaves narrowing from a broad base and much toothed. Long narrow spikes of flowers variously shaded in pink and violet, and borne during a long season. Comes freely from seed. A distinct form, *albus*, bears long tubular flowers of creamy-white. A plant of many names; *angustifolius*, *atropurpureus*, *pulchellus*, &c.

P. centranthifolius.—A slender leafy kind with thick grey leaves and narrow scarlet flowers appearing in June. California and Arizona. It comes near *P. Murrayanus*, and though less handsome than that kind, is easier to grow, and rather hardier.

P. Clevelandi.—A Californian species akin to *barbatus*, with grey stems and foliage springing from a woody base; flower spikes long and slender, with narrow tubular flowers of bright crimson, thickly set. Leaves sharply toothed. A good border kind.

P. Cobaea.—A handsome kind from Texas and a parent of the garden varieties. Stout erect growths of 2 feet, with thick deep green leaves, minutely hairy and a little sticky. Flowers very large and open, narrowing rapidly to the base; colour varying from reddish-purple to nearly white. August. A rather tender kind, of difficult increase, and doing best in a warm season. A fine variety *purpurea* bears very large purple flowers shaded with violet, one of the best forms that can be grown. Other kinds are often sold as

P. Cobaea, but when once seen it is not readily mistaken.

P. confertus.—A distinct plant with short erect stems rising from a carpet of dark green shining leaves, at times finely toothed. Small flowers of pale yellow or creamy white in dense crowded spikes. A much prettier variety of this is *P. caruleo-purpureus*, with compact heads of deep violet blue, appearing earlier than any other kind. Syn. *P. procerus*.

P. cordifolius.—A useful shrubby plant of semi-climbing habit, flowering from early summer to late autumn. Its growths are leafy, the long slender stems loaded with tubular scarlet flowers about an inch long. S. California. Being tender, this handsome kind needs shelter in winter.

P. cristatus.—A good plant of but a few inches with a tuft of narrow hairy leaves often sticky with gum, and short spikes of reddish-purple flowers about an inch long, and of curious shape from abrupt inflation of the tube.

P. deustus.—An effective kind for grouping amongst rocks, being of neat dwarf habit with short stems rising from a woody base. Leaves thick, shining, and variable in shape, mostly dented, and the upper ones stemless. Wide-mouthed flowers of yellowish-white, sometimes tinged with purple, and arranged in a crowded cluster on the spike. July. Western States.

P. diffusus.—Abundant near the Columbia River, and one of the best in flower from June until cut by frost. Stems of about 2 feet, of spreading habit, the broad leaves deeply toothed; light rose-purple flowers of less than an inch, upon short stalks, and carried upon leafy much-branched stems. A showy little plant, early in flower, seeding freely, and well worth cultivation. It is, however, apt to succumb to the dampness of our winters.

P. Eatoni.—A plant of recent introduction, and one of the best of the group, growing about 2 feet, with flowers of rich crimson-scarlet widening towards the mouth, and finely contrasted with silvery-glaucous stems and foliage. California.

P. gentianoides.—A large-flowered Mexican species with long shining leaves upon stems of 3 to 4 feet, and spikes of violet flowers in July. Tender in all save the most sheltered positions, and now superseded by the garden varieties, of which it is part parent.

P. glaber.—A handsome plant, and one of the best, with several fine seedling forms. Dwarf erect growths, often less than a foot high and slender in habit, with long narrow leaves, smooth and wavy. Profuse in fleshy flowers of an inch or more, wide at the mouth and borne in clusters of six or seven; colour, bright blue shading to violet or purple. Banks of the Spokane River in N.W. America. Among its many good forms are *alpinus*, a dwarf robust kind with dense clusters of clear azure blue; *cyananthus*, a form from the

Rocky Mountains, with taller and greener stems, broader in leaf, with dense clusters of blue: *hybridus*, stouter and more vigorous with large heads of blue and rosy-purple; *speciosus*, a narrow-leaved form with beautiful bright blue flowers shaded purple; and *splendens*, a tall plant with flowers of rich dark blue. Seed should be sown early in spring. Syn. *P. speciosus* and *preanthera*.

P. glandulosus.—A showy plant from the sandy channels of torrents in the Rocky Mountains. Thin toothed leaves upon stout erect stems of 2 to 3 feet; flower-spikes narrow with large rosy or lilac flowers, wide in the throat and short in the lip. June.

P. glaucus.—A dwarf kind from the Rocky Mountains, with grey stems and foliage of about 9 inches; dense clusters of dull lilac or bluish-purple flowers of medium size, with a wide pale throat. A form of this is known as *stenosepalus*.

P. gracilentus.—A shrubby kind of about a foot, with a woody base, long shining leaves, and loose clusters of tiny violet-blue flowers very shortly lobed.

P. gracilis.—A slender and pretty plant of dwarf growth with long funnel-shaped flowers of lavender colour, varying to white; upper leaves long and narrow, base leaves more rounded. August.

P. grandiflorus.—A tall grower, with stout stems of about 3 feet, and thick, broad leaves of bluish-grey, clasping or surrounding the stem. Brilliant flowers of 2 inches or more of a fine blue or purple, with a wide base and very short stalks.

P. Hallii.—A low herb from the mountains of Colorado, with thick, narrow leaves, and broad, bell-shaped flowers of pale mauve or purple, in short spikes.

P. Hartwegi.—Found by Humboldt upon the mountains of Toluco, Mexico, at a height of 11,000 feet. It is a plant of great vigour and beauty, and for a while was much grown, but has given place to modified forms in which its influence is very marked. Its purple stems, freely branched, exceed 3 feet, with long shining leaves of bright green and narrow drooping flowers, red or deep purplish-crimson.

P. heterophyllus.—A lovely little subshrub, 12 to 15 inches high, with narrow leaves of grey-green, and slender branching stems of clear, bright blue flowers, with a rosy flush deepening to purple, and often much varied upon the same plant. July. Thrives best in warm sheltered spots and light soil, and it is best to winter a reserve of cuttings under glass. California.

P. humilis.—A dwarf plant of 6 to 8 inches, from open slopes of the Rocky Mountains, and as a result very hardy in bleak exposures. It is akin to *P. gracilis*, with flowers of a deeper blue and denser in the spike, appearing early in June. They are small and narrow, ranging from deep purplish-blue to nearly white, and freely produced. A gem for the rock garden, in gritty loam and leaf-mould, freely watered during summer.

P. labrosus.—From the hills of Southern California, with long narrow leaves upon tall purplish stems of 3 to 4 feet, and long loose spikes of narrow, tubular flowers, bright scarlet, and held nearly erect upon first opening.

P. lætus.—A shrubby Californian species with grey down-covered growths a foot high, and blue flowers of about an inch during July and August. A pretty kind, but rare in gardens and somewhat tender. *P. Roezli* comes near this, with narrow leaves and flowers of pale blue or lilac.

P. lævigatus.—A tall plant with leafy stems and long slender flowers, white or tinged with purple, widening from a narrow base. It is a common plant in the western States, its best form being the "Foxglove" Pentstemon, growing 4 or 5 feet, with larger and more inflated white flowers.

P. Menziesii.—A shrubby kind found by Douglas in the Rocky Mountains. It is a good rock-plant for a sunny corner in dry sandy soil, with freely spreading stems of less than 12 inches, and pretty rose-purple flowers of brilliant hue. Increased by cuttings in sandy soil. Its several forms are:—*Douglasi*, with small thick leaves and lilac or rosy-purple flowers; *Newberryi*, forming a graceful bush with pink or rosy-purple flowers; and *Scouleri*, a taller and earlier flowering form, of trailing habit, rooting at the joints, and hardier than the other forms, its flowers of bluish-lilac or violet-purple. Oregon.

P. Murrayanus.—A handsome and distinct plant with flowers of deep scarlet about 1½ inches long, upon long slender stems of 2 to 3 feet, the lower leaves grey-green clasping the stem. Texas. It is best grown as a tender biennial, though perennial in its wild state. A fine race of seedlings has been raised from this plant by Messrs. Vilmorin under the name of *Murrayanus grandiflorus*; their flowers are larger, richly varied as to colour, with a long season of bloom.

P. ovatus.—A pretty mountain plant from the limestone summits of Idaho, with slender erect stems of 3 feet, bearing bright green leaves and loose spikes of blue flowers changing to rosy-purple. It is best grown from seed at frequent intervals, old plants perishing.

P. Palmeri.—A handsome plant, of slow growth and somewhat tender. Stems of 2 to 3 feet with thick grey leaves growing together around the stem, and pale flowers flushed with pink or purple and very wide at the mouth. Best reared in pots, and only planted out to flower in its second season. Utah.

P. pubescens.—The wild kind of eastern America, common as a loose growing, slender herb of 2 feet, with toothed and sticky leaves and loose clusters of deep purple or flesh-coloured flowers, enlarged at the mouth, but closing like the flowers of a Snapdragon. From Ontario, southward and westward. Syn. *P. Mackayanus*.

P. puniceus.—A beautiful plant, flowering freely between summer and autumn. Stout erect stems of 1 to 6 feet, with stemless leaves

of grey-green, blunt and fleshy, and funnel-shaped flowers of glowing crimson in clusters of three and four, their rich colour set off by clear white anthers. Arizona and Mexico. A plant with all the good points of *P. Murrayanus*, and much easier to grow, but not generally hardy in our winters. *P. Wrightii* comes near this, but is dwarfer, smaller in leaf and flower, and the flowers of a deeper crimson. *P. Eatoni* is perhaps still nearer, its taller growths yet more silvery, and its flowers deep crimson, as in *Wrightii*. These kinds need frequent renewal from seed.

P. Richardsoni.—Found about the Columbia River and its branches, thriving in the leafy deposits drifted amongst the rocks. It is a showy kind, forming long rambling stems of 3 feet, loosely branching, covered with shining deeply cut leaves and medium-sized violet or rosy-purple flowers. A robust plant forming large tufts in flower from July onwards.

P. rotundifolius.—A border plant growing 2 feet high, with thick rounded stems and leaves of grey-green and large drooping flowers of bright brick-red upon long stalklets, giving the spike a loose appearance. N. Mexico.

P. secundiflorus.—A distinct plant of free growth, with narrow grey-green leaves and bluish flowers suffused with bronze where touched by sunlight. They are an inch or more long, very broad and bell-shaped towards the mouth, and carried in long, narrow, one-sided racemes. Colorado.

P. spectabilis.—A Mexican kind of 18 to 24 inches, with greyish-green leaves deeply toothed, and pretty rosy-purple flowers of about an inch, very open and full in the purple-lined throat, and carried in branching panicles.

P. triphyllus.—From the granite soils of the Blue Mountains: about 18 inches high, bearing small violet or pale rose flowers in a loose leafy spike, the pale inner throat of the flowers lined with darker veins. A slender herb, thriving in sandy soils.

P. tubiflorus.—A distinct plant with tall stems of 2 to 3 feet from low leafy tufts, the stems bare save for a few small bracts and the dense spike of tubular white flowers, sometimes shaded with purple, rising in successive tiers. Kansas and Arkansas.

P. venustus.—A pretty plant from the western States, with erect leafy stems of 2 feet and thick leaves sharply indented; the spike narrow, bearing fine purple flowers more than an inch long.

P. Watsoni.—A dwarf plant from the mountains of Colorado, much branched, bearing rounded leaves and small funnel-shaped flowers of dark violet-purple, relieved at times by touches of white.

THE HYBRID PENTSTEMONS.—Precious flowers supposed to have come from *P. gentianoides*, but more largely from the pretty *P. Hartwegi*. *P. Cobæa*, too, has probably come in somewhere, for some varieties bear a strong resemblance to it. Whatever their parent-

age, they are beautiful plants, and much use should be made of them, as they are valuable in autumn and carry their beauty into winter, at least in western and sea-side gardens.

They succeed in any good soil, such as a good loam enriched with manure and leaf-soil. They can be planted out as groups in beds, or in the mixed border, where their various colours blend charmingly, ranging from white to scarlet, with intermediate shades of pink, rose, purple, carmine, and purplish-lilac. If good plants be put out by the end of April, they will bloom about the middle of June, and yield flowers until winter. They are increased both by cuttings and by seeds; the cuttings taken in August or early in September from the young growth round the main stem should be put into a prepared sandy bed, on a shady border, under a hand-glass, or into boxes or pots in a cold frame. They root readily, and those in boxes or pots might be wintered there, and not transplanted till spring. Those in the border should be lifted and potted, or planted in a cold frame for the winter, or where the winters are mild they may be transplanted to the open ground in a well-prepared bed, and protected during severe weather with a little litter or branches of Evergreens. The young plants, however, should not usually be planted out till March or April. To increase the stock of any given variety rapidly, the store pots of cuttings rooted in autumn should be put in a gentle bottom-heat in spring, and induced to grow; if the young growths be taken off when they are 2 in. in length, and put into pans of sandy soil of the same temperature, they will quickly strike, and by May and June form healthy plants.

SEEDLINGS.—The Pentstemon is a free seeder, and there is no difficulty in obtaining seed. It should be taken from only the finest varieties showing distinct or novel character—and such varieties can scarcely fail to yield something worthy of cultivation. The seed should be sown in February or early in March in a gentle heat: it will quickly germinate, and when the plants are large enough to handle, they should be pricked off into shallow boxes, and after a time hardened off in a cold frame. Here they can remain till the end of May or later, according to size, and they should then be planted out in well-prepared beds. When they flower, which they will do by August and September, any especially good varieties should be marked for increase.

If the bed of seedlings be allowed to stand for another season (and this is often a good plan), the seed-stalks should be cut away as soon as ripe, and the bed cleaned, top-dressed with leaf-soil and short manure in spring, and there will be a plentiful harvest of flowers the following summer. Seedlings should be protected by a cold frame during winter, and planted out in April in good soil in a sunny spot.

GOOD GARDEN FORMS: Arthur J. Ward, Countess of Tweedale, Dr. Baine, Dr. Barrie, Edwin Beckett, Emile Rodigas, George Horne, James Robertson, Jane Dieulafoy, John A. Elliot, John Forbes, John Jennings, Joseph Chamberlain, Joseph Kent, Lady Arthur, Lord Lister, Lord Rothschild, Marconi, Miss Stewart Peter, Miss Talbot, Mrs. Forbes, Mrs. J. Chamberlain, Mrs. Oliver, Mrs. Jennings, Mrs. Younger, M. Deherain, Peter Readman, Simon Campbell, and Walter Thomson. The above are remarkable for the large size and brilliant colour of their flowers, but a variety that for massing is as good as any is Newberry Gem. In this the blooms are small and graceful, very freely carried during many weeks on a plant of neat compact habit, their glowing crimson colour rendering great effect in the border or in massed beds.

PERILLA.—*P. nankinensis* is a half-hardy annual, with dark vinous-purple foliage. Seed should be sown about the middle of February in pans or boxes in heat; the seedlings should be transplanted into boxes in soil not over-rich, and after being gradually hardened off they should be planted out about the end of May. To those without artificial heat in spring it is worth little, needing heat to reach a fair size for planting. There are several garden varieties which are much used in bedding-out, and often with the worst results as to effect.

PERIPLOCA (*Silk Vine*).—*P. græca* is a rapid-growing shrubby climber of the Stephanotis order, excellent for walls, arbours, trellises, and the like, but on account of the somewhat unpleasant odour of its flowers it is not well to plant it against a dwelling-house. Its long slender stems and branches form a dense mass, and at midsummer are covered with brownish-red velvety flowers; it is deciduous, and therefore unsuitable for a winter-screen. Increase by seeds, layers, or greenwood cuttings under glass. Southern Europe. It is hardy, and has been grown in English gardens for nearly three centuries.

PERNETTYA. (*Prickly Heath*).—

Evergreen shrubs of the Heath family, from South America. At one time several of the wild kinds were grown, but none proved satisfactory until by crossing and selection a race of seedlings was obtained from *Ps. mucronata* and *angustifolia*. These seedling forms of *mucronata* are among the most beautiful of berried shrubs, bearing dense clusters of berries varying in size from a small pea to a small cherry, and in colour from white, pale pink, and lilac, to crimson, purple, and nearly black. The plants differ in habit, some being nearly prostrate, and others erect or drooping, though the largest are not much over 2 feet high; their fruits also vary in density and texture. They are often borne so freely that little plants of a few inches high will be loaded down with them, but in some gardens, and for no apparent reason, not many are set. The plants do best grouped together in sunny places, where they shade each other's roots, and where the atmosphere is moist and the ground cool, and the soil rich in peaty or vegetable matter. They succeed well, however, in stiffer soils, such as clay and limestone marl, especially if given a little good soil at the outset, and soon make dense masses, spreading by suckers. They grow fairly well even in shade, but fruit less freely, and only fail in hot sandy or chalky soils, or where there is much lime. Otherwise they are fully hardy, free from insect pests, and move readily, though averse to disturbance. The small sharply-pointed deep green leaves are always neat, and the numerous bell-like white flowers expanding in May, and in pretty contrast with the bright red of the new shoots, render these little shrubs worth growing for their spring-tide beauty alone. And when the berries are freely produced in autumn, lasting through the winter quite into spring, their value for beds upon the lawn near the house, or in groups of the rock-garden, cannot well be overstated. The birds seldom touch the fruits unless hard pushed in winter, and they last well and are exceedingly pretty when cut for indoor use. Indeed, it is possible to enjoy the plants in this way, potting them in autumn when the berries are well set, for use in the conservatory and dwelling-house when re-established and fully coloured. Increase by suckers, layers, cuttings, and seedlings, which often spring up of themselves where the plants are thoroughly at home. There are many kinds with different names, mostly indicating the colour of the fruits. Pretty dwarf-forms are atro-

lilacina, carnea nana, coccinea purpurea, purpurea macrocarpa, rosea macrocarpa, sanguinea, rosea lilacina, and rosea purpurea; taller forms, alba, atrococcinea, atro-purpurea, elegans, lilacina, macrocarpa, rubra-lilacina, and nigro-major.

PEROWSKIA ATRIPLICIFOLIA (*Silver Sage*).—A beautiful silver-grey half-shrubby plant of the Sage order, with a pungent odour, growing 3 to 4 feet high, with spikes of blue and white flowers in July and August. The effect of the numerous flowering shoots and the grey foliage is distinct and good, and the plant is worth a place in the choicest garden for its graceful habit and long season of beauty, and the value of its slender panicles for cutting. It needs only ordinary soil, but does best in a sunny spot, and so far seems hardy—at least in the south. Increase by cuttings. Afghanistan.

PETALOSTEMON (*Prairie Clover*).—Pretty clover-like perennials, mostly from the western states of America, and not much grown, though well worthy of cultivation in warm open soils, coming readily from seed. The best species are *P. candidus*, with white flowers on stems of 1 to 2 feet; *P. oligophyllum*, with spike-like white heads on slender stems; *P. tenuifolium*, with narrow silvery down-covered foliage and spikes of rosy-purple flowers; and *violaceus*, forming a neat tuft of finely-cut foliage and showy spikes of deep violet flowers. All are better for a dry place.

PETASITES (*Winter Heliotrope*).—*P. fragrans* is a rampant weed blooming in December and January, unless the weather is very severe. The flowers, deliciously fragrant and of a pale dingy lilac, are gathered in short panicles upon stems of 4 to 12 inches. It is unfit for garden culture, as it runs very much at the root and becomes a weed, but it may be planted in the worst clays and on rough banks, lanes, and in hedgerows, as it is very useful for winter bouquets, and may carpet, so to say, a small clump of shrubbery, where it can be conveniently gathered. Another species, *P. vulgaris* (Common Butterbur), is a native plant, 2 to 2½ ft. high, closely allied to the common Coltsfoot, but having great Rhubarb-like leaves; the flowers appear in spring before the leaves, and are of a dull pinkish-purple. Exotic plants with less effective leaves than this have been used in gardens; but it should not be allowed to come nearer to the garden than the margin of some adjacent stream or moist bottom. An allied

plant, *P. japonica gigantea*, has recently come to us from the Far East, where the

The Winter Heliotrope (*Petasites fragrans*).

great rounded leaves, as large as a small sunshade and used as such by Japanese children, rise on stout fleshy stems as high as a man. It makes a stately water-side plant, and coming from the island of Saghalien it should prove fully hardy in this country. Its flowers come in early spring, before the leaves. Division.

PETROCALLIS (*Rock Beauty*).—*P. pyrenaica* is a beautiful little alpine plant,

Petrocallis pyrenaica.

forming dense cushions 2 to 3 in. high, resembling a mossy Saxifrage, with fra-

grant pale-lilac flowers, faintly veined, coming in April. Though hardy, it is fragile, and happiest on the rock-garden, in sandy fibry loam, in level sunny spots, where it can root freely in moist soil mingled with broken stones. It may also be grown in pots plunged in sand in the open air, and in frames in winter, but it becomes "drawn" and delicate under glass. Increase by seed or careful division. Alps and Pyrenees. *P. fenestrata* is a newer kind, of similar habit but with white flowers.

PETUNIA.—In certain positions, some of these showy half-hardy plants of the Solanum order produce a charming effect in masses; and all are well suited for large vases, for baskets of mixed plants, for low trellises, and for planting under windows and walls. The spots chosen for Petunias should be open and sunny, and the soil deep and rich, for in low damp situations they perish with the first cold nights of autumn. There are many named kinds, but as each grower has his own it is useless to particularise. They include single and double kinds in self or mingled shades of white, mauve, crimson, or purple, variously veined and blotched, and often with fringed or laced edges. A pleasing variety may be quickly raised from seeds of a good strain. The best double kinds, as selected by one of our first growers, are:—Juliette Lamber, white; Clarke, deep plum; Charon, blue purple; Fleur de Rose, rose-pink; and Frau Stadt Schröder, rose and white with finely fringed petals. Sown in heat in February or March, good plants may be had for putting out at the end of May, but it is not safe to plant them out earlier. Seedlings, too, are now so good that they are frequently planted in mixed borders for cutting. The named kinds must be raised from cuttings. These should be inserted in August in a bed of leaves or other fermenting material at a temperature of 70° to 75°, and with a top-heat of 65°, since they strike quickly under such conditions. As soon as rooted they should be taken out of the bottom-heat and placed in cold frames till frosty nights set in; then removed to an intermediate house and placed on shelves near the glass, remaining there in store-pots till spring, then potted off singly and grown on till planting-out time. The roots are so brittle that, however well they are rooted, the soil does not adhere to them; and this is why it is necessary to pot singly, for if the plants are put in pans or boxes, and transplanted thence, they suffer greatly.

PHACELIA.—A group of sun-loving annuals with showy flowers, mainly from the western states of North America. Some are only a few inches high and spread along the ground; others are several feet in height, bearing bell-shaped or tubular flowers, blue, mauve, purple, or white, and carried in curved racemes which straighten as they expand. Only two or three kinds have been grown in our gardens, but others are well worth a place and are becoming better known. They are of easy culture as annuals, some kinds preferring sandy soils and others something stiffer. The tall kinds should be planted fairly close, and the trailers further apart, and most kinds will begin to flower in about ten weeks from sowing. Nearly all are more or less hairy, and like most hairy plants they like a dry place, and then bloom freely and through a long season. Seeds may be raised in heat and the seedlings planted out in clumps, but this needs care, for all Phacelias dislike moving. They may be sown in the open during April, like *Nemophila*—to which several kinds bear resemblance—and this is the safer way. August sowings may also be made, to be wintered under glass, and flower in early spring. Few plants are more valuable to bee-keepers. The best kinds are:—

P. bicolor, a low spreading plant with much-cut clammy leaves and loose spikes of 10 to 20 rather large funnel-shaped flowers, bright purple with a yellow centre.

P. bipinnatifida, a bushy plant of one to two feet, with dissected leaves irregularly lobed and toothed, and covered with downy hairs. The flowers, opening in succession from July and September, are small but very numerous and arranged as in the heliotrope. The buds are white and the open flowers bright blue with prominent stamens. Pretty for cutting. Found in Ohio and Alabama, much further east than other kinds.

P. campanularia.—The best kind, free in its fine dark-blue flowers spotted with white in the throat; they last a long while, and the plant makes a pretty carpet in sunny places.

P. congesta is a variable kind from Texas, 8 to 15 inches high, with grey-green lobed or cut downy leaves, and mauve-coloured flowers gathered into large loose heads.

P. divaricata, a showy kind, abounding on the shores of the Bay of San Francisco. Its fragile stems spread freely, bearing oval leaves curving upwards at the edges, and loose spikes of pale violet flowers three-quarters of an inch across.

P. Douglasii, a neat spreading plant with the habit and appearance of *Nemophila insignis*, its hairy and much-cut leaves gathered near the base of the stems, and the bell-shaped flowers half-an-inch across.

P. glandulosa.—A perennial kind, of dwarf habit, with pretty foliage and mauve-coloured flowers in May, the prominent stamens giving a sort of "bottle-brush" appearance to the spikes.

P. grandiflora, a tall handsome plant with hairy, wrinkled, broad rounded leaves one and a half inches long, and sky-blue flowers veined with purple, during early summer.

P. humilis.—An alpine species, coming from a height of 5,000 to 6,000 feet in the mountains of California. Though of erect habit it is only a few inches high, branching freely from the base. The leaves are spoon-shaped, and the rich indigo-blue flowers carried freely as loose spikes.

P. Menziesii, of erect habit and 9 to 12 inches high, covered with rough grey hairs; leaves long, narrow, and stemless. The flowers come freely in clusters of bell-shaped deep violet or white blossoms, half to three-quarters of an inch across, rich and lasting. A good and easily grown kind.

P. Parryi from S. California, is a compact plant of 6 to 12 inches, with oval leaves, hairy on both sides and somewhat sticky. The flowers are shaped like a shallow bell, with a spreading mouth an inch across, their prevailing rich purple colour relieved by five pure white spots. There is a pretty white form.

P. sericea.—A perennial species from Colorado, with leafy stems of 6 or 8 inches, leaves cut into narrow leaflets, and dense heads of violet-purple flowers. A pretty plant, best suited to the warm soils of our southern shore gardens, proving tender in colder soils and inland.

P. tanacetifolia is a stout hairy plant of 1 to 3 feet, found upon the sand or gravel banks of streams in California. It bears finely cut leaves like those of a tansy, and large compact heads of pale blue or bluish-pink flowers in June. There is a variety with white flowers, and a form *tenuifolia* in which the leaf-segments are almost hair-like.

P. viscida.—From open spaces near the Pacific coast; is a hairy, gum-covered plant of 1 to 2 feet, with rounded and toothed leaves $1\frac{1}{2}$ to 3 inches long; the flowers are deep blue or purple with a white centre. Syn., *Eutoca viscida*.

P. Whitlavia, a loosely-branched plant of 1 to 2 feet, with angular toothed leaves, and large rich blue flowers nearly an inch across, the corolla divided into five spreading lobes. There is a white form and a variety *gloxinioides* in which the flowers are spotted.

PHALARIS (*Ribbon Grass*).—Garden grasses, useful in the wild garden or beside water, where the spreading roots can do no harm. The forms commonly grown are those striped with yellow or creamy-white, and known as *arundinacea variegata* and *elegantissima*. These grow about four feet high, and are best in

rather poor soils, but are not particular, doing well almost anywhere, and also in shallow water. The Canary Grass, *P. canariensis*, is a pretty annual kind, with graceful variegated seed spikes. Syn., *Digraphis*.

PHELLODENDRON (*Eastern Cork Tree*).—Hardy summer-leaving trees about 50 ft. high, from China and Japan, spreading in habit, and with large leaves cut into many leaflets. Of quick growth, they soon make a low round head, and thrive in all save wet soils. The bark is thick, light grey, and corky. They are being used in America for street-planting, but are little known in this country. Increase by seeds, and root-cuttings rooted in sand. The Chinese *P. amurense* is the hardier and more vigorous kind, *P. japonicum* being perhaps a form of it.

PHILADELPHUS (*Mock Orange*).—Beautiful flowering shrubs from the temperate regions of the northern hemisphere, summer-leaving, and with few exceptions hardy. There are several wild kinds so much alike in flower that some confusion of name has arisen, and no garden need contain more than the best kinds, which are now fairly well known. Of more importance than the natural species are the new hybrid forms, valuable for their neat habit and the fact that they bloom in a small state, whereas the wild kinds seldom flower well until large. These tall kinds are eventually of fine effect when allowed to take their natural form as masses of 15 to 20 feet, loaded with white flowers in May, June, or early July. By growing several kinds we secure a succession of flower. They do best in light and rather dry soils, and some do not bloom freely in rich moist land. Some kinds thrive in partial shade, and all are good town plants, but they are finest when well exposed, and such kinds as *microphyllus*, *Coulteri*, and *mexicanus* enjoy a hot place, the last two being tender, save upon a wall. All should have plenty of room to spread and droop, and if they grow too large it is better to cut them to the ground and start afresh than to cut them into ugly forms. Some of the strong kinds form standards if cut to a single stem, while the dwarf erect kinds form pretty hedges, sheeted in white from base to crown. Some of the older kinds, with their strong and heavy perfume, are unpleasant near the house, but the newer kinds are not objectionable. For cut flowers the double kinds are best, the flowers crowded upon slender arching sprays and being more lasting; the single

kinds drop quickly unless cut in bud. There is a golden-leaved form of the Common Mock Orange, which retains its colour well and does not burn if planted where it gets a little shade at mid-day. Increase is by suckers, layers, or cuttings of soft wood rooted under glass during summer, or ripened stems inserted in the open during autumn; these last, however, take about a year to root. The best kinds are as follows:—

P. coronarius (Mock Orange).—This kind, with its twiggy growth and heavy perfume, is well known, but less planted now than formerly, or banished to distant parts of the garden, where under good conditions it will reach a height of 10 ft., flowering early in May. Some of its garden varieties are distinct and useful: *foliis aureis* is the Golden Philadelphia; *nanus* is a dwarf plant, but too shy in flower to be of value; *Satsumi* is a graceful Asiatic form; while there are varieties with variegated foliage, and others known as *flore pleno*, *primulæflorus*, and *dianthiflorus*, with double or semi-double flowers.

P. Coulteri, a nearly evergreen kind from North Mexico, of fine habit, and distinct in its waxy flowers with a rosy-purple flush at the base of each petal, forming an inner zone of colour. It is somewhat tender and does not flower freely, but by crossing it has given the new hybrid *P. purpureo-maculatus*, a hardy and free-flowering kind, differing from anything hitherto seen in this family.

P. Falconeri, a new and graceful plant, 10 ft. high, of uncertain origin, but probably from Japan. Its pure-white fragrant flowers, of waxy texture and with sharply-pointed petals, are borne freely in June upon wand-like arching stems that droop gracefully under the heavy clusters.

P. Gordonianus, one of the best kinds from North America, where it is common near the Columbia River. It grows 10 to 15 ft., is of graceful habit, with a profusion of large faintly-scented flowers in July. This kind will do well with a little shade, and its great value is its late blooming.

P. grandiflorus.—The best large-flowering kind and one of the finest of hardy shrubs, reaching a height of 15 to 20 ft. Its numerous flowers measure 2 in. or more across, of a good white, and either scentless or faintly fragrant. There are many forms and slight variations of this plant, differing little in general character, and running one into the other. The forms known as *floribundus*, *latifolius*, and *Zeyheri* are all good, and especially *laxus*, a loosely spreading plant of graceful outline, and not very tall-growing. These forms flower in June.

P. hirsutus.—Less showy than most kinds, the flowers being small and mostly solitary, but they are scattered so freely that a well flowered plant of 4 to 5 ft. is pretty, and its effect distinct from the other kinds.

P. inodorus, a plant much like *P. laxus*, but

more erect and vigorous, with large scentless flowers, useful for cutting where the odour of other kinds is an objection. It is a plant that forces well, but, coming from the southern States, it is a little tender in cold districts.

P. Lemoinei.—A hybrid from *microphyllus* crossed with *coronarius*—a beautiful shrub, flowering in the latter half of June, its abundant

of June and early in July. *P. californicus* is a pretty but rather tender form of this plant.

P. mexicanus, a chastely beautiful plant and nearly evergreen, but tender save in the warmest parts of the south-west of England and Ireland, where it occasionally covers warm walls near the sea to a height of 15 feet. The flowers are large and deeply cupped, of waxy texture, and either creamy-white or faintly flushed with rose. Their strong spicy perfume is agreeable, and unlike that of any other kind.

P. microphyllus, a pretty little plant from Colorado, California, and North Mexico; hardy with us and richly beautiful in warm soil and a place where its wood is well ripened. The flowers are small and solitary, but freely produced towards the end of June, milk-white, and with a fruity fragrance. It is the tiniest of the genus, rarely reaching 3 feet in height, with slender stems and small glossy green leaves the size of Box, and greyish, with hair on the underside.

P. Satsumi, a good shrub from Japan, with freely-branched slender stems of 4 to 6 feet, long narrow leaves, and rather small pure-white flowers, in pairs or loosely clustered.

HYBRID KINDS.

P. AVALANCHE.—Flowers large with a pleasing odour, and so numerous that the branches are weighed down with them.

P. BOUQUET BLANC.—Pure white double flowers borne in profusion.

P. BOULE D'ARGENT.—A dwarf spreading plant with double flowers and very fragrant.

P. CANDELABRE.—A dwarf-growing form, with flowers larger than those of *P. Lemoinei*, and with undulated petals. Very pretty in the rock-garden.

P. CONQUETE.—A free-flowering form, whose branches arch over with the weight of blossoms. These, which are large and double, have almost a tulip shape, and are fragrant.

P. FANTAISIE.—From the seed-bearing parent this inherited a slight pink tinge towards the centre of the flower, and for hybridising it has proved to be valuable.

P. FIMBRIATUS.—A slender form, with curiously-toothed blossoms.

P. GERBE DE NEIGE.—Pure white single flowers nearly a couple of inches in diameter and prettily cup-shaped.

P. MANTEAU D'HERMINE.—A general favourite, which forms a compact specimen, thickly clothed, when at its best, with double creamy-white blossoms.

P. MONT BLANC.—This, which reaches a

Philadelphus microphyllus.

pure white flowers about $1\frac{1}{2}$ in. across, and with a pleasant fruity fragrance. Of neatly compact habit, it reaches a considerable size at maturity. Its form *erectus* differs only in its more rigidly erect habit. From this first cross has sprung a race of shrubs of fine habit, refined fragrance, and much freedom of flower, the value of which is as yet hardly shown in our gardens. One of the newest and best is *P. purpureo-maculatus*—quite a distinct break in colour.

P. Lewisii, a neat shrub from the Pacific coast of North America, and nearest *hirsutus* in its hair-fringed leaves. The flowers are a little smaller, scentless, opening at the end

height of 4 ft. to 5 ft., is of rather upright growth, with large, sweet-scented flowers.

P. NUEE BLANCHE.—This has large shining green leaves, and regularly shaped round blossoms, deeply cupped.

P. PAVILLON BLANC.—A vigorous form, with large clusters of white flowers.

P. PERLE BLANCHE.—The finest double Philadelphus, with very large flowers of the purest white, and borne in great profusion.

P. PURPUREO-MACULATUS.—This was given a first-class certificate by the R.H.S., which was well deserved, not only for its merit, but also for the possibilities it opened up of quite a new race of these beautiful shrubs, whose blossoms hitherto have been white, or nearly so, whereas those of the new-comer have on each petal a distinct blotch of purple-rose.

ROSACE.—This bears large double flowers, consisting of two or three rows of petals, at first creamy-white, but after expansion becoming pure white.

PHILESIA (*Pepino*).—*P. buxifolia* is an exquisite dwarf shrub, with large carmine-red Lapageria-like bells (2 in. long) nestling among and suffusing with their rich colour the sombre evergreen foliage. It is a precious shrub for the cooler parts of the rock-garden in the more favourable coast gardens, in moist peat or turfy loam. It is very averse to cold draughts and a dry atmosphere, and to avoid this may be grown well in unfavourable districts under a hand-light. In this way air can be given in fine weather and shade in summer, with the necessary protection at all seasons. May be increased by suckers from the base, but in a plant of such slow growth these should only be removed from strong and well-established roots. S. America.

PHILLYRAEA (*Jasmine Box*).—Distinct shrubs from the south of Europe, at one time among our most important evergreens, but now neglected, spite of their beauty, in our southern gardens. Further north they are somewhat tender in hard winters. The newest kind, as well as the hardiest and best, is Vilmorin's Jasmine Box (*P. decora*), with laurel-like leaves and fragrant white flowers in early spring. Coming from the mountains of Asia Minor, this will withstand severe frost, is free from insects and disease, and quite at home in town gardens. The flowers are sometimes followed by black fruits like a sloe, containing seed by which the plant is readily increased. Otherwise increase is difficult, the best way being cuttings of partly-ripe wood taken with a heel and rooted in pots of sandy soil with gentle heat in early summer. Nurserymen have found that the Phillyraea unites readily with Privet, so that nearly all their stock is grafted, and

the plants die out just as they should be in full beauty. This has helped to give the group a bad name, but for shore gardens of light soil there are few better shrubs.

The kinds from the Mediterranean are classed as three species, but they vary so much from seed and are so closely connected by intermediate forms as to be better treated as one variable kind. There is first the Narrow-leaved Phillyraea (*P. angustifolia*), 15 feet or so in height, with long narrow leaves which may be small and narrow, as in *rosmarinifolia*, a fine dwarf evergreen from Italy. *P. latifolia* reaches the size of a small tree of 30 feet, with rigidly spreading branches, a compact habit of growth, and broad deep-green leaves. To it belong several forms—the Holly-leaved (*P. ilicifolia*), which is one of the best known; *laevis*, with rounded leaves and saw-like edges; *spinosa*, in which the edges are more sharply toothed; and *rotundifolia*, with broadly rounded leaves. Between *angustifolia* and *latifolia* comes *P. media*, intermediate in size and vigour as well as in its leaves. Strangely enough, it is also the most tender, many plants having been cut to the ground or killed outright in the winter of 1880. This also has several forms, such as *buxifolia*, with short rounded leaves; *oleaefolia*, in which they are longer and narrower; and *pendula*, with a diffuse habit. All do best in light open soils and in full sun, and all are of fine habit without much pruning, though they will bear this if necessary and make thick, handsome hedges. All the kinds bear greenish-white flowers, but only in *P. decora* are they large enough to attract.

PHLOMIS (*Jerusalem Sage*).—A group of old-fashioned shrubs and perennial plants belonging to the Sage family, and interesting because so unlike most other plants. There are now not many kinds in cultivation, but even these show much beauty and diversity of form and habit. The leaves of many kinds are wrinkled, woolly, or hoary, becoming smaller up the stems, while the handsome hooded flowers are yellow, purple, or white, and borne in clusters around the stem, tier above tier. The perennial kinds are easily suited as to soil, and will take care of themselves in the wild garden or rougher parts of the pleasure grounds. The shrubby species are best in light and dry soils, where their growth is not too vigorous and the wood well ripened. All are easily increased, the shrubby kinds from seed, or cuttings of the young shoots put in under glass

in spring or summer; the herbaceous kinds by seed, or division in spring or autumn. The best kinds are:

P. armeniaca, neat and distinct, with down-covered silvery leaves and stems crowded with whorls of rosy flowers, several of which are in good condition at the same time. A good rock-plant. Armenia.

P. cashmeriana, an old kind newly reintroduced, doing best in light soils and in warm gardens near the sea. At its best a striking plant, about 2 feet high, with densely woolly stems and leaves, and heavily crowded whorls of pale lilac or rosy-purple flowers, from the end of July. North India.

P. fruticosa (*Jerusalem Sage*).—A shrubby kind, hardy in warm dry soils, with evergreen stems at times reaching 6 to 8 feet, but mostly 3 or 4 feet high, and clothed with evergreen woolly-grey leaves of wrinkled texture. The flowers are showy, coming as whorled heads of bronzy-yellow from June to August, and lasting well on the plant, or when cut. Of fine appearance and indifferent to drought and to sea-winds, this is one of the most distinct of our evergreen shrubs. South Europe. *P. ferruginea* is a shrubby kind coming near this, but is not so good or so hardy.

P. herba-venti, a handsome perennial from Spain, needing a warm dry soil and some protection if grown far inland. It makes a bold spreading mass of 2 to 3 feet, with hairy green or purple stems, and long green leaves which are rough on the upper side and hoary beneath; flowers violet-purple, from July to September. It is a good perennial of easy culture.

P. lunarifolia, a fine border plant, free in its bright yellow flowers. The white woolly leaves and stems render it conspicuous even when out of flower.

P. purpurea, a low shrubby kind from Southern Europe, with much-wrinkled oblong or triangular leaves, covered with down, and rosy-purple flowers in July.

P. samia, a pretty plant for warm soils, free in its pale yellow and orange flowers, sometimes shading to pink. It blooms in May and June. Mountains of North Africa.

P. tuberosa, a stout plant of 3 to 5 feet high in good soils, with handsome dark green leaves and dense whorls of rosy-purple flowers in summer, partly fringed with white hairs. The foliage is good, and the plant of easy increase by its fleshy tubers. East of Europe, and Siberia.

P. viscosa (also known as *P. Russelliana*), a rather clammy plant of 3 feet, with bold wrinkled leaves, green above and downy beneath, and numerous bright yellow flowers of fine effect.

PHLOX.—For the most part showy garden perennials; but the annual *P. Drummondii* alone has produced distinct varieties enough to furnish a garden with almost every shade of colour. The perennials are numerous, and present such

variety in habit that for the garden they may be divided into three distinct groups. One is alpine in habit; of this the beautiful *P. subulata*, or Moss Pink, is the best known, but there are many others in the Rocky Mountains and westward, some of them more truly alpine. Next to these are several that may be grouped as running or creeping Phloxes, perennial, but with prostrate stems. Lastly, there are the well-known tall garden Phloxes, generally called the perennial Phloxes, though all Phloxes but *P. Drummondii* are perennial. Perennial Phloxes have been so hybridised that the types are quite lost sight of in a vast number of garden forms. *P. subulata*, for instance, varies so much in the wild state that its forms have been described as species.

EARLY OR SUMMER - FLOWERING PHLOXES have chiefly come from *P. suffruticosa*. They include many varieties, from 2 to 2½ feet in height, varying principally in colour, and flowering during June and July. They grow in any good border or bed, and if the subsoil be too wet, it must be drained, and about 9 in. of good hazel-loam enriched with good old manure and a small quantity of broken bones laid on the surface. In the herbaceous border a pit can be dug—say, 12 in. square and 9 in. deep—and filled with this compost. In the south of England, and especially on warm dry soils, these early Phloxes often do best in partial shade, being more sensitive to fierce sun heat than the later kinds. In dry seasons a good surface mulching is a great help. Summer Phloxes are useful in June and July, as they come between the spring and autumn sorts. The following are twenty-four of the finest: Attraction, Burns, Charles Downie, Conqueror, Cyrene, Duke of Athole, Excellence, Fantasy, Gem, James Hunter, James Thomson, John Fairband, Lady Napier, Miss Lingard, Mrs. Craven, Mrs. Duncan, Mrs. Forbes, Mrs. J. Hope, Mrs. Leckie, Mrs. Miller, Nettie Stewart, Perfection, Snowden, The Shah.

AUTUMN OR LATE-FLOWERING PHLOXES have been obtained by hybridising and selecting from various N. American species, principally *P. paniculata* and its varieties *acuminata*, *decussata*, and *pyramidalis*, which are stronger and taller than the early Phloxes, and immediately succeed them in flower, thus prolonging the season at least two months from the end of July. Within the last few years there has been great advance in these plants, both in habit and freedom of flower. They are now bright

and varied in colour, including all shades from rich vermilion to pure white, the old dingy purples and magentas having disappeared. There are endless varieties, more or less distinct, but the following will be found a good selection: Amazone, Coccinea, Cyrano, Dr. Bois, Esclarmonde, Etna, Eurydice, Gourdan, Independence, James Hamilton, James P. Robertson, Joseph Jerbrand, L'Aiglon, Lothair, Lottie, Lucy Genin, Matthew Miller, Mrs. John Barker, Mrs. Pemberton, Pantheon, Papillon, Reuone, Roger Marx, Simplon, Sylphide, and Tapis Blanc. For large beds, and to get bold masses of distinct colour, the following are the most effective and can be used according to the shades of colour required, viz.: Mrs. Jenkins and Sylphide, white; Etna, orange-red; Eclairer, carmine and salmon; Cœur de Lion, rosy-purple; Coquelicot, rich vermilion, but not always easy to grow; Boule de feu, scarlet with a dark eye; Roi des Roses, salmon-red; Iris, bluish-violet; Eclatante, crimson-shaded orange; Esperance, pale mauve; Crepuscule, silvery mauve with crimson centre. When in beds or borders, the early and late sorts should be planted alternately, and arranged according to height and colour, a mass of bloom, lasting for at least three months, being produced. After planting give each plant a good stake, and tie it up when necessary. In spring the number of shoots should be reduced according to the strength of the plant and nature of the variety. Phloxes of this group are also improved by a top-dressing of good rich soil every spring; and in very hot and dry seasons good watering will prolong the bloom.

The way to propagate Phloxes is by seed, cuttings of the stems and roots, and division. Seed should be taken from the best sorts as soon as ripe, and sown in boxes or pans in good free loam, keeping them in a greenhouse or warm pit close to the glass. The young seedlings will appear in February and March; and when fit to handle prick them into boxes of good soil and keep close and warm for a short time; they can then be grown with the other plants intended for the flower garden. The strongest will be fit to plant out in April and May. They will flower the first season, but will not be strong until the second. In the second year all the best sorts ought to be marked and then grown a third year, to test them with the best named kinds. Cuttings can be taken at all seasons, and in propagating from roots cut the oldest into pieces about

$\frac{1}{2}$ in. in length, sown, so to speak, in boxes, and treated like seedlings.

The leaves also strike, but this is a very slow way. As regards division, this consists in taking the old plant and cutting it into small pieces. The habit of the plant should be strong and erect, with plenty of broad and healthy foliage, and not exceed 3 or 4 ft.

P. divaricata.—A handsome plant from North America, larger than either the Creeping Phlox (*P. reptans*) or the Moss Pink (*P. subulata*), and about 1 ft. high, with large lilac-purple blossoms in summer, while the leaves are rounded at the base, and are egg-shaped or lance-shaped. There is a good pure white form, and a new garden variety *Laphamii*, with larger flowers of deeper colour and of much stronger growth, reaching 18 or 20 inches. Its great value is, however, the fact that it flowers considerably later. Rock-garden in good soil. Increased by division.

P. Drummondii.—One of the most beautiful of half-hardy annuals, varied and brilliant in colour, and not injured by bad weather, like many other flowers. It may be used in a variety of ways, such as a carpet to beds of standard Roses, as it does not interfere with the well-being of the Roses, but hides their naked stems. It is also suitable for rustic vases and boxes; but it is when in masses that its beauty and diversity of colour are best seen. Seed should be sown about the first week in March in shallow pans or boxes, in a light rich soil, and a warm and rather moist temperature. Prick off the seedlings when fit to handle in boxes or a bed in a warm house in a temperature of 50° to 60°. Here they will soon grow, and place them out in the shade to harden as the weather gets warm. Those growing in a bed should be again transplanted to a prepared bed in a cold frame, kept covered for a few days, and hardened gradually. When the plants are 3 to 4 in. high, pinch out the main shoot, to induce bushy growth and prolong the flowering period. The bed should be fully exposed to the sun, and if good moist soil, the plants will be uninjured even in the hottest weather. Although generally treated as an annual, *P. Drummondii* strikes freely from cuttings in autumn; these are useful for pots and early spring bloom in the conservatory or the greenhouse. Varieties are endless, and some very distinct named sorts differ from the type not only in colour, but in growth and the shape of their flowers.

P. ovata Carolina is a handsome plant, about 1 ft. high, with slender stems ter-

minated by a cluster of large showy deep rose flowers very useful for cutting. *P. ovata* has broader leaves, while *P. nitida* is also handsome. *P. glaberrima* is far less important. These kinds flower in summer, in ordinary soil and an open spot.

P. pilosa is a pretty plant 1 to 2 ft. high, large flat clusters of white, pink, or purple flowers, $\frac{1}{2}$ to $\frac{3}{4}$ in. in diameter, appearing from June to August. It is one of the rarest of cultivated Phloxes, though a spurious kind is sometimes sold for it. The true plant reminds one of *P. Drummondii*. Another rare species is the true *P. bifida*, an elegant plant, the flowers bluish-purple.

P. reptans (*Creeping Phlox*).—This is a beautiful little plant sending up numbers of stems from 4 to 6 in. at the end of April or beginning of May, each bearing from five to eight deep-rose flowers. It is useful on the rock-garden or border, and makes pretty tufts of soft woolly foliage round beds of hardy plants, thriving in peat or light soils. In some soils, especially in the south of England, this little plant burns in the sun and loses its leaves; it should then have a moist and shady place on the rock-garden. Syn., *P. verna* and *P. stolonifera*.

P. setacea is sometimes considered the same as *P. subulata*, but its leaves are longer and farther apart on its trailing stems, the whole plant being less rigid. The flowers are of a charming soft rosy-pink, and have delicate markings at the mouth of the tube. *P. s. violacea* is a handsome Scotch variety, more lax in growth and with deeper coloured flowers, almost crimson. Both the variety and the type are lovely plants for the rock-garden, where, with roots deeply seated among the fissures and enjoying coolness and moisture, they thrive luxuriantly in any amount of sunshine.

P. Stellaria.—This little plant is often confused with *P. subulata*, but is quite distinct, with much longer, narrow, pale green leaves, and white flowers. There are several fine garden varieties belonging here, with lilac or mauve flowers on dark wiry stems, their petals set starwise. They flower in May and June, and are exceedingly beautiful in masses, but they do not hug the ground like the more mossy forms of *subulata*. The kind called *lilacina* in particular is so strong that it is best used by itself, or its stems overrun the dwarfer kinds. Its leaves are beautifully clean-looking and healthy, and the charming pale mauve flowers are carried in profusion. Other good kinds belonging to this group are

Annulata, bluish-white and purple; Atrolilacina; Bridesmaid, white shaded lilac; Eventide, bluish-white; Newry Seedling, very pale mauve; and Seraph, white with a blue eye.

P. subulata (*Moss Pink*).—A Moss-like little Evergreen, the flowers pinkish-purple or rose-colour, with a dark centre, and so dense as to completely hide the plant. The stems, though 4 in. to 1 ft. high, are always prostrate, so that the dense matted tufts are seldom more than 6 in. high; but in moist, sandy, and well-drained soil, when the plant is fully exposed, the tufts attain a diameter of several feet and a height of 1 ft. or more. *P. frondosa* is a vigorous form, and in light garden soil its trailing branches will soon cover almost a square yard of surface. *P. nivalis* is as trailing, but smaller, and with shorter, more densely arranged leaves. Its flowers are snow-white. *P. Nelsoni* is a hybrid between *P. subulata* and its forms, as it possesses foliage of an intermediate character; the flowers pure white with a charming pink eye. Besides this, the late Mr. Nelson, of Aldborough, and Mr. Thomas Smith, of Newry, have raised a large number of seedlings, as varied in hue as Phlox Drummondii. Among the best are Atropurpurea and Vivid, both of rich colour; Fairy, a good rosy-lilac with purple eye; Kathleen, a shade paler with a crimson eye; Leila, a distinct shade of rosy-grey; Little Dot, very compact, with small white flowers shaded blue; and Model, flowers of bright clear rose.

The dwarf Phloxes are so closely allied that general cultural remarks will suffice. Well-drained ordinary garden soil and sunny exposure are essential. Though perfectly hardy, the damp atmosphere of mild winters is fatal, and as the plants do not seed freely, they must be increased by cuttings. A sharp knife and a careful hand will soon remove the two or three pairs of leaves with their included buds without damaging either the slender stem or the joint. These should be taken off in July, when the branches are just commencing to harden, and inserted in sandy soil in a frame where they can be shaded from full sunshine and given the benefit of the night dews by the removal of the lights. They will soon root and become good flowering plants the following season. With large patches, the readiest way is to sprinkle sandy soil over the entire plant and to work the same gently amongst the branches with the hand. If this be done during the summer or the early autumn, the trailing branches will form roots the

following season, and may be planted elsewhere. These Phloxes are charming in spring, being hardy and forming gay cushions on the level ground, or pendent sheets from the tops of crags or from chinks in the rock-garden. Rocky hills and sandy wastes in North America.

Known species: *P. adsurgens*, W. Amer.; *amæna*, N. Amer.; *bifida*, do.; *biflora*, Chili; *brevifolia*, N. Amer.; *bryoides*, N.W. Amer.; *cæspitosa*, do.; *canescens*, N.W. Amer.; *clarkiioides*; *divaricata*, N. Amer.; *Douglassii*, N.W. Amer.; *Drummondii*, Texas; *elata*, N. Amer.; *floridana*, do.; *glaberrima*, do.; *glomerata*, do.; *Hoodii*, N.W. Amer.; *intermedia*, do.; *linearifolia*; *Listoniana*, N. Amer.; *longifolia*, N.W. Amer.; *maculata*, N. Amer.; *muscoides*, N.W. Amer.; *nana*, do.; *odorata*, N. Amer.; *ovata*, do.; *paniculata*, do.; *pilosa*, do.; *reptans*, do.; *Richardsoni*, Arctic Amer.; *Ræmeriana*, Texas; *rosea*, N. Amer.; *siberica*, Arctic regions; *speciosa*, N.W. Amer.; *Stellaria*, N. Amer.; *subulata*, do.; *suffruticosa*, do.; *Thomsoni*, do.; *tigrina*; *virginica*, N. Amer.

PHORMIUM (*New Zealand Flax*).—Fine-leaved plants from New Zealand, like giant Iris in foliage, their tough broadly sword-shaped leaves rising to a height of many feet in the more vigorous kinds, and of stately effect at the water-side mingled with Bamboos, Pampas Grass, and Gunneras. In hard winters even strong plants may be injured or cut to the ground, but the roots seldom perish, and by selection hardier forms are now available than those first introduced. In the most favoured districts one well-grown plant of Phormium will spread into a mass 30 or 40 ft. in circumference and 8 to 10 ft. high, with flower-stems rising several feet above this. The reddish-brown flowers are more curious than beautiful, but when borne freely they give character to the plant. In cold districts the roots should be well protected, or the plants can be grown in tubs and moved to the conservatory, after a time on the lawn or terrace during summer. *P. tenax* is the common green-leaved kind, and is a noble plant of very vigorous growth, but tender. Some of its forms are more resistant, the hardiest of all being the Powerscourt variety, with a narrower and more glaucous leaf of erect growth, and about 6 ft. long. A form with dark leaves is *atro-purpurea*, with a deep purplish zone along the edges of the leaf, and in some plants wholly suffusing it. There are two striped forms of *P. tenax*, one closely resembling the parent but a little less vigorous, its broad dark-green leaves striped with white and yellow; and Veitch's form (*P. Veitchii*), in which the leaves are shorter, narrower, and of a more lively green. This is a relatively hardy kind, and perhaps the prettiest of the striped sorts. *P. Cookianum* is hardier than *P. tenax* and a much smaller plant, with leaves of only 3 to 4 ft. and yellow

flowers; it also has a variegated variety. *P. Colensoi* is another fairly hardy kind from the mountains of New Zealand, with a spreading and graceful way of growth and narrow leaves. Of this there is a distinct garden form called *compacta*, very dwarf, neat, and hardy, with quite narrow leaves. Increase by seed and root-division, seed from one plant yielding a variety of forms. The Phormiums like a rich soil with abundance of sunlight and moisture, and where there is nothing to fear from frost they do well treated as water-side plants.

PHOTINIA.—A group of handsome shrubs, mostly evergreen, and too tender for our gardens, where even the hardiest kind, *P. serrulata*—known as the Chinese Hawthorn—is rarely seen except along the south coast, though quite hardy enough for sheltered places inland. This is one of the best of seaside shrubs, making dense masses 20 or more feet in height and width. The foliage is handsome, glossy like that of a Portugal Laurel, and of a fine red colour in spring. These young leaves come so early as to risk injury from late frosts, and to escape this the plant is mostly grown against walls when away from the sea, and is very handsome in this way, bearing heads of small white flowers in May and June. Another hardy kind from China and Japan is *P. variabilis*, which loses its leaves in winter, but retains its bright scarlet berries long after they have fallen. The leaves themselves turn a fine crimson before falling when the plant is grown in an open and sunny place and in dry soil. To do well with us the Photinias should have a light well-drained soil, shelter, and sunshine.

PHRAGMITES (*Great Reed*).—*P. communis* is a most graceful plant in all open waters, by which it forms excellent covert for duck. It grows to a height of 6 ft., with drooping heads of brownish-purple flowers in autumn. There is a finely variegated form.

PHUOPSIS (*Crosswort*).—A pretty little hardy perennial of trailing habit, with heads of pale rosy flowers in early spring. The individual blooms are small, but clustered in dense heads, their one fault being a somewhat unpleasant smell. There are garden forms with deep crimson and with purple flowers. Increase by seed, or division in early spring. Old tufts should be trimmed with scissors or a pair of shears from time to time, and soon push out afresh. Easily grown in any soil, on open banks or sunny places

in the rock-garden. Caucasus. Syn., *Crucianella stylosa*.

PHYGELIUS (*Cape Figwort*).—*P. capensis*, a Cape plant, is related to the *Chelone* and the *Pentstemon*, but distinct in its general effect. It grows some 3 or 4 ft. high, and its many stems are terminated by a long branching raceme of brilliant scarlet flowers, which open in May and June and continue far into autumn. It is hardy near London, though it does not flourish so well in the open as under the shelter of a wall, where it will stand any amount of sun-heat and even long periods of drought. It prefers a light rich soil, but in warm sea-shore districts is not fastidious. Readily increased by cuttings or portions of the root-stock, the bases of the stems being furnished with rootlets.

Phyllostachys. See BAMBUSA.

PHYSALIS (*Winter Cherry*).—*P. Alkekengi* is a handsome and curious South European plant with ample downy leaves,

Physalis Alkekengi (Winter Cherry).

bearing in autumn bright orange-red bladder-like calyces, enclosing Cherry-like fruits of a pleasant acid flavour, and perfectly wholesome either raw or preserved. It is a hardy perennial, requiring

a warm border; 1 to 1½ ft. high. Division or seed. Solanaceæ.

P. Francheti.—A splendid new hardy plant from Japan, possibly a variety of *P. Alkekengi*, but so distinct as to merit special attention. It is larger altogether than the old kind both in foliage and calyx, which is brilliant coral-red in colour, though varying a little in shade, sometimes touched with orange, and generally 3 in. in length with a circumference of 7 or 8 in. The plant grows 18 in. high and requires a similar position to *P. Alkekengi*, spreading strongly by underground stems. The dried fruits are beautiful in winter bouquets.

PHYSOSTEGIA (*False Dragon's-Head*).—Handsome perennials, best for grouping with the bolder kinds of hardy plants. *P. virginiana*, 1 to 4 ft. high, has flesh-coloured or purple flowers crowded in terminal racemes. There are pretty white and pink forms, *alba* and *rosea*, and a more vigorous one, *speciosa*, with larger flowers of deeper purple colour. These are all very pretty for cut work, or grouped in the border. *P. imbricata* from Texas has higher and more slender stems, broader leaves, and larger flowers of a deeper colour. *P. denticulata* is similar to *P. virginiana*, but rarer and less showy. All these kinds flower in summer, and thrive in any ordinary soil. Division.

PHYTEUMA (*Rampion*).—The Rampions are neat, pretty, and interesting plants of the Bellflower order, with small flowers in profusion. They enjoy a sunny position, and some of them are good rock-plants. *P. orbiculare* is a rare and desirable native Rampion, 1 to 2 ft. high, and is best among rock-plants, where it would be free from the destructive effects of the hoe and rake. It flourishes in a dry position in a mixture of limestone grit, peat, sand, and loam, and has violet-blue flowers in July. It is extremely impatient of removal or division, and should be raised from seed sown in autumn in a cool frame. *P. Sieberi* is neat for the rock-garden, requiring a moist sunny situation, and a mixture of leaf-mould, peat, and sand. It forms cushion-like tufts, and in May and June has dark-blue flower-heads, on stems 4 to 6 in. long. Division. *P. humile* is a neat tufted plant for the rock-garden, where it can get a dry sheltered position in winter and plenty of water in summer. The flowers are blue, and produced in June on stems 6 in. high. Division. *P. comosum* is very slow-growing, and must be particularly guarded against slugs. It is a

genuine rock-plant, suitable for a fissure, vertical or sloping to the sun, and does best amongst a mixture of a little loam, peat, sand, or grit, where it can root to the depth of 2 ft. It bears almost stalkless heads of dark purple flowers, has Holly-

Phyteuma comosum.

like leaves in June and July, and comes best from seed. *P. Charmeli* and *P. Scheuchzeri* are much alike, *P. Scheuchzeri* being dwarfer. It bears pretty blue flowers, on stems from 6 to 12 in. in height, and is evergreen. A new kind, *P. camp-anuloides*, is one of the best, with tall much-branched spikes of deep violet-blue flowers, very freely produced. Sow seed in autumn, and do not expect too much the first year. The best kinds improve when well established, their roots running to a great depth and making it almost impossible to move old plants.

PHYTOLACCA (*Virginian Poke*).—This North American perennial, *P. decandra*, is from 5½ to nearly 10 ft. high, with reddish stems and flower stalks. The flowers, on cylindrical spikes, are at first white, but afterwards change to a delicate rose. In autumn the colour of the leaves is in rich contrast to the pendent purple berries. It grows in almost any-kind of soil, and is raised from seed or division. It is scarcely refined enough in leaf for the flower garden, but is effective near the rougher approaches of a hardy fernery, in open glades near woodland walks, or in any like position. There is a garden form in which the leaves are variegated with rose and white. *P. acinosa*, the Indian Poke, comes from the Himalayas, and, while much resembling *P. decandra*, is a little less tall, with its berries in drooping clusters instead of held erect. *P. icosandra* is a bushy plant, 2 to 3 ft. high, the

leaves similar to those of a *Hydrangea*. It has rather long spikes of creamy-white flowers, succeeded by fruit-clusters similar in size and shape to Indian Corn, but composed of ripe Blackberries. Should have the same treatment and position as *P. decandra*.

PICEA (*Spruce Fir*).—Usually stately evergreen cone-bearing trees of the northern world and mountains, including among them the common Norway Spruce and the Douglas Fir, usually doing best in moist valley soils. Trees that were once included under this head are now placed under *Abies* and also *Pinus*, to which the reader should refer for trees he seeks which are not placed under this heading. As regards grouping and other matters, what has been said of *Pinus* and *Abies* may be considered as applying to a great extent to these trees also.

P. AJANENSIS.—The finest of the Japanese Spruces, distinguished from all others by the bluish silver tint of the young branches on the undersides, but which are upturned so that the whole tree has a silvery appearance. It is very hardy and thrives best in a stiffish soil. It should not be in a too sheltered place, or it will commence growth too early and be liable to injury by late frosts. Somewhat similar to this spruce and often confused with it is *P. Alcockiana*, also from Japan, but inferior as an ornamental tree, being of a dull green more like the common Spruce.

P. EXCELSA (*Norway Spruce*).—This is too common to need description, forming as it does beautiful woods in most parts of the country. It is a quick growing tree, but too short-lived to be of great value for ornament. It is a mistake to plant it on high exposed places or in very light soil. In most sheltered valleys it is a beautiful tree when seen in masses. There are many forms of it, a good number of which are mere monstrosities not worthy of the garden, especially the so-called golden and silvery varieties. The dwarf forms, such as those named *Clanbrasiliana*, *Gregoryana*, *pygmæa* are suitable for planting in bold rock-gardens. The North American white and black Spruces, *P. alba* and *P. nigra*, are too much like *P. excelsa* to be of any great value here.

P. DOUGLASI (*Douglas Fir*).—Among the noblest trees of the West American forests, this is undoubtedly one of the most valuable trees ever introduced, both for ornament and timber. It is now a common tree, being largely planted, especially in Scotland, for timber, and may be at a glance distinguished from other conifers by its dense soft green foliage on pyramidal trees a hundred or more feet high in the oldest specimens. It should be planted only where the soil and situation are suitable, and not in exposed places, as it thrives best in sheltered valleys or woods, but it will live in all soils ranging from light sands and gravels

to moderately stiff clay. There are several varieties of the tree, that known as the Colorado variety being considered the hardiest. The glaucous form is an extremely handsome tree, more rapid in growth than any other silvery conifer. Varieties of this tree, *taxifolia*, *Standishi*, *pendula*, &c., are not remarkable, of far greater importance being the natural variety from the Rocky Mountains.

P. MENZIESI (*Menzies Spruce*).—In places where this Spruce thrives it is a very beautiful tree because of the bluish silvery-grey tone of its needle-like leaves. In a damp climate where the soil is deep and moist it grows into a handsome tree, but in dry soils it soon becomes in a wretched condition. This Californian Spruce is also known as *P. sitchensis*.

P. MORINDA.—No other Spruce has such gracefully drooping branches as this Himalayan tree, which is also known well by its other name *P. Smithiana*. It is worthy of a place among the finest ornamental trees, but must have a deep moist soil more heavy than light, and the position not too sheltered. Under

Picea Morinda.

these conditions it flourishes in the bleakest parts of the eastern counties, where some of the finest examples of it exist.

P. ORIENTALIS.—This Caucasian Spruce has somewhat the appearance of the Norway Spruce, but it is a smaller growing tree with

much shorter leaves and branches, and is more suitable as a garden tree, as it is of denser growth and retains its lower branches. It is of a deep glossy green, and on this account, and its dwarfed growth, is especially suitable for grouping with the larger conifers. It is very hardy, and thrives best in moist soils.

P. POLITA (*Tiger-tail Spruce*).—This is one of our newer Japanese trees, but judging by the largest trees in various parts of the country, it is a Spruce that will make itself a future in these islands. It is of handsome rigidly pyramidal outline, and with leaves the stiffest and sharpest-pointed of all, which renders it cattle proof. It stands exposure well, and is a tree for high windy places.

P. PUNGENS.—An American Spruce most valuable for this country, hardy, standing exposure in high places better than any other. It is generally known in gardens by the variety *glauca*. It is largely raised from seed in order to select from the seedlings silvery plants. This Spruce is confused with another Californian Spruce called *P. Engelmanni*, *P. commutata* or *P. Parryana*, but which is quite inferior as an ornamental tree to *P. pungens*.

P. OMORICA (*Servian Spruce*).—A recent introduction, which promises to be a good addition to the Spruces notable for ornamental planting. It has somewhat the appearance of *P. orientalis* in its growth, and very dark green foliage, but the leaves are larger, flat and decidedly silvery beneath.

PIERIS.—Evergreen shrubs of Japan, China, and America. Their effect is precious among Magnolias, Rhododendrons, and the choicer evergreen shrubs, and the same soil usually suits them. They may also be grouped as bold rock-garden shrubs in moist peaty or leafy soils, thriving all the better for partial shade at mid-day. The following are the best kinds:—

P. floribunda.—A close-growing evergreen shrub from N. America, with narrow oblong leaves and white urn-shape flowers in dense one-sided racemes, formed in the autumn and opening in spring. They will do so much earlier, however, and come much whiter too, if put in gentle heat under glass, or even cut and placed in water in a warm room. The plant is hardy in most soils, but thrives best in those of a sandy and leafy nature, if not dry. It never grows high, and may be grouped with the choicer evergreen shrubs.

P. japonica.—A beautiful evergreen shrub with long drooping clusters of white flowers, giving almost a lace-like effect to freely flowered plants. It is hardy, and grows much larger than *floribunda*, but is slow and poor on cold or loamy soils, and only luxuriant in peaty or leafy beds that are well drained and free from lime. It will grow in shade and in full sun, but a moist half-shaded place is what it likes best. The flowers open from January to March, according to season, and last a long time, whether cut or in the open air. There are some dwarf

garden forms, and one with variegated leaves. Japan.

P. formosa. — A beautiful and tall evergreen shrub, only hardy in the west and south of England, suffering injury at times even in the Thames Valley. It bears dark green leathery leaves, finely toothed at the edges, and drooping clusters of white bells, 6 in. in length, expanding in April and May. Nepal.

The increase of all these shrubs is slow, but not difficult. Cuttings from forced plants root most readily, those made from ripened shoots

Flowers of Pieris.

in August taking many months to start in a greenhouse; the same applies to layers, so that these ways are seldom used, except to increase fine seedlings. Seeds ripen freely, and should be treated like those of Azaleas and Rhododendrons.

Other species of less importance from a garden point of view are *P. mariana*, N. America; *P. nitida*, S. United States; *P. ovalifolia*, Nepal; and *P. phillyæifolia*, Florida.

PINGUICULA (*Butterwort*).—These interesting dwarf bog-plants are pretty in the bog-garden or moist spots in the rock-garden. There are about half-a-dozen kinds, all resembling each other and, except *P. vallisneriaefolia*, natives. *P. grandiflora* (Irish Butterwort) is the finest. Its flowers are large and blue-purple, the leaves broad, spreading flat upon the rock or soil. It prefers the shady side of a moist mossy rock, where the face is steep and the narrow chinks are filled with rich loam. If planted in earth

alone, where the drainage is imperfect, it usually perishes in winter. *P. alpina* differs from all other kinds in having white flowers, marked more or less with lemon-yellow on the lip, but sometimes tinted with pale pink. It roots firmly, by means of strong woody fibres, and prefers peaty soil mingled with shale or rough gravel, and shady humid positions, such as are afforded by a high rock-garden with a north aspect, or by the shelter of a north wall. *P. vulgaris* grows freely in any sunny position in rich moist peat or peaty loam. A small form, with leaves like those of *P. alpina*, both in form and colour, is found in alpine bogs in the north of England. *P. lusitanica*, found on the west coast of Scotland and in Ireland, is smaller than any of the preceding, and has pale yellow flowers. It grows in peaty bogs exposed to the sun. *P. vallisneriaefolia* from the mountains of Spain differs from others in its clustered habit of growth. Its leaves are pale yellowish-green, and sometimes almost transparent, becoming 4 or 5 in. long, and occasionally even 7 in. towards the end of the season. The flowers are large, soft lilac colour, with conspicuous white or pale centres. Dripping fissures and ledges of calcareous rocks (frequently in tufa) suit the plant perfectly, but it requires very free drainage, continuous moisture, and a humid atmosphere.

PINUS (*Pine*).—Noble evergreen, cone-bearing trees of northern and temperate regions, of highest beauty and use, some of them admirably suited for the climate of the British Islands and giving finest evergreen shelter. When the Mexican and Californian Pines were first introduced and much talked of, little care was taken in discriminating between the hardy and tender kinds, so that the Pines of Mexico and Southern California got as good a chance in our pleasure grounds as the most precious of the hardy ones; but if we want to make the best use of the Pines we must plant only the best of the hardy ones and those likely to endure and be useful and beautiful in our climate. The Pines of subtropical countries which live in Devonshire and the west country, and around the coast of Scotland and Ireland in sheltered places, are no proof whatever of their value for the country generally, or even of their surviving hard winters in the places where they thrive when young. Even in many of the places where a show is made of these tender conifers there is nothing so handsome as a group of old Scotch or a grove of the Corsican Pine. Nurserymen and others

concerned with planting seldom take the trouble to see these trees in their native beauty on their native mountains, and assuming that the nursery or infant state of the tree is the natural form, make ceaseless efforts to keep the trees always in this form, whereas the nature of the Pine is generally to shed its lower branches, and hence we get that wonderful dignity of the Pine as seen on the mountains, both in the new and old worlds, lovely pillars crowding all over the northern mountains. I have seen Pines condemned because they began to assume this habit of shedding their lower branches and taking their true character. Like other important families of trees, these have numerous garden and other varieties which are generally best left out if we seek to get the full expression of the natural beauty of the trees; but, as usual, the practice of professional planters generally is rather against us. Ugly, contracted, and monstrous forms are always in catalogues, which should be let alone there. While such varieties are often worthless, natural varieties, especially of kinds inhabiting vast regions of the earth, like the Scotch Pine in northern Europe, and the Western Yellow Pine in America, may be important in giving us hardier varieties, or those of special use, like the Russian form of the Scotch Fir. Synonyms are numerous, unfortunately, leading to confusion in the nomenclature, but among Pines, if anywhere, what is not worth knowing is not worth growing, and all the great Pines are so distinct in form that those who care about them will soon know them by heart, and the showy labelling method of the "pinetum" is not necessary in any good way of planting.

It is this great family of trees which has given the name for the "pinetum" which we see in many country places, and it is not by any means the best way of growing the trees. The isolation of specimens in the turf allows the grass in dry seasons to take away all the moisture from the tree, while the effect of this dotting about of trees is very far from artistic. The true pinetum is a wood of Pines, the trees all chosen for their perfect hardiness in any given district, sheltering each other, promoting the true growth of the Pine by their close planting, especially in early life, shading the ground and keeping the moisture in it. In such a pinetum the trees should be planted in groups and colonies, not necessarily rigidly separated by hard-and-fast lines, but sometimes those of like regions running together, as

the European cone-bearing trees do in the mountains of Central Europe.

The advantage of grouping and massing the pines in a natural way is that they not only protect themselves from the sun, but the leaves and dead branches of the trees help to nourish the ground. The roots are very near the surface, and they get a source of nourishment which fails them in the ordinary pinetum. In starting woods of Pines I have sown Furze-seed beneath (the little Furze and the common kind), which come very freely whether the ground be fallow at planting or otherwise. These give excellent covert, and, in rough districts, I think, prevent rabbits and hares paying too much attention to the little trees. There may be a drawback or two, but on the whole I think there is a gain, because the vigorous young trees soon get their heads above the Furze, which is limited in stature, and eventually destroy it as they do the Grasses.

In numerous places where there is not room enough to make a true pinetum, or Pine-wood even, then we should get a better effect in grouping the Pines than by scattering them about as they are often seen even in villa gardens, where there is little room. But in many places in every county there is ample room for such beautiful evergreen woods as these precious trees give us, the true and natural way of growing the trees being carried out.

In making the ordinary pinetum the richest ground is often taken, and large holes are made and filled with rich soil, whereas I think the better way would be to choose true Pine soil, if we have it—that is, rocky or poor ground of little use for anything else, and, by rightly choosing and planting the trees, doing away with the need of the costly and special preparation of the regulation pinetum. In this the rich soil and preparation give a rapid growth at first, but no means of testing the value of any Pine in the natural soil of the place. The rapid growth is often followed by weakness of wood, and often by too early destruction from storms, while the timber of such trees is always inferior to that grown in poor or rocky ground. We have the clearest evidence, on the mountains of Europe, California, Scotland, and elsewhere, that very fine Pines may be, and are, grown naturally on very poor rocky soils, and we should take this lesson and make our Pine-wood or pinetum in such a soil, or one as near as we can approach to it.

In some places, on the other hand, we

Corsican Pine.

may wish for the effects of a Pine-wood in a given situation, and in that way we must take the soil as it comes.

Not only is it unnecessary to make costly and special preparation of soil for Pines that suit our climate, but they actually seem to do as well in rocky and shaly places where there is almost no soil at all. When in California, I often saw seedling Pines starting vigorously on the bare places where the gold-miners had washed away the surface for many feet, and the little Pines came and sowed themselves on the bare, soilless ground, and, bearing this in mind, I have several times planted Pines in quarries and places where there was literally no soil except the *débris* of the stones that had been turned out, and the result was even better than we got in the natural soil around.

Often in young woods of Pine we find double-headed trees owing to false starts from our exciting mild winters, the attacks of squirrels, and other causes. Where time can be spared it is a good way to go round now and then in spring, and just pinch out the points of the second leader in every case where we see two or more growths where one erect leader should be seen.

The habit of planting "specimen" trees common in our present day pinetums is a costly and not a good way. The best way in all cases is to plant little trees, never over 1 ft. high; I have often planted them much smaller with perfect success. They have a struggle at first, but eventually the growth is quicker and cleaner than that of older trees, the specimen trees of the ordinary nursery having a very hard time in dry seasons.

In devoting a piece of ground to the pinetum it is as well to begin by ploughing it and letting it mellow in the frost and air for a year or so, but this is by no means necessary in poor rocky or mountain ground. In some cases it may be quite safe to sow seed of the Pine on the ground where we wish it to grow, instead of the usual nursery system, sowing in lines about 4 ft. apart, so as to be able to protect the trees a little in infancy, though that is not always necessary, because Pines that suit the climate will often get over all their early difficulties, except the rabbit and hare. These ought to be excluded by good wiring for at least seven years after forming the plantation, by which time, if the choice of trees has been a good one, they will be too old and vigorous for the teeth of these creatures to kill, and all wire can be taken away and grassy paths and drives may lead

freely from the Pine-wood into other woods or plantations near. In the following enumeration of the finer species I have omitted those of doubtful hardiness or fitness for our climate from any cause:

P. AUSTRIACA (*Austrian Pine*).—One of the best and hardiest pines; distinct in form and colour, attaining a maximum height of nearly 100 ft., of close dense growth when young, thriving on calcareous and poor stony or rocky ground and on clay soils (but not on poor sands). Owing to its close "covert" and habit it nourishes the ground beneath it so well with its fallen leaves that it is self-supporting and gives precious shelter. It is often planted in Britain, but generally set out in the usual specimen way so that the tree is slow to take its true form as it does when grouped as trees should be. The final form of the tree, which so far we hardly ever see in our grounds, is very picturesque, with a free open head, but, being a free grower and giving valuable wood, however grouped or massed it should be freely thinned so as to allow of its full development.

In books this Pine is sometimes classed as a variety of the Corsican Pine, but, from a planter's point of view, the trees are as distinct as any other Pines in colour and form. Being a native of the mountains of Lower Austria, Styria and Carinthia, sometimes also growing on the low hills and even plains, it would, I think, be distinctly hardier than the Corsican in the case of very severe winters and their effects in low ground.

P. CEMBRA (*Swiss Pine*).—A hardy northern Pine of distinct, close-growing form, and a very slow grower in our country, as well as in its native land on the mountains of Central Europe or in Siberia, where it attains a maximum height of 100 ft.

P. COULTERI.—A Californian tree, not so large as other kinds from that great country of Pines, but remarkable for the great size of its cones, which are often 20 ins. long and weighing 10 lb. in its own country. In our country this tree should be planted only under the most favourable conditions, in sheltered valleys and on warm soils.

P. EXCELSA (*Himalayan Pine*).—A handsome tree, much planted in Britain with long, slender, drooping leaves and pendent cones. It is a native of the Himalayas and of very wide distribution in Asia, and also in another form inhabits the mountains of Greece and south-eastern Europe on high elevations. In our country it thrives best in warm and well-drained soils.

P. HALEPENSIS (*Jerusalem Pine*).—A distinct and very useful Pine throughout the rocky parts of Greece and its islands, also Crete, Asia Minor, Syria and Palestine. When one travels in those countries the hills seem very bare until you get near their slopes, when the welcome growth of this Pine appears, a frequently graceful and stately tree. Coming from such a hot country it is not likely to be so useful with us, except in warm districts.

P. INSIGNIS (*Monterey Pine*).—A beautiful Pine of the seashore of California, grass green in colour, and often thriving very well in the southern and western parts of our country, but in inland places occasionally suffers in hard winters, and therefore not good for general planting, although on high ground in the home counties I have seen healthy trees. Syn., *P. radiata*.

P. LAMBERTIANA (*Sugar Pine*).—A noble tree of California and Columbia River, reaching a maximum height of 300 ft., and some-

Pinus rigida.

times 60 ft. in girth of stem. We cannot omit such a tree here, but could not expect it to make such progress as in its own genial climate, and where planted with us it is usual to do so in sheltered situations and in free, warm soils. The cones are each sometimes over 2 ft. long.

P. LARICIO (*Corsican Pine*).—The tallest Pine of Europe, reaching 160 ft. high and over in Calabria and its own country, Corsica, and of very rapid growth in our country, as I have raised woods of it in ten years. The tree, if one raises it from seed, as we should in planting, shows a great variety of habit and even foliage, and if one liked to do anything so foolish one could give Latin names to several forms found in one wood. The Calabrian variety has been reckoned as a species by some, as it is a more vigorous tree, especially in poor soils. The variegated or otherwise dwarf, deformed varieties are beneath the notice of anybody who thinks of the dignity and true character of this great tree.

P. MONTANA (*Mountain Pine*).—A dwarf, very hardy Pine, which clothes the mountains of many parts of Central Europe with a low bushy growth not much larger than the Savin or Furze, but under better conditions getting into a larger state, sometimes into a low tree. In our country it is often called *mughus* and *pumilio*, but the best name for the species is the one given here. It is a useful and distinct Pine for clothing banks and giving cover between taller trees.

P. MONTICOLA (*Western White Pine*).—A

Pine of the higher mountains of California, Oregon, and Montana, reaching a maximum height of 80 ft., with a girth of 9 ft. It is considered a western representative of the great White Pine of Canada, and as it is found at elevations of 10,000 ft. is hardy in our country and better worth planting than many of the trees of greater size.

P. PARVIFLORA.—A medium sized and pretty tree, with dense foliage, cultivated much in Japan, and a native of the northern islands, therefore a hardy tree with us, thriving in deep soil.

P. PINASTER (*Cluster Pine*).—A beautiful Pine of pleasant green colour, 70 ft. or more high, native of the Mediterranean region, often by the seashore, and useful in our country near the sea, but often thriving in inland places, best in free and sandy soils. It is also used much in France as a protection against the encroachment of the sea. There are a great many so-called varieties of this Pine, few of any consequence.

P. PINEA (*Stone Pine*).—A distinct and picturesque Pine, old trees attaining a height of 70 ft. to 75 ft. This very characteristic Pine of Italy is not hardy in our country. It has been often planted here, but does not survive hard winters, and should not be planted except in the most favoured parts of the south. It is a native of sandy and rocky places by the seashore in Greece, Syria, and Asia Minor.

P. PONDEROSA (*Western Yellow Pine*).—A very noble tree, reaching nearly 300 ft. with a trunk girth of over 45 ft., but in the arid regions found much smaller. Sometimes one may see trees branchless for over 100 ft., but

Shoot of White Pine.

in quite healthy condition. It inhabits Montana, British Columbia, Western Nebraska, and Northern California, and is hardy in Britain. There is a form found on the eastern side of the American continent which is hardier. *P. Jeffreyi* (Black Pine) is now supposed to be a variety, also *scopularia*, but it does not grow quite so tall as the others. This *P. Jeffreyi* is

found 1,500 ft. high on the eastern side of the Rocky Mountains, this answering for its hardiness.

P. PYRENAICA (*Pyrenean Pine*).—A fine, rapid-growing tree, with bright green foliage. A native of the Pyrenees and Spanish mountains, and also in the south of France; 60 ft. to 80 ft. high. *P. Brutia* is supposed to be a form of this.

P. RESINOSA (*Red Pine*).—A tall Pine, 100 ft. to 150 ft. high, Newfoundland to Manitoba, and southwards through the New England States. From its northern area of habitation this should be a hardy and thriving Pine in Britain.

P. RIGIDA (*Torch Pine*).—A forest Pine reaching a height of 80 ft. on sandy and rocky places in Canada, Kentucky, Virginia, and the

Old tree, Scotch Fir.

Eastern states. This Pine is hardy and a rapid grower in Britain, growing in moist places less likely to suit the greater Pines.

P. SABINIANA (*Grey-leaved Pine*).—A very interesting Californian Pine, inhabiting the dry and warm hills and the coast ranges and foot hills of Sierra Nevada; not often a very high mountain tree. The grey foliage gives the wild trees the appearance of clouds in the distance.

P. STROBUS (*White Pine: Weymouth Pine*).—One of the noblest forest trees of the northern world, sometimes reaching a height of over 170 ft., with a girth of trunk of 30 ft., though often found much smaller. Owing to the cutting of the woods in Canada and Northern America, it is seldom seen in its native dignity in the settled parts. It forms dense forests in Newfoundland and Canada, and westwards and southwards along the mountains. Certain varieties are catalogued, but they are of little use beside the parent tree.

P. SYLVESTRIS (*Scotch Pine*).—Our native Pine and, in its old state, one of the most beautiful and useful we can ever have. It is of very wide distribution in Northern, Arctic, and mountain regions, and also on the mountains of Italy and Greece. The Russian variety is considered a more erect and stronger grower. A great number of varieties is mentioned in books and catalogues, and some hybrids, compact and dwarf varieties, including variegated ones, none of any value compared to the wild tree. This Pine sows itself freely in rough heaths and sandy ground, and thrives there.

PIPTANTHUS (*Nepaul Laburnum*).—*P. nepalensis* is a Pea-flowered shrub, with large deep-green leaves like those of the Laburnum. It is hardy enough for walls, and in southern and warm localities withstands our winters without even this protection, but is not the most desirable of plants. It has evergreen foliage, and in early summer long dense clusters of large bright yellow flowers similar to those of the Laburnum, but larger. It succeeds best in light soils, and is easily increased by seeds, layers, or cuttings of the ripened shoots in autumn. Himalayan Region.

PITTOSPORUM.—Evergreen shrubs, natives of New Zealand, Australia, and China, few of them in cultivation and those usually only seen in southern gardens or else in sheltered places near the sea, where they form evergreen bushes and trees of some beauty and distinctness of form. *P. tobira* is a good white flowering shrub in some southern gardens, and is among the plants worth growing in tubs or vases for placing out in the summer. *P. undulatum* is a graceful evergreen, and *P. Mayi* and *P. Colensoi* are also very pretty at Castlewellan and other gardens in districts with a climate allowing of the cultivation of the half hardy evergreens.

PLAGIANTHUS.—Handsome flowering shrubs of the Mallow order, most of which belong to Australia, and are tender, but three kinds come from the mountains of New Zealand, and succeed against walls in the milder parts of Britain. The best is *P. Lyalli*, with leaves of a long heart-shape and large pure white flowers with a bunch of golden stamens, drooping gracefully in clusters upon long stems from the tips of the previous season's growth. They open in June, when the plant resembles nothing so much as a beautiful large-flowered cherry. After flowering, the stems should be cut back and trained, and free growth encouraged, which lasts far into autumn; in fact, the leaves often hang nearly all

winter. In our warmest gardens *P. Lyalli* is hardy without a wall, but seldom flowers so well in the open. It needs a warm, well-drained soil and rich feeding, and is safest screened from the morning sun. Increase by layers and cuttings. *P. Lamperi* is also grown against walls, where it bears a profusion of fragrant, creamy-white flowers, but it is tender, and probably now confined to collections. *P. betulinus* is also rare, but appears hardier than the last, and has grown very rapidly to a height of 20 feet at Castlewellan. It makes a graceful, birch-like tree of 50 to 60 feet in New Zealand, with small leaves and clusters of whitish flowers.

PLATANUS (*Plane*).—Stately summer-leaving trees of the East and America, of rapid and vigorous growth and high value in the warmer parts of our islands as shade, lawn, or avenue trees; thriving too in the centre even of smoke-polluted cities, as in many of the squares in west and central London, and not merely existing, as most trees do in such condition, but attaining much beauty of form and dignity there, as in Berkeley Square and Lincoln's Inn Fields. Here the great trees, getting out of the gardeners' way, or any attack of pruners or self-appointed tree-architects, assume their true and natural form, and are very fine whether in summer or winter. Where the Plane is used in the streets of London, however (as on the Thames Embankment), the costly and wasteful labour of pruning the trees to one ugly shape is carried out. The Planes are easily increased by cuttings and layers, but planters should in all cases avoid them, as they cannot expect from such beginnings the fine rapid, natural growth and true form of the tree. The Plane which thrives best in London, or what is often called the London Plane, is not (as it used to be thought) the American or Western Plane, but the Eastern Plane or one of its forms of which the accepted name is now *acerifolia*, a name with many synonyms. The true Western Plane, *P. occidentalis*, is rarely seen in Europe outside of botanical gardens, and, when it is, it has little of the beautiful vigour of the Oriental Plane in our country. The name *Orientalis* is still kept up for a deeply cut leaved form of Plane, but it is not really distinct as a species from the London Plane. *P. cuneata* is an Eastern species with deeply cut leaves, but it may be taken for all planting ends that the vigorous London Plane is the Eastern Plane, no matter by what name it is called. The Plane, being

a tree of vast distribution in the East, accounts for the origin and distribution of the various forms, mainly differing in the shape and lobing of the leaves. While the tree attains its greatest growth in southern Italy and south-eastern Europe generally, it is a noble tree in the southern parts of England, attaining its best size, height, and form in good valley soils, and there are many fine examples of it in the Thames Valley. There is a peculiarity of the bark in scaling off in large irregular patches, which leads to rather a striking effect, and is in no way harmful to the tree. The Greeks and Romans used it much as a shade tree near their public buildings, and from all recorded time it has been much planted in Persia. As

Platanus orientalis.

yet this tree has been little used in our woodlands, though it certainly deserves a place in them, especially in those on the alluvial soils.

PLATYCODON (*Broad Bell-flower*).—Handsome perennials, allied to the Bell-flowers. *P. grandiflora* is a handsome Siberian perennial, hardy in light dry soils, but impatient of damp and undrained situations, where its thick fleshy roots decay. Sometimes this begins below and spreads upward, but it generally begins above and spreads downward, the plant rotting off at the neck. The flowers are 2 to 3 in. across, deep blue with a slight slaty shade, and in clusters at the end of each branch. The branches are 18 in. high, and very slender at the base, so that if unsupported in their early stages they fall about and look untidy. Such neglect is impossible to repair later, for branch after branch breaks away in tying. It is better to leave them alone, merely pegging down the branches to prevent

breakage by wind. Perhaps the best position for the plant would be overhanging a ledge in some sunny corner of the rock-garden, where its negligent growth matters less, and its flowers, being on a level with the eye, are shown to advantage. Like most *Campanulas*, it has a tendency to revert from blue to white, and this white form, though equally pretty, is by no means so common as the type. A rich loamy soil, good drainage, and an open situation are best. Propagate by seeds, which can be readily procured. The young shoots, if taken off when about 3 in. long, in spring, and placed in a gentle bottom-heat, will strike, but not freely. The plant is a bad one to divide—division often resulting in failure, and, if attempted, must be carried out in May, when the growth has just commenced. *P. autumnale*, or *chinense*, from China and Japan, is taller and more robust than *P. grandiflorum*, with narrower leaves, but more dense, and its flowers, though smaller, are pretty evenly distributed along the upper half of the stems. Besides a white variety, it has a tendency

Platystemon californicus.

to become semi-double, by a sort of "hose-in-hose" reduplication of the corolla, similar to what occurs in many of our *Campanulas*. The dwarf, *Mariesi*, from Japan, is distinct in habit, with rich blue flowers.

PLATYSTEMON.—*P. californicus* is a pretty Californian hardy annual Poppywort, forming a dense tuft, studded thickly in summer with sulphur-yellow blossoms. It

merely requires to be sown in ordinary soil in the open border either in autumn or spring; but the seedlings should be well thinned out. *P. leiocarpum* is a similar kind.

PLUMBAGO (*Leadwort*).—An interesting family of graceful perennials and half shrubby plants, the hardiest being *P. Lar-pentæ*, the blue-flowered Leadwort, from China. *P. capensis*, usually grown under glass, may be planted out in summer, bearing its lovely pale-blue flowers continuously. The plants should be specially prepared for out-of-doors, young ones being best for edgings, though taller ones may be used in certain positions. *P. capensis* is used with good effect in German gardens. *P. Lar-pentæ* is perfectly hardy, its wiry stems forming neat and full tufts, varying from 6 to 10 in. high, according to soil and position. In September these are nearly covered with flowers, arranged in close trusses at the ends of the shoots, and of a fine cobalt-blue, changing to violet; they usually last till the frosts. A warm sandy loam or other light soil and a sunny warm position should be given, such as above the upper edges of vertical stones or slopes on the rock-garden. It may also be used for borders, banks, or edgings in the flower garden, particularly in the case of slightly-raised beds. Very easily increased by division of the roots during winter or early spring.

POA.—Perennial and annual Grasses, few worth cultivating. *P. fertilis* has dense tufts of long, soft, smooth, slender leaves, 10 to 18 in. high, and arched gracefully on every side. In the flowering season they bear airy, purplish or violet-tinged panicles, rising to twice the height of the tufts. Isolated on lawns the plant is effective, and if in good soil gives no trouble. *P. aquatica* is a stout native Grass, 4 to 6 ft. high, usually occurring in wet ditches, by rivers, and in marshes. It is one of the boldest and handsomest of hardy Grasses for the margins of artificial water or streams, associated with such things as the Typhas, Acorus, Bulrush, and Water Dock. It increases rapidly.

PODOCARPUS.—Evergreen trees of the Yew tribe, tender in Britain save in the mildest parts. *P. chilina* is a handsome tree which has reached a fair size in a few sheltered gardens, and *P. japonica* and *P. macrophylla* from Japan, and *P. Totara* from New Zealand, may prove more or less hardy along the South Coast when older and well established. *P. alpina*, from the mountains of Tasmania, is probably the hardiest of the group, but is only a Yew-like shrub of

semi-prostrate habit, more interesting than beautiful.

PODOPHYLLUM (*May Apple*).—Distinct perennial herbs, three of which are from Asia and one from North America. The best known is *P. Emodi*, from the Himalayas, a plant 6 to 12 in. high, with large leaves cut into wedge-shaped lobes, their whole surface a fine bronzy red in early spring. The flowers are large, white or pale rose, and followed in August by fruits of a brilliant red as large as a hen's egg, and edible, though of mawkish flavour. The plant succeeds in the moist peaty soil of woodlands, especially in wet places and in partial shade, and where the leaves are sheltered from cold winds. Increase by division of the creeping root-stock, or seed sown in cold frames as soon as ripe. This is a handsome plant for shady plots of deep moist soil in the wild garden or the margins of peat borders, but it dies away quite early in summer, so must be grouped with other things for autumn effect. *P. peltatum* is from rich woods of the eastern United States, with poisonous roots and leaves, though the fruits are harmless. It is not so handsome as *Emodi*, but will grow in drier places, and its glossy wrinkled leaves, borne umbrella-like on a long bare stem, are distinct and interesting. The waxy-white cup-like flowers come in May, and give place to yellowish-green fruits like a wild Apple—whence the name May Apple. *P. pleianthum* is from China, its spreading leaves rising to nearly 2 ft. in height, with large drooping bunches of purple flowers and heavy grey-green fruits turning purple when fully ripe.

POHLIA PLATENSIS.—A pretty little bulbous plant from South America, allied to Iris, and with several other names, but mostly known under this one. The flowers appear in summer, and are shaped like those of a Tigridia, of a rich blue colour blotched with white and yellow towards the centre. The plant needs the same treatment as the Tiger flowers, and is so beautiful that when better known it will be much grown in light warm soils. Syn. *Cypella platensis*.

POINCIANA.—*P. Gilliesii* is a beautiful sub-tropical tree which thrives against walls in the Isle of Wight. The late Rev. H. Ewbank writes of it in the *Garden* as follows:—"The foliage gives it very much the look of an Acacia at a little distance, and it is often mistaken for one of them. But no Acacia that I have ever seen has such splendid blossoms. My great surprise has been in its well doing

to such an extent in the open ground that I have now no fear for it at all, and during the worst frost we have had here during the last twenty or thirty years it was entirely uninjured. A very great recommendation for it in my eyes is the time of year when it is accustomed to blossom. All spring things have gone by, and the wealth of flowering shrubs and trees has become exhausted when this very beautiful object makes full compensation for any loss that has been sustained. Moreover, it goes on for such a very long time—blossoming, it is true, in an intermittent sort of way—but still remaining an attraction in the highest degree in the garden for week after week." Such a handsome and graceful thing deserves trial in warm southern gardens, especially where the soil and subsoil is open and warm, and always against south walls. Its one fault is the rather rank smell of the flowers.

POLEMONIUM (*Greek Valerian*).—A small family of Phloxworts, mostly from North America. A few of them are familiar in gardens, and among the best are the following:

P. cœruleum (*Jacob's Ladder*) most people are familiar with. Besides the original blue-flowered species, there is a variety with white blossoms, a second, *acutiflorum*, in which the petals are narrow and pointed, and another handsome form with variegated foliage, which on good garden soil is almost as easily grown as the common one. It thrives best in deep, rich, but well-drained loam. As the variegated variety is grown for leaf-beauty alone, the flower-stems should be removed. Increase by division in early autumn.

P. confertum.—This is one of the finest of all, with slender deeply-cut leaves, and dense clusters of deep blue flowers on stoutish stems about 6 in. high. It requires a warm spot in the rock-garden and a well-drained, deep, loamy soil, rather stiff than otherwise. Though it requires plenty of moisture in summer, excessive dampness about the roots in winter is hurtful. It should be allowed to remain undisturbed for years after it has become established. A garden form of this plant, *mellitum*, is rather more vigorous, and bears white flowers. Rocky Mountains.

P. humile is a truly alpine pretty plant with pale-blue flowers on stems a few inches high. In a dry situation and a light sandy soil it is hardy, but on a damp subsoil is sure to die in winter. *P. mexicanum* is similar but larger, and being only of biennial duration is scarcely worth

cultivating. There is, however, a much improved garden form, *Richardsonii*, of much stronger growth and with far larger flowers, as many as a score of deep blue bells with a yellow eye sometimes coming in one cluster. There is also a white form of *Richardsonii*, and both kinds are fragrant and good for cutting. N. America.

P. reptans is an American alpine plant, and, though far inferior in beauty to *P. confertum*, is worth growing. Its stems are creeping, and its slate-blue flowers form a loose drooping panicle 6 or 8 in. high. Snails devour it ravenously, especially the scaly root-stocks during winter, and must be watched for. *P. sibiricum*, *grandiflorum*, and *foliosissimum* much resemble *P. cæruleum*, but are more vigorous, with larger flowers. There are several other species in cultivation, but not important.

POLIANTHES (*Tuberose*).—*P. tuberosa* is a native of the East Indies, but strong imported bulbs of this deliciously fragrant plant, if inserted in warm soil, will flower well in the open air during August. In the neighbourhood of London we have seen the Tuberose flowering freely in the open border, the bulbs in a light, sandy, well-drained soil, in which they had remained all the winter, slightly protected during severe weather by ashes or other dry material.

POLYGALA (*Milkwort*).—The hardy Milkworts are neat dwarf plants, with flowers much resembling those of the Pea family. *P. Chamæbuxus* (Box-leaved Milkwort) is a little creeping shrub from the Alps of Austria and Switzerland, where it often remains quite tiny. In our gardens, however, on peaty soil and fine sandy loams, it spreads out into compact tufts covered with cream-coloured and yellow flowers. The variety *purpurea* is much prettier; the flowers are a lovely bright magenta-purple, with a clear yellow centre. It succeeds in any sandy, well-drained soil, best in sandy peat and slightly shaded from the mid-day sun. Even when out of flower it is interesting owing to its dwarf compact habit, bright shining evergreen leaves, and olive-purplish stems. A new species belonging to this shrubby evergreen section is *P. Vayredae*, a little plant of dwarf habit, with rich rosy flowers continued during many weeks. *P. paucifolia* is a handsome North American trailer, 3 to 4 in. high, with slender prostrate shoots and concealed flowers. From these shoots spring stems, bearing

in summer one to three handsome flowers about three-quarters of an inch long, generally rosy-purple, but sometimes white. It is suited for the rock-garden, in moist leaf-mould and sand, and for use in half-shady places with *Linnæa borealis*, *Trientalis*, *Mitchella*. The finest of the American kinds is *lutea*, with bright yellow flowers, but this is still very scarce with us. Some of the British Milkworts, especially *P. calcarea* and *vulgaris*, are interesting and easily grown in sunny chinks of the rock-garden if in calcareous soil. They form neat dressy tufts of blue, purple-pink, and white flowers, borne profusely in early summer. Seed may be gathered from wild plants and sown in sandy soil. Plants carefully taken up from their native positions have also been established in gardens.

POLYGONATUM (*Solomon's Seal*).—Graceful tuberous perennials, distributed chiefly in the north temperate regions, and with very few exceptions quite hardy with us. There are nine distinct species in cultivation, and perhaps as many varieties, and although there is some similarity amongst them, all are distinct as garden plants. They thrive in almost any position in good sandy soil and with an occasional dressing of leaf soil. It is in shady nooks of the wild garden, however, under deciduous trees, that they are seen to the best advantage. They are increased by seeds, which, sown as soon as gathered in autumn, germinate in early spring: the creeping root-stocks may also be divided, and in good soil soon form nice tufts. A few kinds are used for forcing for early spring use in the greenhouse; these are generally imported instead of being grown at home, as they might well be. It simply requires singling out good crowns and growing them in rich loamy soil, lifting and potting when required.

P. biflorum.—A pretty species from the wooded hillsides of Canada and New Brunswick, of slender graceful growth, the arching stems 1 ft. to 3 ft. in height, the small flower stems jointed near the base of the flowers, which are greenish white, two or three together in the axils of the leaves. Syn. *P. pubescens*.

P. japonicum.—A distinct species, native of Japan, hardy in this country, flowering in early April, growing about 2 ft. in height, the leaves of a very firm leathery texture, the flowers white, tinged purplish.

P. latifolium, the old broad-leaved Solomon's Seal, seems to be

about intermediate between *P. multiflorum* and *P. officinale*. It is a native of Europe, and is said to have been found in Syke's Wood, near Ingleton, Yorkshire. A fine robust species, the stems being from $2\frac{1}{2}$ ft. to 4 ft. high, arching, the leaves bright green; flowers large, two to five in a bunch from the axils of the leaves, greenish-white, in July. *P. latifolium* var. *commutatum* differs from the above in being glabrous throughout, with a flower-stem 2 ft. to 7 ft. in height; large white flowers, three to ten in a bunch. N. America.

P. multiflorum.—This is the common Solomon's Seal, and is the most grown of all the species. It grows from 2 ft. to 3 ft. high, glaucous green; the flowers are large,

spots on the rock-garden, the habit graceful, 2 ft. to 3 ft. in height, leaves glossy green; the flowers, white, marked with reddish lines and dots, are borne in bunches of from six to ten in the axils on both sides in late summer. The fruit is red when ripe.

P. punctatum.—Another beautiful species from the temperate Himalayas, where it is found at altitudes of 7,000 ft. to 11,000 ft., and hardy in our gardens; about 2 ft. in height, the stem angular, with hard leathery leaves, flowers white, with lilac dots, two to three in a bunch, in late summer.

P. roseum.—A handsome little plant, allied to *P. verticillatum*. It was first sent to the Royal Gardens, Kew, by

Polygonatum multiflorum (Solomon's Seal).

nearly white, one to five in a bunch in the axils of all the leaves. It is a very robust and free-growing species, its arching stems and drooping flowers being very attractive. There are several garden varieties, notably a double-flowered one, and one in which the leaves are distinctly variegated. *P. Broteri* is a variety with much larger flowers; *P. bracteatum*, a form in which the bracts at the base of the flowers are well developed, flowering throughout the summer.

P. oppositifolium.—A charming kind confined to temperate regions of the Himalayas and hardy, although usually given as a greenhouse species. It will doubtless do best in a sheltered spot, but even in the open it has given me no trouble, and it is a good plant for shady

Bunge, and is doubtless the plant described in *Flora Rossica*. It appears to vary considerably in the length and breadth of its leaves, in their being more or less whorled, and also in the size of its flowers. It grows 2 ft. to 3 ft. in height, the leaves in whorls of three or more; the flowers, in pairs in the axils of the leaves, are clear rose-coloured and very pretty amongst the narrow green foliage. N. Asia.

P. verticillatum.—An elegant species distributed over the temperate Himalayas, and pretty general in the northern hemisphere. It was found in Perthshire, Scotland, in 1792, and appears to have been cultivated by John Tradescant, jun., as early as 1656; 2 ft. to 3 ft. high under cultivation, the leaves four to eight

in a whorl; the flowers, two to three in a bunch in the axils of the leaves, are greenish-white, smaller than those of *P. multiflorum*. The fruits are red when ripe, and remain hanging after the leaves have fallen.

POLYGONUM (*Knotweed*).—A vast family, comprising 150 species of world-wide distribution, the majority insignificant weeds, but with several noble plants well worth considering for their beauty of form. They thrive in any soil; those of a bushy habit should be allowed plenty of space. Confinement mars their beauty, which lies in the many flower-spikes rising above a gracefully developed mass of foliage reaching to the ground. The

Polygonum sachalinense.

dwarf perennials, most of which are evergreen, need no support and little attention beyond an occasional trimming, but the annuals, unless grown as single specimens and in sheltered situations, require support. Among the most remarkable are the climbing kinds, which run about very freely in the rougher parts of the pleasure garden, need very little care, and are pretty when covered with flowers during autumn.

P. affine is a pretty alpine plant of the

Himalayas, where it grows on the wet river banks and meadows, and hangs in rosy clumps from moist precipices. In cultivation it is 6 to 8 in. high, with rosy-red flowers in dense spikes borne freely in September and October. *P. Brunonis* is similar and as desirable; the flowers, of a pale rose or flesh colour, borne in dense erect spikes nearly 18 in. high, and continuing more or less through the summer.

P. baldschuanicum.—A plant of value for draping low trees and bushes. Its sprays of rose-flushed flowers come in quantity with pretty effect during summer and autumn. Too often it is set to climb an upright pillar, but is prettier left to grow freely among shrubs or along a stretch of sunny fencing, finding its own way gracefully. Its rosy fruits as well as its flowers make it a bright object for weeks together. It is hardy with a covering for the roots, growing again if cut down by frost. The best way to increase it is to graft it upon cuttings of its own roots, other means seldom proving successful. Central Asia.

P. capitata.—A pretty little plant from Nepaul, with reddish trailing stems rooting at every joint, small hairy evergreen leaves bearing a dark V-shaped blotch in the centre, and small rounded heads of flower, pale rose in colour, rising just above the carpet of foliage. The plant is tender, disappearing with the first frosts, but it often sows itself and reappears in spring; or roots may be wintered in the greenhouse, making a pretty carpet under a sunny stage, or drooping from hanging baskets. Seed or cuttings.

P. chinense.—A new plant from China, of bushy compact habit, with many white flowers in late autumn. It thrives near water, and will hold up the banks of streams with its strong matted roots. The flower sprays are thrown well into view, are good for cutting, and stand the autumn rains better than most flowers. Syn. *P. cymosum*.

P. cilinode.—A climbing kind from North America, of great vigour, a single plant covering many square yards in a season, with myriads of small white flowers of charming effect in autumn. For covering trees, thrusting its way through bushes, or to adorn a hedge-side, this is one of the best, not being averse to shade.

P. compactum is a miniature of *P. cuspidatum*, forming a compact tuft 1 to 2 ft. high, bearing white flowers in profusion. It flowers late in autumn.

P. cuspidatum (*Japan Knotweed*) is of fine graceful habit, its creamy-white flowers borne in profusion. It should be grown apart on the turf or in the wild garden. It is easier to plant than to get rid of in the garden.

P. filiforme.—The variegated form of this is the plant seen in gardens, and even this is scarce, though its dwarf neat stems with large finely blotched leaves hanging prettily, and the abundant white flowers in autumn, make it well worth growing. It is fully hardy, and does well in half-shade.

P. lanigerum.—A distinct species lately

come from tropical Asia, but hardy enough for the summer garden, where its tall, much-branched stems carry silvery down-covered leaves, very variable as to size, but of fine colour effect and with a pretty droop. The flowers are bright red or white, and are only seen with us in a warm autumn. As the plant is tender, the roots should be wintered under glass, and young plants, raised from cuttings in early spring, planted out in May or June.

P. multiflorum.—A tuberous-rooted kind from China and Japan, with shining deep-green leaves and loosely spreading bunches of tiny white flowers on reddish stems. Its chief merit is its great vigour in rough places of the wild garden, or to hide unsightly objects in a short time.

P. orientale (*Persicary*).—An old annual kind, easily raised from seed, and sometimes self-sown in old gardens. It is mainly useful for bold temporary planting, reaching a height of several feet within a few weeks, and its white or rosy-purple flowers are of some effect in autumn. A more useful garden form is *pumilum*, which rarely rises above 2 ft., and bears similar rosy-purple or white flowers. By growing *P. orientale* in poor, dry soil, its growth is restrained and the flowers come freely and earlier in the season.

P. polystachyum.—A Himalayan plant much confused with *P. molle*, to which it is superior. It never grows high, and from late in September carries a mass of spreading plume-like sprays of white flowers, with a scent of honey, and lasting for several weeks. It needs quite a sharp November frost to check it, and its stout leafy stems with their olive-green leaves threaded with red veins are neat all the summer, and its roots do not run.

P. sachalinense.—A huge perennial with bright green leaves upwards of a foot in length, the flowers greenish-white, in slender drooping racemes. It thrives in a moist soil near water, where it is effective, and it makes a fine feature on the turf or in a spot where it can run about freely. Sachalien.

P. sphaerostachyum.—One of the dwarfiest and prettiest of the group, but not always easy to grow. From a tuberous root rise short semi-prostrate stems with narrow leaves and drooping spikes of blood-red flowers, continued through a long season on a healthy plant. It increases very slowly even when doing well, and thrives best in an open place in the rock-garden, where it can enjoy moisture in summer and yet be dry in winter, the roots being apt to decay if too wet. The difficulty is to meet these conditions, and this is sometimes done by a glass covering from the time the plant goes to rest in the autumn. Increase may be by division of the rootstock, but it is risky to disturb a strong plant. Seed is produced in a good season, dropping off unnoticed while still green, and eagerly devoured by birds; this should be carefully gathered, and sown in a cold frame. The young plants need careful handling, and flower in their second season when all goes well. Himalayas.

P. vacciniifolium is very distinct in aspect, quite hardy, and thrives in almost any moist soil, but is best seen where its shoots can

Polygonum vacciniifolium.

ramble over stones or tree stumps. Under favourable conditions it grows rapidly, and produces a profusion of Whortleberry-like leaves and rosy flowers. Himalayas.

POLYPODIUM (*Polypody*).—This large family of Ferns contains several good hardy kinds, the principal being the common *P. vulgare*, which has about a score of cultivated varieties differing more or less widely from each other. The most distinct and beautiful as well as the freest in growth are *cambricum*, *elegantissimum*, *omnilacerum*, and *pulcherrimum*. Though preferring shade, they only need a good supply of water at the root during summer, and will thrive even exposed to the full rays of the sun. Plant them in fibry loam and tough and fibry peat, with a liberal admixture of leaf-mould and well-decayed woody matter, to which add a thin top-dressing of similar material every autumn. The evergreen Polypodiums associate well with flowering plants that do not require frequent removing, and they may be made to cover bare spaces beneath trees, or to overrun stumps. A beautiful effect, too, is got by their use as a carpet or setting to some of the plants in the rock-garden. Besides *P. vulgare* and its varieties, there are several deciduous kinds, such as *P. dryopteris* (Oak Fern) and *P. phegopteris* (Beech Fern), well known to all Fern lovers. They thrive

best in peat, loam, and sharp sand, with some broken lumps of sandstone, and prefer a dry situation in the rock-garden, or any situation which is not fully exposed to the sun. A slightly shaded spot should be selected, where they might be planted among flowering plants suitable for the same treatment and affording the needed shelter. *P. Robertianum* (Limestone Polypody) is a beautiful deciduous species, somewhat difficult to manage; it should

Oak Fern (*Polypodium dryopteris*).

have a dry sheltered position, does not mind sunshine, and prefers a mixture of sandy and fibry loam, with a plentiful addition of pounded limestone. *P. alpestre* resembles the Lady Fern, with fronds dark green, and sometimes exceeding 2 ft. in length. It may with advantage be grouped with Lady Ferns, as it flourishes under similar treatment. *P. hexagonopterum* a native of N. America, is hardy in sheltered positions, and has elegant tapering dark green fronds about 1 ft. in height.

Polystichum. See ASPIDIUM.

PONTEDERIA (*Pickereel Weed*).—*P. cordata* is one of the handsomest water-plants, combining grace of habit and leaf with beauty of flower. It forms thick tufts of almost arrow-shaped, long-stalked leaves, from 1½ to over 2 ft. high, crowned with spikes of blue flowers. *P. angustifolia* has narrower leaves. Both should be planted in shallow pools of water.

Division of tufts at any season. North America.

POPULUS (*Poplar*).—Usually forest trees of northern and temperate countries, often of rapid growth, mostly hardy in our country, some giving very fine effects in the landscape, and others of value in woodlands. Generally they are much neglected in country places, and in future they will be worth more attention, not only because their rapid growth often helps to shut out objectionable things, but some for their timber. Among the best are the white, or the Abele Poplar (*P. alba*), and its variety *Bolleana nivea*, which is whiter in the foliage than the wild tree; the great *P. monilifera* of North America, grown under various names in our gardens, and the most rapid grower of Poplars; the Balsam Poplar (*P. balsamifera*); Fremont's Poplar (*P. Fremonti*); *P. grandidentata*; *P. heterophylla* of North America, of which there is a pendulous variety; *P. laurifolia* of Siberia; the Black Poplar (*P. nigra*), a native tree which has one or two varieties, one the Lombardy Poplar; *P. Sieboldi* of Japan; *P. Simoni* of China; *P. suaveolens* of North-West India; *P. tremuloides* of North America, and *P. trichocarpa*. Poplars being common in French and Continental gardens generally, their culture has led to what are called improved races and hybrids, among which the variety *Eugenie* is a favourite in the east of France. Few Poplars are ever planted in a fine way in our country, and some of them are not well known yet; but such as are known are very fine in habit, especially the Abele and its allies, and there is no more beautiful tree than our native Aspen (*P. tremula*), with its cloud of delicate moving leaves.

Four kinds of Poplar are considered natives of our country—the White Poplar, sometimes growing 100 ft., the Grey Poplar (*P. canescens*), the Aspen, and lastly, the Black Poplar, though this is not certainly a native. In nature these trees usually inhabit moist ground near streams or lakes, or moist woods, and in cultivation they often do best and look best in such places, as in the Poplar-lined valleys of France. In our moist climate, however, such soil or place is by no means essential to their growth, as we see noble trees of the greater Poplars in good soil away from lake or river; but where there is water it is often well to group them near it, as, like the Willows, they are rarely so good in effect as when grouped near water. The Lombardy Poplar is

often used in that way, and shows its fine form in such situations; the Grey and White Poplars have claims in the same way, as they, when old, often show very fine form.

Our gardens are so crowded with exotic things—many of them quite unfit

Populus nigra.

for our climate—that it is surprising how little our native Poplars come into the scheme of the planter, and hardly ever into that of the ordinary nursery planters with their conventional trees and pseudo-botanical absurdities in the way of monstrous forms and variegations. The true Aspen is one of our native trees that is neglected, and rarely ever seen grouped in the pleasure garden in an effective way, though we may see it here and there wild, in woodland places, often grouping itself very prettily. I know nothing more attractive than a group of the Aspen by the waterside or in almost any position. In Ireland, and on warm limestone soils elsewhere, the leaves become a lovely colour in autumn, but not on stiff soils.

PORTULACA (*Purslane*).—This bright little annual *P. grandiflora* has been introduced many years from its native home in Chili, and few Chilian plants have spread so widely all over the world. It seems as happy under a tropical sun as in an English garden, where no other annual excels it in brilliancy, delicacy, and diversity of colour. It makes itself at home as well on a dry, poor bank as in a rich border among taller things. One can see by its growth that it is a child of the sun, and that is why one finds it so fine in gardens in the parched plains of India and Egypt, as well as throughout North America. The colours vary from crimson and white through every shade to pure yellow. There are single and double-flowered kinds, and it is difficult to say which are the more beautiful. The double flowers last longer, and greater care seems

to have been made, in selecting the finest of the doubles by crossing the various sorts. Forty years ago M. Lemoine, of Nancy, raised many beautiful double sorts, to which he gave names, but it was soon found useless to keep named sorts, so one buys seed now in mixed colours, as with *Cinerarias*. Seeds of the *Portulaca* should be sown thinly during the month of April in pans in a frame, and the seedlings be planted out early in June. They can be also sown in the open ground about the end of May, for succession after the frame-raised seedlings. The best plants are got when the seedlings, as soon as they are large enough to handle, are pricked out into small pots of rich soil and kept in an airy frame. The seed is best sown in light and rather rich soil, and only just covered. In planting out, choose the sunniest and warmest spots in the garden, and plant in bold masses to get a rich effect. It has proved in India one of the most useful flowering plants for bedding

Flowers of *Portulaca grandiflora*.

during the cool months. The named varieties of *P. grandiflora* are *Thellusoni*, *lutea*, *splendens*, and *Regeli*, while another kind is *P. Gilliesi* from Mendoza.

POTENTILLA (*Cinquefoil*).—A large family, many hardy herbs and alpine flowers among them. The most important are the fine hybrid varieties got by crossing showy Himalayan species such as *P. insignis* and *P. atro-sanguinea*, a form of *P. argrophylla*. These two species are well worth growing. The former has clear yellow and the latter deep velvety crimson flowers. Other useful tall-growing kinds are *glandulosa* from California, a good plant for very dry places, where the large golden flowers come freely for several weeks during the hottest weather. It is fully hardy, and with leaves deeply cut. Other plants for just such a position are *P. hippiana*, with large leaves of a decided

grey, and *P. crinata*, with silvery-white leaves, the flowers bright yellow in both kinds. One of the best, however, is *P. nepalensis* (or *formosa*), from the Himalayas, with stems of 18 in., and fine bright red flowers shading to crimson. As a companion to this, though somewhat taller, is *P. Hopwoodiana*, of hybrid origin, with large flowers in blending shades of rose, buff, and yellow. These single kinds are easily grown, and never fail to flower well. The hybrid double kinds of garden origin are most showy, lasting longer in perfection both on the plants and when cut than the single sorts. There are many distinct named kinds to be had from hardy plant nurseries, and these varieties represent every shade of size and colour. The culture of Potentillas, like that of most hardy flowers, is simple. They luxuriate in a light deep soil and exposed positions.

The following is a good selection of double sorts: M. Rouillard, reddish-crimson; Belzebuth, dark crimson; Chromatella, yellow; Dr. Andry, scarlet, margined with yellow; Escarboucle, crimson; Bélisaire, reddish-orange; Vase d'Or, yellow; Le Dante, orange shaded with scarlet; Louis Van Houtte, crimson; Phœbus, rich yellow; Le Vésuve, crimson with yellow margin; Versicolor, yellow suffused with brownish-crimson; Vulcan, scarlet shaded with yellow; Variabilis fl.-pl., yellow with scarlet margin; Eldorado, scarlet-crimson with yellow margin; Perfecta plena, bright scarlet-crimson slightly tinged with yellow; Imbricata plena, orange-scarlet; Etna, reddish-crimson; Panorama, yellow heavily stained with scarlet; Nigra plena, dark crimson; Meteor, yellow suffused and blotched with scarlet; Meirsschaerti fl.-pl., yellow veined and striped with crimson; William Rollisson, deep orange-scarlet with yellow centre; Fénelon, orange and scarlet; Purpurea lutea plena, scarlet-crimson slightly tipped with yellow.

Among the dwarf alpine species there are some very beautiful plants for the rock-garden. Of these the following are the best:—

P. alba (*White Cinquefoil*).—The leaves of this pretty plant from the Alps and Pyrenees are quite silvery and have a dense silky down on the lower sides. It is very dwarf, and not rampant; its white Strawberry-like flowers nearly 1 in. across, with a dark orange ring at the base. Easily grown in ordinary soil, and on borders or for the rock-garden. It blooms in early summer, and is increased by division.

P. alchemilloides.—A very distinct

kind, quite easily grown in any position, and with a long season of beauty. The flowers are pure white and nearly an inch across. This plant comes from the Pyrenees, and is easily increased by seed or division.

P. alpestris (*Alpine Cinquefoil*).—A plant closely allied to the spring Potentilla (*P. verna*) forming tufts nearly 1 ft. high, with bright yellow flowers about 1 in. across. While enjoying a moist deep soil, it cares little how cold the position is. Though not common, it is found on rocks and dry banks in several parts of the country. A more vigorous form of this plant, from the central and southern Pyrenees, is *pyrenaica*, with larger flowers of a deeper yellow.

P. ambigua, from the Himalayas, is a dwarf compact creeper, with in summer large clear yellow blossoms on a dense carpet of foliage; is perfectly hardy, requiring only a good deep well-drained soil in an open position in the rock-garden.

P. calabra (*Calabrian Cinquefoil*).—A very silvery form of our native Silvery Cinquefoil (*P. argentea*), coming from Italy and Southern Europe. It has prostrate shoots, and bears in May and June lemon-yellow flowers nearly 1 in. across. It flourishes freely in sandy soil, in the rock-garden.

P. fruticosa (*Shrubby Cinquefoil*).—A pretty neat bush, 2 to 4 ft. high, bearing in summer clusters of showy golden-yellow flowers. It is suited for the rock-garden or the dry bank. Its variety *humilis* is a tiny miniature, of charming effect in the rock-garden, and the form *davurica* (perhaps a hybrid) is quite prostrate.

P. nitida (*Shining Cinquefoil*).—A beautiful little plant from the Alps, a couple of inches high, its silky silvery leaves seldom with more than three leaflets each. The flowers are pretty and delicate rose. It is well worth a good place in the rock-garden, and needs a little more care than other kinds. It likes plenty of moisture in summer and soil with a little peat in it, and to keep in health needs frequent top-dressings of good soil. Several beautiful forms are now grown, *alba* with white flowers, *rosea* and *rubra* in deeper shades of rose, *atro-rubens* in rosy purple, and *grandiflora* with large soft-rose flowers.

P. Thurberi.—A taller plant from N. America, coming near *nepalensis*, but of much dwarfer habit. Its rich brownish-red flowers of an uncommon shade, from June to August, are attractive in the border.

P. tonguei.—A charming plant for the rock-garden, and unlike any other kind in its orange and terra-cotta coloured flowers. It is of hybrid origin, and only rises 3 or 4 in. above the soil.

P. tridentata.—A spreading carpet-like plant from North America, rarely rising above 4 in., its dark evergreen foliage prettily spangled with white flowers in June and July. It does best in a moist, fairly rich place, and will bear partial shade. Easily increased by division.

PRATIA.—*P. angulata* is a pretty plant for the rock-garden, creeping over the soil like the Fruiting Duckweed; the flowers white, and like a dwarf Lobelia, numerous

Pratia angulata.

in autumn, giving place to violet-coloured berries about the size of Peas. It is fairly hardy, and grows best in moist districts with a mild winter, such as Cornwall, where charming carpets of this little plant are not uncommon in shady places. New Zealand. Syn. *Lobelia littoralis*. A second kind, *P. begonifolia*, is from the Himalayas, and is larger in all its parts, with downy leaves and purple berries.

PRIMULA (*Primrose*).—There is so much charm and beauty among Primroses that no garden is complete without them, and there is scarcely a species not worth cultivating. They have a great diversity of habit and growth. Some are at home on the sunny slopes of the rock-garden, others in shade, many make excellent border flowers, and a few exotic species are at home in the woodland with our common Primrose. The family contains nearly a hundred different sorts, and we have therefore confined ourselves to the most distinct and desirable kinds. There is so much confusion among certain sections, particularly in the alpine and the Himalayan species, that we have not attempted to deal with these exhaustively ;

while others, such as *P. nivalis*, are too little known in gardens to render it necessary for us to speak of them.

P. amœna (*Caucasian Primrose*) is allied to our common primrose, but is distinct. The corolla is purplish lilac in bud or when recently expanded, but turns bluer after a few days, and the blooms come out before the snow has left the ground. It is so much earlier than the common Primrose, that while that species is in flower, *amœna* has finished blooming, and has sent up a strong tuft of leaves very much like that sent up by the common Primrose after its own flowers are faded. It is one of the best plants for the spring garden and the rock-garden. Division of the root. Caucasus.

P. auricula (*Common Auricula*).—In a wild state this is one of the many charming Primulas that rival Gentians, Pinks, and Forget-me-nots in making the alpine fields so exquisitely beautiful. Possessing a vigorous constitution, and sporting into many varieties when raised from seed, it attracted early attention from lovers of flowers; its more striking forms were fixed and classified, and it became a "florists' flower." Its cultivated varieties may be roughly thrown into two classes: first, self-coloured varieties, or those which have the outer and larger portion of the flower of one colour or shaded, the centre or eye white or yellow, and the flowers and other parts usually smooth, and not powdery; second, those with flowers and stems thickly covered with a white powdery matter or "paste." The handsomest of the former kinds are known by the name of "alpines," to distinguish them from the florists' varieties, and are the hardiest of all. The florists' favourites are distinguished by the dense mealy matter with which the flowers are covered. They are divided by florists into four sections—green-edged, grey-edged, white-edged, and selfs. In the "green-edged" class the throat of the flower is usually yellow or yellowish; this is surrounded by a ring, varying in width, of white powdery matter, and this again by another ring of some dark colour, and beyond this a green edge, which is sometimes $\frac{1}{2}$ in. in width. The outer portion of the flower is really a monstrous development of the petal into a leaf-like substance, identical in texture with the leaves. The "grey-edged" varieties have the margin of a green leafy texture, but this is so thickly covered with powder that the colour cannot be distinctly seen. The same occurs in the "white-edged" kinds, the difference

being in the thickness and hue of the powdery matter. In fact, the terms "green-edged," "grey-edged," and "white-edged" are simply used to indicate slight differences between flowers having an abnormal development of the petals into leafy substance. It is a curious fact that between the white and the grey the line of demarcation is imaginary, for both classes occasionally produce green-edged flowers. The "selfs" are really distinct, since the outer portion of the corolla is of the ordinary texture, though a ring of powdery matter surrounds the eye.

The classification of such slight differences merely tends to throw obstacles in the way of the general growth and enjoyment of the flower in gardens. Let the florists maintain these fine distinctions; those who merely want to embellish their gardens with the prettier varieties need not trouble themselves with named sorts at all. It should be borne in mind that the florists' kinds are the most delicate and difficult to cultivate. The curious developments of powdery matter, green margins, &c., tend to enfeeble the plant. They are, in fact, variations that in Nature would have little or no chance of surviving in the struggle for life. The general grower will do well to select the free sorts—alpines, and good varieties of the common border kinds. The special merit of these is that they may be grown in the open air on the rock-garden and in borders, while the florists' kinds must be grown in frames.

Their culture is very simple, light vegetable soil and plenty of moisture during the growing season being the essentials. In many districts the moisture of our climate suits the *Auricula* to perfection, and great tufts of it are grown in gardens without any attention. In others it must be protected against excessive drought by stones placed round it, and cocoa-fibre and leaf-mould are also useful as a surfacing. However, as none but good varieties of the alpine section deserve this trouble, we would prefer, wherever practicable, that they should be placed in the rock-garden on spots where they would have some shelter and could root freely into rich light soil. They would cause no trouble beyond taking up, dividing, and replanting. This should be done every second or third year, or as often as they become too crowded or lanky. The very common kinds may be planted as edgings or in beds in the spring garden, but wherever the plant is free, naturally improved varieties should be substituted for the

common old border kind. There are a few good kinds already in the trade, most of them in shades of yellow, such as *Alexandra*, *Celtic King*—a very good one, —*Erin's Queen*, *Miss Davis*, and *Yellow Queen*—also known as *Golden Gem*. *Purple Bedder* is crimson-purple; *Chameleon* with yellow, brown, and striped flowers on the same plant; and *Sulphurea* with pale fragrant trusses.

Auriculas are easily propagated by division in spring or autumn, but best in early autumn. They are also easily raised from seed. Seed ripens in July, and is usually sown in a gentle heat in the following January. It should be sown thinly in pans. The plants need not be disturbed till they are big enough to prick into fine rich light soil on a half-shady border. It is most desirable to raise seedlings, as in this way many beautiful varieties may be obtained, and if a desirable variety is noticed, it should be marked, placed under the best conditions, and propagated by division as fast as possible.

As to the florists' varieties, diffuse instructions have been given, but the essential points may be summed up thus. They require protection in frames or pits during winter and spring, and may be placed in the open air in summer and early autumn. While inside they should be very near the glass, the lights being left off in mild weather, and air being given at all times day and night except in severe frosts. The pit or frame may be the usual one for the winter months, but as the plants show flower they ought to be removed to one with a northern exposure, so as to prolong the bloom. In such a place, with abundance of air, they are not without beauty through April and the first weeks of May. After flowering they should be potted in May, and kept shaded till they have recovered. The potting usually consists of carefully shaking away all the soil and putting the plant in fresh compost; and the practice is a good one, for this plant and its wild allies put forth young roots higher up the stem every year, and the encouragement of these young roots is sure to have a good result. The pots generally used (the 4-in. size) are quite large enough for this annual potting, one sucker of a kind being placed in the centre of each pot. The wisdom of potting every plant in this way is doubtful, and it is better to select those that have sound roots, and are set firmly and low in the earth, and while disturbing the ball but little to give them

a careful shift into a 5-in. pot. In growing the alpine kinds in pots—and they are as worthy of it as the other kinds—growers should put five or six plants in a 6-in. pot, one in the centre and four or five round the side, so as to form a good group. The same principle may be carried out in pans, and applied to the free-growing florists' varieties as well as the alpinists. In summer all the plants should be placed in the open air on boards or slates or a bed of coal-ashes, to prevent the entry of worms. Some careful growers guard the plants from heavy rains, but this is unnecessary if the pots are perfectly drained and everything else is as it ought to be. The florists rarely plunge the pots; but if plunged in a bed of clean sharp sand, or in any like material on a well-drained bottom, and free from earthworm, they will be safer and less troublesome, because free from many risks which attend plants exposed in a fragile porous shell containing but a few inches of soil. Some pot their plants in August, but the best time is just after the flowering, as if disturbed in the autumn the plants have less strength for flowering.

The compost for these tender florists' kinds is one-third of good turfy loam, one-third leaf-mould, and one of well-decayed cow manure and silver or sharp river sand. Although we have given such full directions in regard to the culture of the florists' varieties, we again earnestly advise all who care for the flower to cultivate the free and hardy forms that thrive in the open air. It is a good plan to select bright or delicate self or other colours that please one. Such kinds should be increased, so that definite effects may be worked out with each colour.

HYBRIDS.—*Primula auricula* has been freely crossed with other species, and with excellent results, though many of these hybrids are as yet little known. One of the best is *P. arctotis*, a cross with *hirsuta*, in which, however, the relation to *auricula* is at once apparent. It is a stout little plant, its compact leaves almost hidden in flowers. It is hardy and easy to grow, and one of the earliest to bloom in spring. *P. discolor* is a natural cross between *auricula* and *venensis*, and probably one parent of our garden Auriculas; *P. Portæ*, with the same parentage, differs from *discolor* in its large wine-red flowers, free of the mealiness of that kind. *P. Gabelii* is a natural cross with *P. villosa*, bearing brownish-violet flowers, and, like all the

other *auricula* hybrids, quite easily grown. A second cross with *villosa*, known as *P. Kernerii*, comes nearer that kind in its covering of dark hairs; the pretty flowers are rosy-lilac with a yellow throat. *P. Peyritschii* is a beautiful cross between *auricula* and *viscosa*, but it comes so near the latter as often to be called *viscosa major*. *P. venusta*, a cross with *P. carniolica*, is a stout little plant of 3 or 4 in., forming rosettes of glossy leaves and large purple flowers. *P. Balbisii*, with large white-throated golden flowers, is an Auricula in all but name, differing only in its more rounded leaves quite free of powder. A cross between this and *auricula* has given *P. similis*, a little plant just intermediate, with bright yellow flowers and slightly mealy foliage.

One of the finest of Primroses, *P. capitata* is very distinct as a garden plant, with a tuft of sharply-toothed pale green

Primula capitata.

leaves and dense heads of flowers of the deepest Tyrian purple. It cannot be termed a good perennial, as it is apt to go off after flowering well, and it is well to raise seedlings. This is easy, as the plant seeds freely in most seasons, and the seedlings flower in the second year. An open position with a north aspect in good loamy soil free from lime, and well watered in dry weather, suits it best. Himalayas.

***P. Cockburniana*.**—A new species from the mountains of Western China, and in

its orange-red flowers quite unlike anything previously seen in this group. It grows in wet upland meadows at elevations of many thousand feet, forming a tuft of wrinkled leaves not unlike those of our wild Primrose and slender stems of 12 to 18 in., with sparse whorls of flowers nearly an inch across. It may become freer in flower under cultivation, otherwise it can hardly be called a showy kind, its great value perhaps being the new colour for our hybridists.

P. cortusoides.—A distinct species bearing clusters of deep rosy flowers on stalks 6 to 10 in. high. In consequence of its tall free habit it is liable to injury if placed in an exposed spot or open border, and should therefore be put in a sheltered position, such as a sunny nook in the rock-garden, where it is surrounded by low shrubs, etc., or in any place where it is not exposed to cutting winds, and at the same time not shaded to its injury. It forms a charming ornament for the rock-garden, for a sunny sheltered border near a wall or a house, or for the margin of the choice shrubbery. The soil should be light and rich, and a surfacing of cocoa-fibre or leaf-mould is beneficial in dry positions. It is one of the most beautiful of Primulas, being readily increased from seed, and hardy in any well-drained and suitable position. *Siberia.* Near to this comes *P. Veitchii*, newly introduced from Western China. The new plant is yet more robust, with broader leaves and larger flowers of a deeper rose colour, and comes from open and sunny places at an elevation of many thousand feet.

P. deflexa.—An attractive little plant recently come to us from inland China, where it grows in mountain woods at a great elevation. Its stout scapes rise from a rosette of hairy leaves to a height of 12 or more inches, bearing a dense head of small rosy-purple flowers which point downwards, and thus account for the specific name.

P. denticulata.—A pretty Himalayan Primrose, of robust growth, 8 to 10 in. high. It has large tufts of broad foliage, and produces in spring, on stout erect stems, large dense clusters of lilac blossoms. It is a most variable plant, and some of its more distinct forms have received garden names, of which the principal are mentioned below. It is paler in colour than any of its varieties, and its foliage and flower-stalks are not mealy. *P. pulcherrima* is a great improvement on the original. It grows from 10 to 12 in. high, and has a more globular flower-truss, which is of a deep

lilac colour. The stalks are olive-green, and, like the leaves, are slightly mealy. It is very beautiful when in flower. *P. Henryi* is a very strong-growing variety, but does not otherwise differ from *P. pulcherrima*. It is a very fine plant, often 2 ft. across, and in Ireland it reaches even larger dimensions. *P. cashmeriana* is by far the finest variety. The flowers are of a lovely dark lilac, closely set together in almost a perfect globe on stalks over 1 ft. high. They last from March till May. The foliage is beautiful, and, like the stalk, is of a bright pale green, thickly powdered with meal, in which, as in many other points, the plant strongly resembles *P. farinosa*. A new garden-raised variety, *Queen of Purples*, is very handsome, with large flowers of an intense deep purple.

All the varieties are hardy, though their foliage is liable to be injured by early spring frosts. They may be placed either in the rock-garden or in an ordinary border, and will grow vigorously in a deep moist loamy soil, enriched by manure. They prefer a shady situation, with a clear sky overhead, and delight in an abundance of moisture during warm summers. If grown in masses in beds, the flowers should be protected by a hand-light or frame placed over them to preserve them. *P. erosa* is similar to *P. denticulata*, but is smaller and less hardy; it has paler flowers, and altogether it is an inferior plant.

P. deorum.—A rare plant from the mountains of Bulgaria, growing in damp grassy places just under the snow-line. Its leaves are rather fleshy, forming a tufted rosette, from which springs a stout stem of 8 or 9 inches with a massive truss of violet-purple flowers. It is hardy on the north side of the rock-garden, thriving in sandy loam and in a moist position, such as the foot of a broad flat stone, which gathers the rain and conducts it to the root. It should be shielded from heavy winter rains by a tilted pane of glass.

P. farinosa (*Bird's-eye Primrose*).—A charming native Primrose with small rosettes of silvery leaves, and flower-stems generally 3 to 12 in. high; the flowers, borne in a compact umbel in early summer, are lilac-purple with a yellow eye. They vary a little in colour, there being shades of pink, rose, and deep crimson. In our gardens it loves a moist vegetable soil, and in moist and elevated parts of the country it flourishes in the rock-garden and in slightly elevated beds without any attention; but in most

districts more care is necessary. In the rock-garden it thrives in a moist crevice, filled with peaty soil or fibry sandy loam. In the drier districts it would be well to cover the soil with cocoa-fibre, leaf-mould, or broken bits of sandstone

Primula farinosa (Bird's-eye Primrose).

to protect the surface from being baked and from excessive evaporation.

P. f. acaulis is a very diminutive variety of the preceding. The flowers nestle in the hearts of the leaves, and both flowers and leaves are very small. When a number of plants are grown together, they form a cushion of leaves, and flowers not more than $\frac{1}{2}$ in. high. Being so small, the plant should have greater care, whether it is grown in the rock-garden or in pots.

P. scotica is a native plant, and requires similar treatment. The flowers, which show in April, are rich purple with a yellow eye, and are borne on stems a few inches high. Native of damp pastures in the northern counties of Scotland. There is also a beautiful pure white form of *farinosa* found upon Ingleborough, but this is very scarce.

P. frondosa.—A plant of the Balkans, and related to the common Bird's-eye (*P. farinosa*), but with larger leaves of a different shape, and larger rosy-purple

flowers during May and June. The plant is thickly covered in all its parts with a fine white powder.

P. glutinosa.—A distinct little Primrose, rare in gardens. On mountains near Gastein and Salzburg, in the Tyrol, and in Lower Austria, it flourishes, in peaty soil, at a height of 7,000 to 8,000 ft. It is 3 to 5 in. high, bearing one to five blossoms of a peculiar purplish-mauve, with divisions rather deeply cleft. Suitable for the rock-garden, or for pots in moist peat or very sandy soil. It should be grown in clusters, being almost certain to die out if isolated. Similar to *P. glutinosa* are *P. tirolensis*, *Flærkiana*, *Allioni*, and others, all natives of the Alps.

P. grandis.—A distinct species from the Caucasus, remarkable only for its large foliage and the smallness of its flowers.

P. integrifolia.—A diminutive Primrose, easily recognised by its smooth shining leaves, which lie quite close to the ground, and by its handsome rose flowers, which are borne one to three on a dwarf stem, and are often large enough to obscure the plant. There is no difficulty in growing this plant on flat exposed parts of the rock-garden, if the soil be firm, but moist and free. The best way is to form a wide tuft, by dotting six to twelve plants over one spot, and in a dry district, scatter between them a few stones or a little cocoa-fibre mixed with sand, so as to prevent evaporation. *P. Candolleana* is another name for this plant. *P. glaucescens*, *spectabilis*, *Clusi-ana*, and *Wulfeniana*, all natives of the Alps, are of a similar character. Division or seed. *P. Heerii* is a wild cross between this kind and *P. hirsuta* found in Switzerland; it makes neat low tufts bearing loose clusters of purple flowers.

P. intermedia.—A charming hybrid between *P. ciliata* and *P. auricula*. In habit it closely resembles some of the dwarf alpine Auriculas, and its purplish-crimson flowers have a conspicuous yellow eye, and are borne on stout erect scapes. On sheltered portions of the rock-garden its richly-tinted blossoms are seen to advantage. It is delicately fragrant.

P. japonica.—A handsome Primrose and first-rate border plant, in moist shady spots of rich loam it grows vigorously, throwing up flower-stems 2 ft. or more and unfolding tier after tier of its crimson blossoms for several weeks in succession. It may be grown in the rock-garden as well as in the border, and is an excellent water-side plant,

thriving almost anywhere and sowing itself freely. There are several forms differing in colour: there is a white form, a pale pink, and a rose form, but the best is the original rich crimson form. In raising *P. japonica* from seed it should be borne in mind that the seed remains some time dormant, unless it is sown as soon as ripe, and that it must on no account be sown in heat. A cool frame is the place for the seed-pan, and till the seed has germinated care must be taken to prevent or keep down the growth of Moss and Liverwort on the soil. A new plant, *P. pulverulenta*, which comes very near *P. japonica*, has recently come from Western China; it differs in its larger and more deeply coloured flowers and in the thick white powder which covers the scape and calyces.

P. latifolia.—A handsome Primrose, with from two to twenty violet flowers in a head. It is less viscid, but larger and more robust than its alpine congener, the better-known *P. viscosa*. Its leaves sometimes attain a height of 4 in. and a breadth of nearly 2 in., and it grows to a height of 4 to 8 in. Its fragrant flowers appear in early summer, and in pure air it thrives on sunny slopes of the rock-garden, if it has sandy peat, plenty of moisture during the dry season, and perfect drainage in the winter months. Like *P. viscosa*, it will bear frequent division, and may be easily grown in cold frames or pits. Alps.

P. luteola.—One of the handsomest of the yellow Primroses, and a noble plant when well grown. The flower-stems are often $1\frac{1}{2}$ to 2 ft. high, though they are usually under 1 ft. in height. They sometimes become fasciated, and thus carry a huge cluster of flowers 4 to 6 in. across. These flowers are like those of a Polyanthus or an Auricula, but they are borne in more compact heads. It likes a moist situation in full exposure, and if put out in rich borders of rather moist soil, or on the lower banks of the rock-garden, or in a copse with a good bed of leaf-soil, it will soon repay the planter. Caucasus. It has been well figured in *The Garden*, from plants that flowered at Chipping Norton, in Oxfordshire.

P. marginata.—One of the most attractive of the alpine Primroses, and distinguished by the silvery margin of its greyish leaves and by its soft violet-rose flowers in April or May. Our mild winters are the cause of its becoming rather lanky in the stems after being more than a year or so in one spot. When

the stems become long, and emit roots above the ground, it is a good plan to divide the plants, and to insert each portion firmly down to the leaves. In the open ground a few bits of broken rock placed round the plants, or among

Primula nivalis.

them if they are grown in groups or tufts, will prevent evaporation and protect them, as they rarely exceed 3 to 5 in. in height. There is a wild form of this kind named *cærulea*, in which the flowers are nearly blue, and some garden varieties with several shades of colour and variation in the leaf margins from silvery white to gold. Alps.

P. minima (*Fairy Primrose*).—One of the smallest of European Primroses. Usually there is only one flower, which is generally rose-coloured, and sometimes white, and appears in summer. The plant is only an inch or so high, but its single flower is nearly 1 in. across, and almost covers the tiny rosettes of foliage. Bare spots in firm open parts of the rock-garden are the best places for the plant, but the soil should be very sandy peat free from lime, and must never become too dry. It is peculiarly suited for association with the very dwarfiest and choicest of alpine plants. Division or seed. Mountains of S. Europe. *P. Flærkiana* is much like it, and probably is only a variety, since the sole difference is that it bears two, three, or more flowers, instead of only one. It enjoys the same treatment in the rock-garden. Austria. Of both kinds it is desirable to establish wide-spreading patches on firm bare spots, scattering half an inch of silver sand between the plants to keep the ground cool.

HYBRIDS.—*P. minima* has also come in for a good deal of crossing. In union with *Flærkiana*, it has given *P. biflora*,

which bears deep rosy flowers in pairs. A cross with *P. spectabilis* has given *P. Facchinii*, also profuse in its rosy-purple flowers in twos and threes. *P. Fosteri* is a natural cross between *minima* and *P. hirsuta*, found in the Tyrol, where it flowers in spring and again in autumn; its flowers are a fine rosy-purple, white in the throat. From *minima* and *anensis* comes *P. pumila*, a little plant nearest the first-named in size and habit, with large flowers of rosy-purple; while a cross with *villosa* has given *P. Sturii*, also near *minima*, but stronger and more free-flowering, and with its rosy-purple

as it seems to grow all to leaf and stem, while many of the other kinds often hide their leaves with flowers. In April its yellow flowers appear in a bunch at the top of a powdery stem, and it emits a Cowslip-like perfume. It thrives as a border plant in light soil. Division. S. Italy.

P. Parryi.—A pretty Primrose, bearing about a dozen large, bright, purple, yellow-eyed flowers nearly 1 in. across. These flowers are borne on stems about 1 ft. high. Though an undoubted alpine, and growing on the margins of streams near the snow-line, where its roots are constantly bathed in ice-cold water, it

Primula rosea.

flowers of a brighter shade than in *pumila*. Another nearly allied natural hybrid is *P. Huteri* from the Tyrol, a cross between *P. Flærkiana* and *P. hirsuta*. Its tiny tufts, scarcely more than an inch high, bear deep violet flowers.

P. Munroi.—This grows at very high elevations on the mountains of Northern India, in the vicinity of water. Its smooth green leaves are 2 in. long, from them arising flower-stems 5 to 7 in. high, bearing sweet creamy-white flowers with a yellowish eye, an inch across, from March to May.

P. Palinuri.—This is quite different from other cultivated Primroses, inasmuch

has succeeded in the open border in moist, deep, loamy soil mingled with peat; it is hardy, and requires partial shade from extreme heat rather than protection from cold. N. America.

P. purpurea.—A handsome Primrose, with purple flowers borne in heads about 3 in. across. Sheltered and warm but not very shady positions either in the rock-garden, or in the open parts of the hardy fernery, will best suit it if the soil is a light, deep, sandy loam, and well enriched with decomposed leaf-mould. It never thrives so well as in nooks at the base of rocks, where it enjoys more heat than it would if exposed. It must

not be confused with the variety of *P. denticulata* commonly called by the same name of *P. purpurea*.

P. rosea (*Rosy Himalayan Primrose*) is a bright Primrose, with flowers of the loveliest carmine-pink. Its pale green leaves form compact tufts, and the flower-stems, 4 to 9 in. high, appear in early spring. It is hardy and grows vigorously in

five pale rosy-red flowers encircled by long bracts. Arctic regions of Asia and North America.

P. Sieboldi.—This is one of the showiest of the Primulas, and is as easy to grow and as hardy as many others. Since its introduction from Japan numerous beautiful varieties have been raised, some of the most distinct being clarkia-

Primula Sieboldi.

almost any soil, preferring, however, a deep rich loam in a moist shady part of the rock-garden. Good garden forms are *grandiflora*, with larger blooms, and *splendens*, with flowers of an intense colour.

P. sibirica.—A pretty little plant of a few inches high, akin to the pale-flowered *P. involucrata*. It carries rather deeply cut leaves and small clusters of three to

flora, *lilacina-marginata*, *fimbriata oculata*, *vincæflora*, *cœrulea-alba*, *Mauve Beauty*, *Lavender Queen*, *laciniata*, and *maxima*. These possess a great diversity of colour, and some have the petals beautifully fringed. One of the chief merits of these Primulas is that they bloom early, flowering about the month of April when other flowering plants are rare; and another is that they are remarkably free bloomers,

throwing up successive flower-stems, and lasting a long time in perfection. Their cultivation also is easy. The best soil for them is light, rich, free material, consisting of fibry loam, leaf-mould, pulverised manure, and some grit to keep it open. They are impatient of excessive moisture, and when put in open ground should be planted in well-drained soil, or in raised positions in the rock-garden. The roots creep just below the surface, and form eyes from which any variety can be easily propagated. *P. Sieboldi* is a hardy herbaceous perennial, which loses its leaves in autumn and winter, when it goes to rest, and starts again early in spring.

P. sikkimensis.—This is a beautiful tall Primrose species, herbaceous in our climate, and quite distinct. It throws up strong flower-stems, 15 to 24 in. high, bearing numerous bell-shaped flowers of a pale yellow, and having an agreeable perfume. Some of the stems bear a head of more than five dozen buds and flowers, and each flower is nearly 1 in. long and more than $\frac{1}{2}$ in. across. It starts into growth in April or early in May, and should have a shady position when in bloom, as its delicate blossoms suffer from cutting winds and bright sunshine. It is hardy, and loves deep, well-drained, and moist ground; but spots in the lower parts of the rock-garden near water, or situations in deep boggy places, suit it best. It is readily increased, either by seeds sown in summer as soon as they are ripe, or by careful division in spring or autumn. This Primrose is said to be the pride of all the Primroses of the mountains of India, inhabiting wet boggy soil at elevations of from 12,000 to 17,000 ft., and covering acres of ground with its yellow flowers. Coming near this is the new kind, *P. orbicularis*, from Western China, a very pretty plant with large yellow flowers an inch across and almost like those of an Auricula.

P. Stuarti (*Stuart's Primrose*).—A noble and vigorous yellow Primrose, about 16 in. high. It has leaves nearly 1 ft. long, and many-flowered umbels. A light deep soil, never allowed to get dry in summer, suits it well; but the most suitable place for it is some perfectly-drained and sheltered slightly elevated spot in the rock-garden. It may be planted against the base of rocks, to shelter it from cutting winds, though, when sufficiently plentiful, this precaution is unnecessary. Mountains of India.

P. suffrutescens.—A plant growing in small tufts on the heights of the Rocky

Mountains, with narrow spoon-shaped leaves and large flowers of rosy-purple with a yellow eye, carried in small clusters during April and May. It is best in a sheltered and well-drained niche of the rock-garden.

P. villosa.—A lovely little Primrose. The leaves have close-set teeth, and are covered with glandular hairs, and are viscid on both sides. Its flower stems, also viscid, barely elevate the sweet blooms above the foliage. It is well adapted for the rock-garden, in which it may be grown in any position, but it requires light peaty or spongy loam, about one-half being fine sand, and its roots should be kept moist during the dry season. It is easily increased by division, and may be raised from seed. Varieties are sometimes, but rarely, found with white flowers. It is sometimes grown under the name of *P. viscosa*. The variety *nivea* or *nivalis* is a beautiful plant, dwarf and neat in growth, producing trusses of lovely white flowers, which are quite distinct from any other in cultivation. It is of very easy culture, and may be grown either in pots or in the open ground. It deserves a select position in the rock-garden or in the border, a light free soil, and plenty of water during the warm season. It flowers in April and May. Alps. Similar to *P. villosa* are *P. ciliata*, *Steini*, *hirsuta*, *pubescens*, *rhætica*, *pedemontana*, *œnensis*, and *Dinyana*, charming little species from the Alps. All thrive under the same conditions as *P. villosa*.

P. viscosa.—A plant of the granite soils of the Alps and Pyrenees, and so near *P. villosa* that the two are often regarded as one, though kept distinct by botanists. This differs mainly in the longer tube of the flowers and their longer stems, though there are other small differences. It develops a thick stem of several inches high, often branched like a tiny shrub. The leaves are large, covered with hairs, and fringed at the edges, and the flowers, which come in large bunches during April and May, are of rosy-lilac with a white centre. The plant is easily grown in peaty soil between sandstone rocks, but it objects to chalk or strong limestone soils. It has been freely used in crossing with other kinds, especially *P. auricula*. *P. Bernina* is a beautiful wild cross with *P. hirsuta*, and bears large rosy-purple flowers. Crossed with *P. integrifolia*, it has given *P. muretiana*, a fine hybrid, in which its own influence is apparent in the many-flowered heads of rich deep purple. One of the

many crosses with *P. auricula* has given *P. Peyritschii*, perhaps better known as *P. viscosa major*, a showy little plant with large crimson-purple flowers. *P. commutata* comes near *P. viscosa*, but its flowers are bright clear rose, and carried on longer stems. There are many other wild and garden forms more or less nearly related to it.

P. vulgaris (*Common Primrose*).—Of all the Primula family, none excel our native Primroses in loveliness, and they are the earliest of all to flower. The Gentians and dwarf Primulas do no more for the Alps than these charming wild flowers do for our hedgerows, banks, groves, open woods, and the borders of our fields and streams. In some places the Common Primrose varies a good deal

are readily increased by division of the offsets, or by seeds, which are produced in abundance. In woods and shrubberies the plants will take care of themselves, a quality which adds to their charms, but in the flower garden some system of culture must be pursued. The following very simple one will secure the best results, both as to the production of vigorous free-blooming plants and an abundant stock. In autumn, after the summer occupants of the flower-beds are faded and removed, the Primroses and other spring flowers are planted in beds as the taste of the grower may direct. About the middle or the end of May it will be time to think of preparing the beds for their summer ornaments, and by that time also the Primroses will have

An Alpine Primrose.

in colour. Some of the prettiest of the wild varieties are worthy of being introduced into shrubberies and semi-wild places; and so long as lovely colour and fragrance are esteemed in the spring flower garden, some of the more distinctly toned varieties should be sought after. Varied hues of yellow, red, rose, lilac, bluish-violet, lilac-rose, and white have already been raised, and if the good single varieties become popular, striking and desirable variations from the commoner types will be much more likely to be preserved. For shrubberies and woodland walks single varieties will always prove more useful than the old double kinds, because more vigorous and more easily increased. All the varieties

begun to fade after yielding a long and abundant bloom. Then take them up, divide the offsets singly, doing this, if the day be sunny, in a shed or in a shady position. New or scarce varieties, or varieties of which a large stock is required, may be divided into the smallest offsets, but where much increase is not desired, the plants should be simply parted sufficiently to allow of their healthy development. As soon as they are parted, plant them in the kitchen-garden or in some by-place. The more rich and moist the soil the better they will grow, especially if the position be a half-shady one. The alleys between Asparagus beds would do admirably if more convenient positions cannot be found. If the weather be very

bright, it would be desirable, for a few days after planting, to shade the plants by spreading boughs or old garden mats over them, and they should at this time be thoroughly watered. If the plants are strong and regular in their development, they should be planted in lines, 10 or 12 in. apart each way, but if the offsets are small they should be closer in the lines. By autumn they will make fine plants, and may then be taken up; as much of the root as will come up with ordinary care, but not necessarily any soil or ball, being preserved, and the plants should be transferred to beds in the flower garden or the pleasure-ground. The varieties of single coloured Primroses are so numerous that it seems a folly to name them, but a few of the most distinct of those propagated by division have received names. Among these may be mentioned: Belvedere, with delicate rosy-lilac flowers, orange and white at the centre; Cecil Rhodes, dark ruby red, the best of its class; Evelyn Arkwright, only differing from the wild kind in its immense flowers, 2 to 2½ in. across; Miss Massey, dark maroon-crimson with a golden eye; Munstead Early White, white with a golden centre, early in flower; Novelty, large flowers of a pretty tender green shade; Oakwood Blue, a good blue kind, which in turn has given other shades known as Wilson's New Blue Primroses; Rosy Gem, a fine shade of rose. Such good old kinds as Fairy Queen, Auriculæflora, Altaica, Crimson Banner, and Violetta seem to have almost disappeared. The propagation of these kinds, as well as of all the perennial Primroses, is slow, unless they can be reproduced true from seed. A seedling may produce two others the first year after blooming, and these may produce six or eight the next year, so that it takes several years to raise a hundred plants, and some patience must therefore be exercised before the newest forms can be circulated largely.

DOUBLE VARIETIES.—The forms most precious for the garden are the beautiful old double kinds. No sweeter or prettier flowers ever warmed into beauty under a northern sun than their richly and delicately-tinted little rosettes. Once they were in every garden, but the day came when, like many hardy flowers, they were cast aside to make way for gaudier things; now, however, people are beginning to grow them again, and are inquiring for old and half-lost kinds which they used to know long ago. The best known and most distinctly marked are the double lilac, double purple, double sulphur,

double white, double crimson, and double red. These and several allied forms are occasionally honoured with Latin names descriptive of their shades of colour. In catalogues will be found the following: *Primula vulgaris alba plena*, *lilacina plena*, *purpurea plena*, *rosea plena*, *rubra plena*, *sulphurea plena*; but we had better speak of them in plain English and confine the Latin term to the species. The double kinds are slower-growing and more delicate than the single ones, and require more care, and the development of healthy foliage after flowering should be the object of those who wish to succeed with them. In the double kinds the deeper the hue the less robust the plant. The rich crimsons and the deep purples are usually most difficult to cultivate, but in the extreme north, where the climate is at once moist and temperate, they grow almost with luxuriance. The climate of Ireland also favours them, but in the south and midland districts it is necessary to give them shade and abundant moisture during summer, and in winter the protection of glass against the continued frosts and rains. The white, lilac, and sulphur kinds, on the other hand, are very hardy, and, if established, appear to stand our climate well.

Shelter and partial shade are the conditions chiefly necessary to their successful culture. Open woods, copses, and half-shady places are the favourite haunts of the wild Primrose. In them, in addition to the shade, it enjoys the shelter, not merely of the tall objects around, but also of the long Grass and herbaceous plants growing near. Taking into account the moisture consequent upon such companionship, let these facts guide us in the culture of the double kinds. It will readily be seen that a plant exposed to the full sun on a naked border is under conditions very different from one in a thin wood; the excessive evaporation and the searing away of the leaves by the wind would be quite sufficient to account for its failure.

It is therefore desirable to plant the beautiful double Primroses in slightly shaded and sheltered positions, in borders of light rich vegetable soil, and, to keep the earth from being dried up too rapidly, spreading cocoa-fibre or leaf-mould on it in summer. It would be better to plant them in some favourite spot permanently than to change them repeatedly from place to place. Indeed, they ought never to be disturbed except for division. They may be used as bedding plants, if treated as recommended for single

varieties, but they are not then so useful or so pretty as when in good colonies or large informal groups. Double Primroses well grown, and the same kinds barely existing, are such different objects that nobody will grudge them the trifling attention necessary to their perfect development. Occasionally they may be seen flourishing in some old country garden, where they find a home more congenial than the fashionable flower garden. Division of the roots.

The Rev. P. Mules, a most successful grower of the Double Primroses, writes to the *Field* about them: "Unless these flowers have been seen at their best, and that can only be under the favourable conditions of suitable soil, pure air, and

occasionally throw up corymbose heads, polyanthus-wise; but this is not uncommon with many Primroses, and is the result of high cultivation, and occurs towards the end of the flowering period. The reason that the rarer varieties are difficult and expensive to obtain is because their culture is not understood, and stocks once allowed to die out can scarcely be replaced. Their reproduction, as they have no seed, is impossible, and one has to depend on division alone for their increase. Like all perennials, there is a tendency to natural deterioration, and unless they be kept in the highest vigour by change of soil and locality and breaking up, nothing can keep them.

"The secret of growing double Prim-

Primrose Munstead Early White.

great experience in culture, no one can imagine their beauty. I have had a bed of fifty plants of the double white carrying at one time 4,000 fully expanded blooms, averaging $1\frac{3}{4}$ in. in diameter. So also Pompadour, with blooms of still larger size, which has flowered without intermission since October, throwing its rich crimson blossoms well above the succulent green foliage, and presenting a fine picture of form and colour. Then we have double rose, double mauve, double dark lilac, double cerise, double sulphur, double yellow, and double rose white mottled. Besides these are some bright crimsons, making a combination of colours which lend themselves to many varieties of garden and house decoration. Some—the sulphur and the dark lilac—

roses differs little, if at all, from that of the more delicate perennials, two points being specially to be observed—protection from cutting and strong winds, and that they be grown together in beds massed, not dotted through the herbaceous border. Beyond this only such knowledge is required as can be obtained by experience in the management of this class of plants."

THE POLYANTHUS.—Though the origin of this beautiful old-fashioned flower is somewhat obscure, it is considered to be a form of the common *P. vulgaris* with the stems developed. Polyanthuses are not at all sufficiently appreciated, considering the wonderful array of beauty they present, and that for rich and charmingly inlaid colouring they surpass all other flowers of our spring gardens.

It would require pages to describe even the good varieties. At one time the Polyanthus was highly esteemed as a florists' flower, and none in existence better deserved the attention and regard of amateurs ; but nearly all the choice old kinds are now lost, and very few florists really pay any attention to the flower. In consequence, however, of the great facility with which varieties are raised from seed, nobody need be without handsome kinds, especially as raising them will prove interesting amusement for the amateur. The rules of the florists are in this case of a little more value than usual, and Maddock, in the following passage, describes a very beautiful varia-

scarcely to be distinguished. In short, the Polyanthus should possess a graceful elegance of form, a richness of colouring, and symmetry of parts not to be found united in any other flower."* Here, however, as in most similar cases, the grower will do well to select the most beautiful of his own raising, and not be tied by any conventional rules.

As to the capabilities of the various kinds of Polyanthus, it would be difficult to name any hardy flower which is so generally useful. The finer varieties are worthy of a place in the rock-garden amidst the choicest alpine plants, while the showier ones are suitable for spring bedding. Numbers of vigorous varieties

"Bunch" Primroses.

tion of the flower : "The ground colour is most to be admired when shaded with dark rich crimson resembling velvet, with one mark or stripe in the centre of each division of the limb, bold and distinct from the edging down to the eye, where it should terminate in a fine point." He further says : "The pips should be large, quite flat, and as round as may be consistent with their peculiarly beautiful figure, which is circular, excepting those small indentures between each division of the limb, which divide it into five or six heart-like segments. The edging should resemble a bright gold lace, bold, clear, and distinct, and so nearly of the same colour as the eye and stripes as

will form the most appropriate ornaments that can be massed by shady walks in pleasure-grounds, and some may be employed as edgings. Many varieties are worthy of being naturalised abundantly in pleasure-grounds and along wood walks, though the enthusiastic florist grows the finer ones in pots. Polyanthuses are scarcely to be recommended for using in masses in the spring garden as much as the finer varieties of the Primrose, since in order to be admired they require to be seen rather closely ; but wherever flowers are placed for their beauty rather than their effect as colour, Polyanthuses are invaluable, and they should be seen in strong

colonies in shrubberies and borders. Their cultivation is almost as simple as that of meadow Grass. They grow vigorously in almost any garden soil, but best in a soil that is somewhat rich and moist; and though they thrive in the full sun, they best enjoy a partially shaded and sheltered position, and are somewhat impatient of heat and drought. When grown for bedding, they are, like the Primroses, removed in early summer from the flower garden to the kitchen-garden or nursery, and replaced there when the summer bedding plants have passed away.

There have been lately raised some varieties, a good deal larger in their parts than the type, and these are very easy of culture and very vigorous. There are, however, very few, if any, double varieties, but some varieties are curious and interesting from the duplication of the calyx or corolla; these are popularly known as "hose-in-hose" Polyanthus. They grow with the same facility as the others. The beautiful Gold-laced Polyanthus are much prized. The best are those raised years ago, such as Cheshire Favourite, George the Fourth, Formosa, Duke of Wellington, Black Prince, Lancashire Hero, and others, and they are mentioned in most florists' catalogues of hardy plants. The common Oxlip is a hybrid more or less intermediate between the Cowslip and the Primrose. It differs from the true or Bardfield Oxlip (*P. elatior*) in bearing much larger and brighter flowers with longer foot-stalks, and in having in the throat of the flower the five bosses characteristic of the Primrose and the Cowslip. Some of its varieties approach the Cowslip and some the Primrose in character. The treatment that suits Polyanthus and Primroses will suit the Oxlip. *P. suaveolens* is a variety of the Cowslip found in many parts of the Continent, but is not sufficiently distinct or ornamental to merit cultivation. *P. elatior*, the true Oxlip, is not very ornamental, the flowers being of a pale buff-yellow, and readily distinguished by their funnel-shaped corolla, which is quite destitute of the bosses present in the Primrose and Cowslip. It grows on clay soils in woods and meadows in the eastern counties, particularly in Essex, Suffolk, and Cambridgeshire. It is of easy culture in collections of interesting plants, but is neither distinct nor ornamental enough for the garden. It is also known as the Bardfield Oxlip. The blue Polyanthus (*P. e. cæruleus*) is a singularly handsome

form of it with slaty-blue flowers, and this, though now rare in gardens, is well worth growing.

CULTURE.—Where soil is prepared for the choicer varieties, any good loam with a free addition of sand, well-rotted leaf-mould, and decomposed cow-manure will form an admirable compost. The Polyanthus may easily be raised from seed, which should be sown as soon as ripe, say about the end of June. It will also grow well if the seed is not sown till the following spring, but by sowing immediately nearly a year is gained. With choice kinds it is better to sow the seed in pans or rough wooden boxes, but for ordinary purposes a bed of finely-pulverised soil in the open air will suffice. Sowings in early spring are better made in pans or rough shallow boxes, placed in cold frames, as time will be gained thereby. Do not lose time by allowing the seed to lie idle in the drawer all the autumn and winter, but sow it as soon as it is ripe, and have strong plants in the following spring.

Some species:—*Primula alba*, S. Europe; *algida*, As. Min.; *Allionii*, W. Europe; *amethystina*, China; *anæna*, Persia; *angustifolia*, N.W. Amer.; *aucherii*, Arabia; *auricula*, Europe; *auriculata*, As. Minor; *bella*, China; *bellidifolia*, N. India; *bracteata*, China; *bullata*, do.; *calliantha*, do.; *capitata*, Himal.; *capitellata*, As. Minor, Persia; *carniolica*, Austria; *cernua*, China; *ciliata*, Alps; *Clarkei*, N. India; *Clusiana*, Europe; *cordifolia*, Hungary; *cortusoides*, Siberia, Japan; *cuneifolia*, Arctic regions; *daonensis*, W. Europe; *darialica*, Caucas.; *davurica*, Dahurica; *Delavayi*, China; *denticulata*, N. India; *Dickiana*, do.; *dolomitica*, W. Europe; *dryadifolia*, China; *egalikensis*, Arct. Amer.; *elatior*, Europe; *elliptica*, Himal.; *elongata*, do.; *Elwesiana*, do.; *erosa*, do.; *farinifolia*, Caucas.; *farinosa*, N. and W. Eur.; *Fedtschenkoi*, Turkes.; *filipes*, N. India; *fimbriata*, N. India; *flava*, China; *Flarkiana*, Alp. N. Europe; *floribunda*, N. India; *frondosa*, Thracia; *Gambeliana*, N. India; *geraniifolia*, do.; *gigantea*, Siberia; *glabra*, N. India; *glacialis*, China; *glaucescens*, W. Europe; *glutinosa*, do.; *grandis*, Caucas.; *Hampeana*, Europe; *heterochroma*, Persia; *Heydei*, Himal.; *hirsuta*, N. India; *Hookeri*, Himal.; *imperialis*, Java; *integrifolia*, W. Europe; *involuta*, Europe, N. Asia; *japonica*, Japan; *Jesoaana*, do.; *Kaufmanniana*, Central Asia; *Kingii*, N. India; *Kisoana*, Jap.; *Kitaibeliana*, Europe; *lasioptala*, do.; *Listeri*, N. India; *longiflora*, Europe; *luteola*, Caucas.; *macrocarpa*, Japan; *Magellanica*, Magellans; *marginata*, Europe; *maxima* Maximowiczii, N. China; *megasæfolia*, As. Min.; *minima*, Central Europe; *minutissima*, N. India; *mollis*, do.; *moschata muscoides*, Himal.; *nivalis*, Asia and N. Amer.; *obconica*, China; *obtusifolia*, N. India; *officinalis*, Europe and As. Min.; *Olgae*, Turkest.; *pachyscapa*, Palinuri, Italy; *Parryi*, N.W. Amer.; *pedemontana*, C. Europe; *petiolaris*, N. India; *pinnatifida*, China; *prolifera*, N. India; *pulchra*, do.; *pumilio*, Thibet; *pusilla*, N. India; *Reidii*, Jap.; *reptans*, N. India; *reticulata*, do.; *rosea*, do.; *rotundifolia*, N. India; *Rusbyi*, N. Mexico; *sapphirina*, N. India; *secundiflora*, China; *septemloba*, do.; *serratifolia*, do.; *sibirica*, Asia and Arct. Amer.; *Sibthorpi*, Spain and Greece; *Sieboldi*, Jap.; *Sikkimensis*, N. India; *simplicissima*, sinensis, China; *soldanelloides*, N. India; *sonchifolia*, China; *spectabilis*, Alps; *spicata*, China; *stenocalyx*, do.; *Stirtoniana*, Himal.; *stricta*, N. Europe; *Stuartii*, N. India; *suffrutescens*, Calif.; *tenella*, N. India; *tyrolensis*, Alps; *uniflora*, N. India; *urticifolia*, China; *vaginata*, N. India; *verticillata*, Arabia; *villosa*, C. Europe; *viscosa*, Europe; *vulgaris*, Europe; *Wattii*, N. India; *Wulfeniana*, Europe; *yunnanensis*, China.

PRUMNOPITYS ELEGANS (*Plum-fruited Yew*).—An evergreen tree from Chili, allied to the common Yew, of dense growth and cheerful green colour. Though it grows slowly, especially in height, it is hardy over a great part of Britain, easily suited as to soils, and readily transplanted. It is an excellent lawn tree, thriving in towns better than most conifers; it also bears cutting without injury, though naturally of a fine pyramidal habit. In its own land it reaches a height of 50 feet, but our best trees do not yet exceed one half this height. The leaves are flat and narrow, bright green above and somewhat silvery beneath, while the reddish or purple fruits to which the tree owes its name are nearly as large as a cherry and of similar structure—a hard inner kernel wrapped in fleshy pulp with a tough outer rind. In severe winters young trees are injured or even killed, but when well established it endures severe cold. It is an excellent seaside shrub, well adapted for hedges and screens. Increase by imported seeds or cuttings, which root readily in sandy soil, under a handlight in autumn. Seed should always be preferred, increase by cuttings tending to spoil the tree by encouraging its way of growing outwards instead of up. Syn. *Podocarpus andina*.

PRUNELLA (*Large Self-heal*).—This handsome and vigorous plant *P. grandiflora* is readily distinguished by its large flowers from the weedy British Self-heal (*P. vulgaris*). There is a white and a purple variety, both handsome plants, thriving in almost any soil, but preferring one moist and free, and a somewhat shaded position. In winter they are apt to go off on the London clay, at least on the level ground, but are well suited for mixed borders, banks, or copses. The variety *laciniata* has deeply-cut leaves. Europe. Flowering in summer. *P. pyrenaica* (Pyrenean Self-heal) is allied to the preceding, and considered a variety of it, thriving with the same treatment, and growing about 10 in. high, with larger violet-purple flowers. *P. Webbiana* is a good garden form making a thick green carpet, with spikes of handsome rosy-purple flowers. Labiatae. Syn. *Brunella*.

PRUNUS (*Plum, Almond, Peach, Apricot, Cherry, Bird Cherry, Cherry-Laurel*).—Bentham and Hooker in the "Genera Plantarum" united under *Prunus* the whole of the species which had at an earlier date been known under one or other of the following names: *Amygdalus*, *Persica*, *Armeniaca*, *Prunus*, *Cerasus*,

Padus, and *Lauro-Cerasus*. This arrangement, which was necessary from the fact that no well-defined line could be drawn between them, has given rise to some confusion. And we may see in consequence two Apricots, maybe, growing side by side, the older one called *Armeniaca*, the newer one *Prunus*. In the following notes the whole of the species dealt with are considered as *Prunus* and are arranged alphabetically; and some, not of much garden value, or those not hardy in Britain, are excluded. But it will be well perhaps to first show the section to which each belongs.

THE ALMONDS AND PEACHES.—*AMYGDALUS*.

P. Amygdalus, *P. Davidiana*, *P. incana*, *P. nana*, *P. orientalis*, *P. Persica*, *P. Simoni*.

THE APRICOTS.—*ARMENIACA*.

P. Armeniaca, *P. brigantiaca*, *P. dasycarpa*, *P. Mume*, *P. sibirica*, *P. tomentosa*, *P. triloba*.

THE PLUMS.—*PRUNUS*.

P. alleghaniensis, *P. americana*, *P. angustifolia*, *P. cerasifera*, *P. cerasifera* var. *atro-purpurea*, *P. communis*, *P. communis* var. *pruneauliana*, *P. divaricata*, *P. insititia*, *P. spinosa*, *P. triflora*, *P. Watsoni*.

THE CHERRIES.—*CERASUS*.

P. acida, *P. Avium*, *P. Besseyi*, *P. Cerasus*, *P. Chamaecerasus*, *P. humilis*, *P. Jacquemonti*, *P. japonica*, *P. maritima*, *P. Maximowiczii*, *P. pendula*, *P. pennsylvanica*, *P. prostrata*, *P. pseudo-Cerasus*, *P. Puddum*, *P. pumila*, *P. serrulata*, *P. subhirtella*, *P. tomentosa*.

THE BIRD CHERRIES.—*PADUS*.

P. Capollin, *P. cornuta*, *P. demissa*, *P. Maackii*, *P. Mahaleb*, *P. mollis*, *P. Padus*, *P. serotina*, *P. virginiana*.

THE CHERRY-LAURELS.—*LAUROCERASUS*.

P. ilicifolia, *P. Laurocerasus*, *P. lusitanica*.

P. ACIDA.—One of the species from which the Cherries of gardens have been derived; small, dark-green, shining leaves of firm texture and nearly glabrous. A variety is *semperflorens*, of drooping habit and bearing white flowers (sometimes double) from May to September, and often carrying flowers and fruit. A dwarf tree, usually grafted standard high.

P. ALLEGHANIENSIS.—Usually a shrub from 4 feet to 6 feet high, but sometimes a small tree three or four times that height. The flowers, $\frac{1}{2}$ inch across, at first pure white changing to pink, are followed by handsome fruits, which are blue-purple, nearly globular, and valued for preserving. Pennsylvania.

P. AMERICANA (wild Red Plum).—A handsome tree found in North America to the east of the Rocky Mountains, and one of the hardiest. It is a tree 20 feet or more high, of graceful habit, bearing at the end of April or the beginning of May many pure snowy white blossoms; fruits red or yellowish-red, the species being cultivated in the United States on their account. The Canada Plum, *P. nigra*, a form of this, is yet more showy and earlier in flower, but runs into *americana* through intermediate forms.

P. AMYGDALUS (the Common Almond).—One of the earliest of trees to bloom, and reaching its best before hardy trees have done more than show signs of reviving life. There

are several named varieties in cultivation : *Amara* (Bitter Almond)—flowers slightly larger than those of the common Almond, petals almost white towards the tips, deepening into rose at the base. *Dulcis* (Sweet Almond)—This has leaves of a grey-green colour, and is one of the earliest to flower. *Macrocarpa*—This is a strong-growing tree with larger, broader leaves than the type ; the flowers too, which are rose-tinted white, are larger. This tree is hardy and vigorous in our country. There are also double-flowered and pendulous varieties cultivated under names denoting these characters, and pretty dwarf forms, pink and white, known as *nanus*, and charming in the rock-garden. Syn. *Amygdalus communis*.

P. ANGUSTIFOLIA (Chickasaw Plum).—In Britain this is a shrub 4 to 6 feet high, but in America it is a small tree 20 to 25 feet high ; the leaves 3 inches long ; flowers in clusters of one or two pairs, white, sometimes with a creamy tint, one-third of an inch in diameter. Several excellent varieties of this Plum are grown in the United States for their bright red fruits, and there are variegated forms cultivated in Europe. *P. Watsoni* (Sand Plum) is a form of this, reaching about 6 ft. in height, with twiggy, much-spined branches and abundant sweet white flowers in May. The orange-coloured fruits are small, but much valued in the western states of America.

P. ARMENIACA (Common Apricot).—The wild bush of the cultivated Apricot flowers in February or early March, its blossoms being usually of a pinkish-white, but there are varieties with deeper-coloured flowers, and one in which they are double. N. China.

P. AVIUM (the Gean).—Wild in the British Isles, generally as a tree 20 feet to 30 feet high. This has long been grown as an ornamental tree, and there are three or four good varieties. None is more beautiful than the double form, whose pure white flowers are borne in spring. The var. *decumana* is a striking tree with large leaves, some of which measure 6 inches to 8 inches in length. The var. *nana* is a curious dwarf plant ; var. *laciniata* has cut leaves ; and var. *pendula* is of weeping habit. The fruit is sweet or bitter (not acid).

P. BESSEYI (Western Sand Cherry).—A fine dwarf form of *P. pumila*, the wild Cherry of the Rocky Mountains. It is as yet little known in our gardens, but will make a pretty bushy shrub for dry places in poor soil. The foliage is an ashen-grey, the flowers white in clusters of two to five, and the fruits cherry-red on short stalks.

P. CAPOLLIN.—A native of Mexico and southwards, where it ranks as a fruit tree ; leaves are of a dark glossy green, and hanging loose and pendent, as in some Willows ; flowers in erect racemes, white ; fruits round, dark red and like small Cherries ; a tree 30 feet to 35 feet high. This is now regarded as a willow-leaved form of *P. serotina*, the wild Black Cherry of America. In France it ripens seed.

Prunus Davidia

P. CERASIFERA (the Myrobalan).—The showiest of all the Plums, flowering whilst the leaf-buds are as yet mere tips of green, the flowers three-quarters of an inch to 1 inch in diameter, in clusters on the short twigs; tree round-headed and of spreading habit, 20 feet high. *Prunus Pissardi* is a variety of this species (var. *atro-purpurea*, the purple Myrobalan), a variety of Persian origin. Its white blossoms are followed by the beautiful red-purple young leaves, which assume their richest tints when just opening and in late summer and autumn. It fruits in favourable seasons, the fruits being coloured like the leaves, even when young.

P. CERASUS (the wild Cherry).—A native of Britain, and usually a small tree or even a

Cerasus Watereri.

shrub, bearing its pure white flowers in spring. It is the double-flowered varieties, however, that give the species its chief value in gardens. A very old and beautiful Cherry is the variety known as *persiciflora*, the flowers of which are double and tinged with rose. One of more recent origin is *Rhexi fl.-pl.*, whose pure white, long-stalked flowers, borne in May, hang from the branches in great abundance. It is a small tree, and one of the prettiest of all the Cherries. Syn. *Cerasus vulgaris*.

P. CHAMÆCERASUS (Siberian Cherry).—A dwarf Cherry, the blossoms white, three-quarters of an inch in diameter, appearing in May. One form of this species is represented

by a tree 10 feet or more high at Kew, but as a rule it is only half as high. It is naturally a small rounded shrub of neat, close habit, but is mostly grown as a standard. There is a drooping variety (*pendula*), and another with variegated foliage.

P. COMMUNIS (Common Plum).—This species is believed to be the source from which the cultivated Plums have been derived, although in a less degree the Bullace (*P. insititia*) and the Sloe (*P. spinosa*) have each most probably a share in their origin. It has, however, some value as an ornamental tree, and reaches a height of 15 feet to 20 feet, the flowers white. Of the varieties cultivated as ornamental trees, var. *prunecauliana* is perhaps the most beautiful. It bears in April many white flowers, not large, but so thickly borne as to cover the twigs. There is also a double-flowered form of this variety.

P. CORNUTA (Himalayan Bird Cherry).—This is the Himalayan form of our Bird Cherry. Its leaves are as a rule larger, broader, and of stouter texture than those of our British trees; they are also distinct in having red stalks.

P. DAVIDIANA.—This is the earliest of all the Peaches to bloom, in mild winters as early as January. Its branches are of somewhat erect growth, the flowers individually 1 inch across and completely covering the shoots made the preceding year, which are frequently 2 feet long. The petals in one form (*alba*) are of a pure white; in the other (*rubra*) pink, but not so freely borne.

P. INSITITIA (the Bullace).—A small tree, often wild in hedgerows, which bears its white flowers in pairs during March and April; its black fruits are ripe in October. There are several varieties, amongst which may be mentioned that with double flowers, another with yellowish-white fruits, and a third with red fruits.

P. JACQUEMONTI.—A pretty shrub, native of Northern India, where it is found at altitudes from 6,000 to 12,000 ft., with flowers of a bright rosy pink, about half an inch across, and borne in great abundance on the growths of the previous summer. The Chinese *P. humilis* is nearly related to this.

P. JAPONICA (Double Chinese Plum).—This is one of the most lovely of spring-flowering shrubs. The single form probably not in cultivation; the double one has white flowers with a more or less rosy tint, some, indeed, of a distinct rose colour. The flowers, each about 1½ in. across, are borne thickly on short stalks from the slender shoots of the previous year. It can be struck from cuttings, but it is better to layer the shoots of an old plant. In that way nice flowering plants can be obtained in two years. Grafted plants neither grow nor flower so well, and a constant watch has to be kept for suckers. Syn. *P. sinensis*.

P. LAURO-CERASUS (Cherry Laurel).—A noble evergreen tree often overplanted and misused, and where this is so Cherry Laurels have to be continually cut back to keep them

within bounds, and their hungry roots prevent the cultivation of better things anywhere near. Several varieties are in cultivation, the best of which are *colchica*, *caucasica*, and *rotundifolia*, all with broader, larger leaves than the common Laurel and preferable to it on account of their hardier constitution. *Salicifolia*, *angustifolia*, and *parvifolia* are narrow-leaved varieties, the last being often grown under the name of *Hartoghia capensis*. A new variety from the Shipka Pass (*shipkaensis*) is said to be the hardiest of all.

P. LUSITANICA (Portugal Laurel).—A noble evergreen rarely seen in its full beauty, because it is nearly always choked with other things in the shrubbery. It is as a group, and allowed

Prunus Japonica.

full freedom of growth, that its value both as a winter and summer shrub is seen, though like the Cherry Laurel it is often over-planted. Var. *myrtifolia* has smaller leaves than the common forms, and its branches are of more erect growth. Being dwarfed, it is also better suited for shrubberies. Var. *azorica* has much larger leaves, and fewer but larger flowers on the raceme. Spain, Portugal, and the Azores.

P. MAHALEB (the Mahaleb).—None of the European Cherries surpass this in its springtide beauty. The Mahaleb is a native of Central and Southern Europe, perfectly hardy in England. Reaching a height of 20 ft. to 30 ft., of free graceful growth; especially is this the case with the variety *pendula*, which, although not strictly weeping, is of looser, laxer

habit than the type. The leaves are each 2 in. long, and the pure white flowers appear in rather flat racemes in May.

P. MARITIMA (American Beach Plum).—A very handsome bushy shrub, new to British gardens. Its beauty is the great profusion of its early flowers, but the purple or yellow fruits, covered with a dense bloom, are handsome and edible, though rather small. A good kind for sandy shore lands.

P. MUME.—Under the hands of the Japanese cultivators this has varied into numerous forms, and there are now at Kew varieties with flowers red and white, single and double, as well as one of pendulous habit. The wood resembles that of the common Apricot. The plant is leafless at the time of flowering. It has been in cultivation for some years both here and on the Continent, but disguised under other names, one of which is *Prunus Myrobalana fl.-roseis*. Corea.

P. NANA (the dwarf Almond).—This, a native of Southern Russia, is one of the dwarfest of the Almonds, being from 2 ft. to 5 ft. high. It flowers during March and April when the leaf-buds are only beginning to burst, the flowers being of a lively rose colour and about three-quarters of an inch across. The leaves are narrow, smooth, dark green, and glossy. It is a charming shrub, and can be easily and quickly propagated by layering. The species will thrive in a dry situation better than most Almonds. There is a pretty double form.

P. PADUS (the Bird Cherry).—This beautiful tree, a native of Britain as well as of North and Central Europe and Asia, is often 40 ft. high, the flowers borne in drooping racemes, in the commonest form being 4 in. to 6 in. long. There are varieties, however, finer both in the flowers and racemes. A double-flowered variety (*flore-pleno*) recently obtained from the Continent is the most striking I have seen. A variety also worth special mention is the Manchurian one (*P. Maackii*), with fine racemes, but chiefly notable for coming into flower early in April, and therefore long before our Bird Cherry is showing a bloom. There are other named varieties in cultivation, the most distinct being var. *stricta*, with quite erect racemes. Var. *aucubæfolia* has its foliage mottled with yellow. The common Bird Cherry is a tree rather for the park and woodland than the garden proper, but the Manchurian and double-flowered varieties fully deserve a place among flowering trees.

P. PENDULA (Rose-bud Cherry).—A beautiful Japanese Cherry and one of the earliest to come into flower, commencing usually towards the end of March. Its pendent growth has led to its being commonly worked on stocks 5 ft. to 6 ft. high, but it comes true from seed. The leaves are much like those of the common Cherry, the flowers of a lovely shade of soft rose and borne in profusion. In the United States, where the summers are much hotter, it thrives better than in England, and it should, if possible, be planted in a sunny spot sheltered

from the north and east. Syn. *Cerasus pendula*.

P. PERSICA (the Peach).—Although neither so free-growing nor so hardy as the Almond, the Peach in various forms is beautiful, and in positions sheltered from the north and east ought to be planted freely. There is now a number of varieties at the service of the planter, chiefly single and double forms with white or red flowers. One of the best of these is *camellieiflora*, with large single or double red flowers. There is one also with purple foliage known as *foliis rubris*, this colour extending also to the fruit. The many double varieties it is not necessary to specify; they are known by descriptive names, like *flore albo pleno*. These unfortunately are rarely seen well grown.

P. PROSTRATA (Mountain Cherry).—A rare species, and one of the most lovely of the dwarf Cherries, a native of the mountains of the Levant, and, although not strictly prostrate (at least in cultivation), is a low spreading bush, the long, slender branches arching outwards and downwards to the ground. The flowers, borne on very short stalks, are of a beautiful lively shade of rose, are half an inch to three-quarters of an inch across, and so plentiful as to almost hide the branches.

P. PSEUDO-CERASUS (the Japanese Cherry).—This is the tree whose flowering marks one of the epochs of the year in Japan. In the forests of North Japan this species becomes a large timber tree, but in England it is not often seen above 20 feet high, and it is the double-flowered varieties that are cultivated in England. They are of various shades of rosy white, and are known under such names as *Cerasus Watereri*, *C. Sieboldi*, &c. More so perhaps than any other are these double-flowered Cherries worth extensive planting, never failing to flower, being of surpassing beauty and perfectly hardy. They should be grown on a cool, moist bottom, and the effect they produce in spring is all the greater if room can be afforded for a grove of a dozen or so trees with a backing of Holly or other evergreen.

P. SERRULATA.—This Cherry, which is a native of Japan, can be recognised by its peculiar mode of branching. The main stem is erect for a few feet, but then branches off almost horizontally into three or four divisions, and henceforth ceases to send up a defined lead. It is picturesque, representing one of the modes of growth we have come to regard as essentially typical of Japanese tree vegetation, and its rosy-white double flowers come about a fortnight later than in the common Japanese Cherry. The single-flowered form is not in cultivation.

P. SIBIRICA (Siberian Apricot).—A pretty little shrub now becoming better known in gardens, where it is valued for its early white or pink flowers carried in profusion.

P. SIMONI.—This has leaves of about the same size as the common Almond, but the tree itself is of more erect habit and frequently resembles the Lombardy Poplar in form of growth. The flowers are white, and appearing

in February and March. Its fruit is deep purple and ripens early. China.

P. SPINOSA FLORE-PLENO (the double Sloe or Blackthorn).—This flowers at the same time as the Sloe, its blossoms white, about half an inch in diameter and not perfectly double, the centre of the flower containing a cluster of stamens. The flowers are thickly crowded on the short spiny branches, the black colour of which serves to show off more vividly the beauty of the flowers. It is one of the most charming of March flowering shrubs. There is a neat garden form in which the leaves are a dark purple colour, like that of *P. Pissardii*.

P. TOMENTOSA.—A pretty and very distinct little Cherry from China and Manchuria, its dense crown unlike other kinds, and of beautiful effect. The pink flowers come just before the hairy leaves, solitary or in pairs, and with very short stalks. The round fruits, set close against the branches, are a pretty bright red.

P. TRIFLORA (Japanese Plum).—More commonly grown in American gardens than with us, and mainly valued for its fruits. These are not equal to our orchard plums, but are very abundant, of fine appearance, and keep well, and the trees are singularly free of disease.

P. TRILOBA FL.-PL.—This, perhaps the most lovely of all the dwarf Prunus, is a native of China and was introduced by Fortune. The flowers are at their best in early April, and each one measures $1\frac{1}{2}$ in. to 2 in. in diameter. On first opening they are of a lovely shade of delicate rose, changing with age to an almost pure white. This species is perfectly hardy, and will thrive as a bush in the open, although not so well as on a wall. The above remarks refer to the double-flowered variety, which for forty years has been in our gardens. Within the last year or two, however, the single-flowered wild type has been introduced. It has smaller rosy white flowers and leaves of the same shape as Fortune's plant, but smaller.—W. J. B.

Pseudotsuga. See PICEA.

PTERIS (*Brake*).—The Bracken Fern (*P. aquilina*), the only thoroughly hardy species of this genus, is generally so common as not to need cultivation. If, however, anyone wishes to introduce it where it is scarce, he should bear in mind that to transplant it successfully large sods containing the strong creeping roots must be dug up, and planted in light soil; if peaty, so much the better. In very mild localities such species as *P. cretica* and the elegant *P. scaberula*, from New Zealand, sometimes thrive in sheltered nooks.

PTEROCARYA (*Winged Nut*).—Walnut-like trees of fine stately form of leaf and habit, *P. caucasica* being hardy in our country, at least in the southern and warmer parts. There are good trees at

Claremont and other places, and one in Hyde Park. The foliage is very glossy and large. The tree is a vigorous grower, and should not be planted near shrubs or other plants we wish to have a fair chance. The trees are natives of temperate

Pterocarya caucasica.

countries in Asia, and their number is likely to be added to as soon as more of China, Mongolia, and countries near are opened up. The Caucasian is the best known species—others are: *rhoifolia* Japan, *stenoptera* China, and *Delavayi* Yun-Nan.

PTEROCEPHALUS.—*P. Parnassi* is a Scabious-like plant of dwarf compact growth, forming a dense rounded mass of

Ptercephalus Parnassi.

hoary foliage which in summer is studded with mauve-coloured flower-heads. It is a most desirable plant, thriving best in light warm soils, and is suited either for

the rock-garden or the ordinary border. Syn. *Scabiosa pterocéphala*. Greece.

PTEROSTYRAX.—*P. hispidum* is a deciduous Japanese shrub, and quite hardy enough for culture as a bush. It makes a capital wall shrub, being rapid in growth, handsome in foliage, and very beautiful in flower. The leaves are heart-shaped, about 6 in. long and 3 in. broad, the small white flowers borne very freely in drooping clusters about the end of July. Another Japanese species, *P. corymbosum*, is less common, though desirable for walls. Its flowers, which are white or faintly tinged, are in crowded clusters. Both species are 8 to 12 ft. high in this country. They are known botanically as *Halesia hispida* and *H. corymbosa*, but ever since their introduction they have been known as *Pterostyrax* in gardens. Increase by seeds, layers, and soft cuttings.

PUERARIA (*Kudzu*).—*P. thunbergiana* is a remarkable climbing plant of almost tropical vigour, growing up poles, colonnades, and walls to a great height in a very short time. It belongs to the pea family, and is a plant the Japanese make a great economic use of in various ways, but our main concern with it here is for the flower garden, where it is hardy and useful as a rapid-growing leafy screen. The flowers are a dull violet-purple and very fragrant, but only come towards autumn, when the plant is well established. Increase by seeds, division of the fleshy roots, or by cuttings.

PULMONARIA (*Lungwort*).—These are vigorous and hardy in any soil. Most of them grow well under the shade of trees, and all succeed best in shade. They form dense tufts of foliage, generally handsomely blotched and speckled with white, and make pretty groups in the spring garden, or in semi-wild places, but are worthy of the best places in the flower garden. There are about half-a-dozen kinds, all like each other. *P. officinalis* and *P. angustifolia* are native plants. *P. officinalis* (sometimes called *P. saccharata*) has rose flowers turning to blue, and *P. angustifolia* bears blue flowers. *P. mollis* is intermediate between the two, and *P. grandiflora* is somewhat similar to *P. officinalis*. *P. azurea* has rich blue flowers. *P. arvernense*, with deep blue flowers, is of refined habit and well suited to the rock-garden. There is a white flowered form of it. Chiefly natives of Europe. *P. dahurica* is sometimes called *Mertensia dahurica*.

PUNICA (*Pomegranate*).—Like the Myrtle, the Pomegranate, *P. granatum*, is grown as a wall shrub, the walls of some

old houses being covered with it, and it makes a very beautiful covering with its dense mass of tender green foliage. The type has single flowers of a brilliant scarlet, but the best is the double-flowered sort (*flore-pleno*), which is also scarlet, and is that most commonly seen. There is also a yellow-flowered sort and a white or almost white kind (*albescens*) with single and double forms, but these are rare. The flowers are borne freely on the young slender shoots of the previous year's growth, and in pruning these must be left untouched. Increase by cuttings of dormant wood, rooted under glass with some heat.

PUSCHKINIA (*Striped Squill*).—*P. scilloides* is one of the most beautiful of spring bulbous flowers. In its growth it is like some of the Scillas, but its flowers are delicate blue, each petal being

Puschkinia scilloides.

marked through the centre with a darker colour. The flower spikes are 4 or 5 in. high. There are two forms of the plant—the ordinary one and *P. compacta*. *Compacta* is so called from its denser and more numerous flowers, and is therefore the handsomer of the two. Delights in a sunny border with a southern aspect near a wall, or an open border slightly raised will suit it. The soil should be light and friable, and about 1 ft. in depth; and the bulbs planted about 4 in. deep. *P. libanotica* is a taller and more vigorous plant of easy culture and hardy. Shady situations in sub-alpine districts of Asia Minor.

PYRETHRUM (*Feverfew*).—Vigorous perennial or rock-plants, by far the most important of which is the Caucasian *P. roseum*, which has yielded the innumerable varieties, both single and double, that have now become such popular border flowers. These have much to recommend them; they are showy,

hardy and easy to grow, little affected by sun or rain, and invaluable as cut flowers. The blossoms are continually becoming more varied in colour and more refined in shape. Though Pyrethrums are in their fullest beauty in June, they are seldom altogether flowerless throughout the summer; and a succession can easily be kept up by judicious stopping and thinning. They are also invaluable for autumn decoration, for if cut down after flowering in June they flower again in autumn. They are easily propagated by division or seed. The proper time for propagation is in spring. Take the plants up, shake off all soil, pull them to pieces, put them in small pots, and place them in a cold frame for a few weeks until established, but not too close, as they are apt to damp. When they are established they may be planted out. A good rich loam suits them best, though they will grow and flower freely in any good garden soil, and the more we incorporate well-rotted manure with the soil the better they grow and flower. Mulching, especially in dry soils, is a help, as it keeps the ground moist and cool. The varieties are so numerous that it is difficult to make a selection, but Messrs. Kelway specially recommend the following: SINGLE FLOWERS:—Agnes Mary Kelway, rose; Ascot, peach; Apollyon, pink; Carmen Sylva, blush; Golconde, crimson; Guardian, clear pink; James Kelway, crimson scarlet; Lord Strathcona, flesh pink; Mary Anderson, early flesh pink; Mrs. Bateman Brown, crimson purple; Ornament, violet cerise; Princess Irene, white; Princess Marie, white; Princess of Wales, early flesh pink; Queen of Whites, white with white centre; York and Lancaster, rose and white. Among the DOUBLE KINDS the best are:—Aphrodite, white; Captain Nares, crimson; Carl Vogt, early white; Chamois, soft yellow; Cleopatra, yellow and white; Ernest Kelway, rosy scarlet; Figaro, deep rose; J. N. Twerdy, maroon; King Oscar, crimson scarlet; Lady Kildare, buff, yellow, and carmine; Leonard Kelway, rose; Lord Rosebery, crimson scarlet; Louise Delesalle, crimson purple; Magician, pink-tipped yellow; Melton, deep crimson; Ne Plus Ultra, pale lilac; Pericles, yellow; Triomphe de France, reddish crimson shading to purple; Wega, buff, yellow, and rose; and Wilson Barrett, light rose. The single kinds are quite as beautiful as the heavy-headed double flowers, and are more suitable for vases. Other species of garden value are—

P. Parthenium (*Feverfew*). — The golden-leaved variety of this plant (*P. aureum* or Golden Feather) is now common. Of this there are several forms. One is called *laciniatum*, and is very distinct from the older kind. These have their uses in geometrical borders, where they have a bright effect. Their culture is of the simplest description. Seed is sown in heat in spring, and the seedlings are pricked off in pans, and when large enough transferred to open borders, and there they withstand the winter unprotected. New plants should be raised every year, as after flowering the second year the old plants lose their neat compact growth.

P. Tchichatchewi (*Turfing Daisy*). — A Caucasian plant, retaining its verdure in dry weather on dry banks or slopes where few plants would flourish; a dwarf creeper, quickly forming a carpet of green. The flowers have white rays and a yellow disc, and in forming turf of the plant in poor dry soils they should be removed, though for the rock-garden of the rougher kind or for borders the flowers have some claim to beauty.

P. uliginosum is one of the finest of tall herbaceous plants, and forms tufts 5 to 7 feet in height. These are crowned by lax clusters of pure white flowers, each about twice the size of an Ox-eye Daisy. It is excellent for cutting, and its blossoms are produced late in autumn before the Chrysanthemums come in. It is a stately plant for a rich border, and thrives best in a deep, moist, loamy soil. It may be naturalised in damp places. Division. Syn. *P. serotinum*. Hungary.

PYROLA (*Winter-green*). — Little ever-green plants of the northern woods and boggy or sandy places, very distinct and attractive both in leaf and flower.

P. rotundifolia (*Larger Winter-green*). — *P. rotundifolia* is a rare native plant, 6 to 12 in. high, inhabiting woods, shady, bushy, and reedy places. It has leathery leaves, and its erect stems bear long, handsome, and slightly-drooping racemes of pure white flowers, rather like a Lily-of-the-Valley, half an inch across, ten to twenty of which are borne on a stem. They have a sweet scent. *P. r. arenaria* is a very graceful plant, found wild on sandy seashores. It differs from the preceding in being smooth, deep green, and dwarfer, and in having as a rule several empty bracts below the inflorescence. Both the type and its variety are beautiful plants for the shady mossy flanks of the rock-garden in free sandy and vegetable soil. They flourish more readily in cultivation

than any other species of the family. In America there are varieties with flesh-coloured and reddish flowers, but none of these are in cultivation. *P. uniflora*, *P. media*, *P. minor*, and *P. secunda* are also interesting British plants, and the first-named is very ornamental, besides being very rare. *P. elliptica*, a native of N. America, is also found in our gardens, though rarely. Any of the Pyrolas are worth growing in thin mossy copses on light sandy vegetable soil, or in moist and half-shady parts of the rock-garden or the fernery, where they make neat ever-green carpets, flowering in summer. Increase by seeds sown as soon as ripe, or division of the roots in autumn or spring; this last is a work of care, the plants being somewhat averse to disturbance.

PYRUS (*Pear and Apple*). — Beautiful flowering trees and bushes of which there is now a bewildering number, since botanists have classed all Apples, Pears, and their allies under the one family. Here, however, it will be convenient to adhere to the old classification, which places Pears under Pyrus, Apples under Malus, Beams under Aria, and Mountain Ashes and Service Trees under Sorbus. No one is likely to confuse one with another, and their names are more easily remembered when so classified. These old genera are now placed as sections of Pyrus. The finest flowering trees are those included under the section Malus, the type of which is the common Crab Apple (*M. communis*). There is a beautiful flowering variety of the Crab Apple called the Paradise Apple, having large handsome flowers, but it is seldom planted for effect, although in common use as a stock for grafting. The Chinese and Japanese Crab Apples include the finest of our small trees that flower in early summer. The Chinese double-flowered Crab (*P. M. spectabilis*) is a lovely tree, 15 to 25 ft. high, with a wide-spreading head of branches abundantly wreathed with large semi-double delicate rose-pink flowers. It is not often met with, except in old gardens. The varieties of *P. M. baccata* or Berry Apple (so called from its small round fruits) are known as Siberian Crabs. They are graceful in growth, showy in flower, and have highly-coloured fruits, which add much to the beauty of the garden in autumn. The Japanese Crab (*P. M. Toringo*) has beautiful flowers and fruits. The flowers are white or pale pink, and the very small fruits are hung on long slender stalks. Of the Toringo Crab there are now several forms, differing in colour of flower and of fruit. It is a small tree, and is a large-

spreading bush if the leaders are removed. The finest of the Eastern Crab Apples is the Japanese *P. M. floribunda*. Fully grown it makes a low tree with a dense wide-spreading head of slender branches, loaded every May with a profusion of flowers of a pale pink when expanded, and of a brilliant crimson in the bud, when they are most beautiful. No garden is well planted if this tree is wanting, as it is hardy, grows rapidly anywhere, and costs little to buy. There are a few varieties of it, one called *Halleana* having larger and more richly-tinted blossoms. There is also a new kind raised in Germany, as a cross between *floribunda* and *prunifolia*, and known as *P. M.*

Pyrus arbutifolia pumila.

Schiedeackeri. It is of fine sturdy growth and wonderfully free, even among these Flowering Crabs, in its large semi-double flowers, vivid crimson in bud, opening to shades of soft rose. Another new wild kind from Central Asia is *P. M. niedwetzkyana*, known as the Red Apple. Not only are the flowers a deeper red than in any other kind, but the fruits, the bark of the twigs, and even the leaves, when coming and dying away, all carry deep shades of crimson and purple. The North American Sweet-scented Crab Apple (*P. M. coronaria*) is a lovely little tree with large pale pink deliciously-scented flowers. There are other ornamental Apples in the section *Malus*, but the foregoing include the finest and the most readily obtainable.

ORNAMENTAL PEARS.—Of the true Pears as ornamental trees little can be said. They are a good deal like orchard and garden Pears in growth and flower, and their fruits are not remarkable. One or two, however, may be planted for ornament. One is *P. Bollwylleriana*, from Central Europe, which produces in spring an abundance

of small white blooms in clusters; and another, *P. salicifolia* (the Willow-leaved Pear), which is well worthy of planting on account of its distinct and beautiful foliage, has leaves of silvery whiteness. *P. olæagnifolia*, or Oleaster-leaved Pear, is another Eastern species with hoary leaves.

Of the *Sorbus* section the common Mountain Ash (*P. Aucuparia*) is a familiar example, but it is too common to need description. There is a rare kind with yellow berries (*fructu luteo*), another kind with weeping branches (*pendula*), a third of erect growth (*fastigiata*), and a fourth with variegated leaves. The last, however, is not very ornamental, as the variegation is seldom distinct. Other species worthy of attention are *P. S. americana*, the American Mountain Ash, which is a good deal like our own Mountain Ash; and *P. S. hybrida*, a tree of very distinct growth, with a dense pyramidal head, and leaves intermediate between those of *P. S. Aucuparia* and *P. Aria* (the White Beam). The true Service Tree, *P. S. domestica*, used to be more

The true Service Tree (*Pyrus domestica*).

frequently planted than now. It is a handsome tree with elegant foliage. Of the White Beam (*P. Aria*) there are some very handsome kinds. Even our native White Beam is ornamental. Like the Mountain Ash, it is also one of the best trees for planting in exposed places on poor soil, and no tree thrives so well on chalk. Its broad silvery foliage makes it show in the landscape, and it is a valuable park tree. Its allies and varieties include some beautiful trees, such as *latifolia*, with leaves which are broader than the type and quite as silvery. *P. A. Hosti* is a handsome tree, both in foliage and flower. Its leaves are large and silvery, and its delicate rose-pink flowers are in broad flat clusters. It is a Central European tree, perfectly hardy, and about 10 ft. high. The Himalayan Beam Tree,

P. vestita (called also *P. lanata* and *nepalensis*), is extremely fine, but is not hardy everywhere. Its very large leaves are like those of the Loquat, and are of silvery whiteness. Where it thrives it is 20 to 30 ft. high.

PYXIDANTHERA (*Pine Barren Beauty*).—*P. barbulata* is a curious little American evergreen shrub, smaller than many Mosses, flowering in May, rose-coloured in bud, white when open, the effect of the rosy buds and the white flowers on the dense dwarf cushions being singularly pretty: it is plentiful in the sandy dry "Pine barrens" between New Jersey and North Carolina and often found on little mounds in low but not wet places. It is a charming plant for the rock-garden, planted in pure sand and leaf-mould, and fully exposed to the sun. Increase by careful division of old plants, or seeds sown in a cold frame as soon as ripe.

QUAMOCLIT.—*Q. coccinea* is a pretty Convolvulus-like plant, with many small scarlet flowers and slender stems of rapid growth, attaining a height of 6 to 8 ft. in a few weeks. It may be treated either as a half-hardy annual, and sown in February or March under glass or in a hot-bed, but it requires a warmer climate than ours to do well. *Q. hederæfolia* is another pretty species. It has scarlet flowers and lobed foliage, and requires the same treatment. Both are excellent plants for sheltered trellises, as they give abundance of flowers from July to September.

QUERCUS (*Oak*).—Noble evergreen and summer-leaving trees of northern and temperate regions, of whose beauty and value books can give but a feeble impression. If we think of our own stately Oak and its variety of form in different situations, even within the narrow area of our storm-tossed isle, we may perhaps get some idea of the value of the several hundred known species of Oak. Of these, by far the most useful for our northern land are the summer leaving (or deciduous) Oaks, resting as they do from all evil influence during the trying season, and coming out in beautiful leaf when the summer is nearly with us. The evergreen Oaks, though of vast importance in more temperate countries (I have passed through millions of acres of evergreen Oak in North Africa alone), are of less value in our cold climate, but we have one precious kind in the Ilex, and other kinds may be grown in the mild parts to a limited extent, especially in sea-shore districts where evergreen shelter is welcome.

From the point of view of effect, the most noble of the summer-leaving Oaks are the American Oaks, with their fine colour in autumn. No trees have been more talked of, yet why are they so rare in our gardens? The answer is, I think, because of our ways of procuring them, by plants too old, from nurseries, and, most fatal of all, by the habit of grafting exotic kinds on the common Oak, and neglecting the natural modes of increase, in the case of Oaks, certainly by seed. If we were dealing with plants of a tender nature, for which some hardy stock would be necessary, there might be some reason for this, but it is not so, because these lovely American Oaks inhabit colder regions than our own country, and they are absolutely different in character from ours, some of them living on dry, warm soils, whereas our Oak is usually best, and certainly the timber is best, on soils of a heavy nature. Therefore, those who wish to have the American Oaks in their beauty should work from seed sown in the place where we wish the trees to grow, or raised in nurseries and transplanted early, or purchase young and healthy plants from forest tree nurseries, and in that way secure the vigorous growth of the seedling tree. Communication is so easy with America now that there should be no difficulty in getting seeds by post, nor should there be any trouble in our nurserymen raising good stock from seed of all the more essential and well-known kinds. In getting acorns over from America or other countries, they should be sown as soon as possible after coming to hand, and it is best to have them sent packed tightly in moist earth.

In the country seats of the United Kingdom there is much varied land in which these Oaks might find a place, at first for their beauty, as in the case of the scarlet and red Oaks, and eventually these great Oaks would have value as timber trees, more than some of the trees we give a place to. Therefore I think that in renewing and filling gaps in woodlands near the house, and also in planting new woods, it might often be well to plant a group or mass of these American Oaks.

In such a large family as the Oak there are rare and delicate species which we need not concern ourselves with, at least before we have established about us in some effective ways the more stately and noble Oaks, nor need we be much concerned about hybrids which occur in nature between wild species, and also

have been raised in gardens and much talked about. As a rule, hybrids in this family are not nearly so important as the wild trees, except, of course, such varieties as occur naturally when we raise the tree from seed, as in the case of the common European evergreen Oak, which gives a pretty variety from seed, as, indeed, our wild Oak does, of which we may see in any good Oak district perhaps trees in a dozen different states of leaf and colour in one day.

It is well that some of the favoured shores and valleys of the world have evergreen Oaks which we may grow in our country, the best known of these being the Ilex of Italy, which is, happily, hardy in our country. It is perhaps most beautiful in sea-shore districts, and many places both in England and Ireland have fine trees. Old trees give excellent shade, and shelter for the flower garden.

With such a great shore-line, the opportunities for growing the evergreen Oaks well are vastly greater than in a Continental country of like temperature. Thickly planted, they are lovely shelter trees for gardens swept by sea winds, as we may see at St. Ann's, near Dublin, Holkar, in Norfolk, and Tregothnan, and they are just as good in inland places wanting shelter. Sometimes after very hard winters the trees look as if they were killed, but afterwards throw off the injured leaves and grow happily again. They should be transplanted with the greatest care when young, and the best way is often to raise plants from acorns, common where the tree grows well, and which may be often gathered in Italy and at home. They should be sown as soon as possible after ripening.

The following list excludes kinds not likely, from their inhabiting warmer regions or other reasons, to be hardy and vigorous in our country :—

SUMMER-LEAFING OAKS.

Q. ACUMINATA (*Chestnut Oak*).—A tall tree with a maximum height of over 150 ft., with grey flaky bark, and chestnut-like leaves, shiny on the upper surface and greyish beneath. This should be a very useful Oak in certain soils in Britain supposed to be inimical to our own Oak. Eastern States and Canada, and westwards, in dry limestone soil.

Q. ALBA (*White Oak*).—A fine forest tree, sometimes 150 ft. high with deeply lobed but not sharp-pointed leaves, and grey bark scaling off in plates. A native of Canada and the more northern United States, its hardness need not be doubted, and the wood is hard and tough and good.

Q. CERRIS (*Turkey Oak*).—This is a valuable tree for garden and park. Though not unlike the common Oak in growth and branching, it is readily distinguished by its deeper green and finely cut foliage and by its mossy-cupped acorns. It is also much more rapid in growth, and will flourish in light and varied soils. It retains its foliage longer than most other trees, and some of its varieties are almost evergreen. The chief of these is the Lucombe Oak, a tree of graceful growth, which rapidly ascends into a tall cone of foliage and retains its leaves through mild winters. The Fulham Oak is a similar tree of hybrid origin. It is also partially evergreen, and differs from the Lucombe Oak chiefly in its habit of growth being more spreading. Other varieties of the Turkey Oak are the Weeping, a decidedly pendulous branched variety and most desirable for a lawn; a variegated form, one of the best of these kinds, as the leaves are clearly margined with creamy white; and the Cutleaved, in which the leaves are finely cut, giving the tree an elegant feathery appearance. The variety known as *Q. austriaca sempervirens* is a form of the Turkey Oak sub-evergreen in character and of medium growth, and useful for small gardens. It is easy to attach too much importance to these varieties, which rarely equal the wild tree in beauty or character, and which have the disadvantage of being increased by grafting, which is against their ever attaining the stature and dignity of the wild tree.

Q. COCCINEA (*The Scarlet Oak*).—A forest tree, in its native country growing to 160 ft. high, and one of the best North American Oaks worthy of planting for ornament in this country. It is a beautiful tree at all seasons, but particularly so in the autumn, when the rich scarlet and crimson hues of its foliage are very handsome. There are varieties of it in nurseries called *macrophylla* with larger leaves than the type, and *pendula* which has a drooping habit of growth. There is a variety known as *tinctoria*.

Q. CONFERTA (*Hungarian Oak*).—This is a noble tree in its own country and one of the quickest growing Oaks in cultivation. It has much larger leaves than the common Oak, and they are cut in much the same way. Its growth is denser and less spreading as we see it here at present than in Hungary, but there are as yet no large trees of it. It is without question a good Oak to plant as a tree of the future, as it is very hardy and grows well in almost all kinds of soil except the lightest and the heaviest. Syn. *Q. pannonica*.

Q. MACROCARPA (*Bur Oak*).—A large forest tree of a maximum height of 160 ft. with a trunk as much as 8 ft. in diameter, and rather large, thin, deeply incised, but blunt lobed leaves shiny on the upper side and whitish below. The timber is good and tough. A native of rich soils from Nova Scotia to Manitoba, and also southwards. Syn. *Q. olivæformis*.

Q. MINOR (*Post Oak*).—A tall tree, sometimes in its best state 100 ft. high, with rough grey bark and deeply incised but blunt pointed

leaves. The wood is very hard and durable. North America, in the eastern states, and westwards and southwards.

Q. NIGRA (*Water Oak*).—A forest tree though not so tall as other Oaks—80 ft. There is a variety of it in cultivation named *nobilis*

with a maximum height of 120 ft., and is so hardy and so handsome that it is quite an established tree in English nurseries. It is one of the quickest growing Oaks, and its chief beauty is the tender green, almost yellow, of the unfolding foliage in May, and rich autumn

An Evergreen Oak.

which has leaves 9 ins. or more in length of a rich green. It makes a handsome small tree. In wet and swampy ground, Eastern and Western United States, also southwards. Syn. *Q. aquatica*.

Q. PALUSTRIS (*Pin Oak*).—A forest tree

tints. It soon makes a fine tree and is one of the best to plant in moist ground or marshy places, as it grows naturally in such ground. Leaves deeply cut, bright green and smooth. Northern United States and westward.

Q. PEDUNCULATA (*British Oak*) is the most

valuable of British trees and most beautiful in old age in many different states alike in wood, park, chase, by rivers, and in pasture land, and one which I like well to see coming into the home grounds in its old state, giving noble shade and fine beauty of form, as at Shrubland and in many other places. Botanists give this and the other British Oak under the general term of *Q. Robur*, but they are wrong, as the Oaks are distinct in form and habit. Of the common Oak there are several varieties that should be made use of in ornamental planting. Those with coloured foliage include the Golden Oak (*Concordia*), which has rich yellow foliage throughout the summer. It is a very slow growing variety, and rarely seen larger than a dwarf shrubby tree. The purple-leaved variety (*purpurascens*) is stronger growing and a desirable tree on account of the rich ruddy tinge of its foliage. It is also called *atropurpurea*. Of the varieties that differ from the type in growth the most distinct are *fastigiata* or *pyramidalis*, which is of much the same style of growth as the Lombardy Poplar, but does not grow so tall. The Weeping Oak (var. *pendula*) is as decided a weeping tree as the Weeping Ash, and is a vigorous grower and a beautiful and graceful tree. There are several forms with cut leaves, the most distinct being those named *filicifolia* or the Fern-leaved Oak, *heterophylla* and *scolopendrifolia*, which latter has leaves like a miniature Hart's-tongue Fern. There are variegated forms of both the common type and of the Cypress Oak, but not so important for landscape effect as the varieties that take a natural colour, but we have never seen any variety of Oak as handsome as the common tree. It is frequently in forests over 100 ft. high, and occasionally over 150 ft., giving a great quantity of valuable timber. The leaves fall earlier than those of the Durmast Oak, and are more varied in yellowish and brownish colours at the commencement of growth.

Q. PHELLOS (*Willow Oak*).—A forest tree 80 ft. high, and unlike the other Oaks in foliage, which is narrow and long like that of a Willow, whitish beneath, which gives the tree a silvery appearance on a windy day. It is not a common tree, though it was introduced from North America in the last century. It is of slow growth in cold places and soils, and thrives well and grows rapidly on well-drained light soils, especially in a gravelly subsoil. United States.

Q. PLATINOIDES (*Swamp White Oak*).—A large forest tree with flaky green bark, and, in its best state, reaching a height of over 100 ft., with slightly lobed leaves, and the acorns on rather long stalks. It has good, tough, closely-grained wood, and is a native of moist and swampy soils in Canada and west to Michigan. Syn. *Q. bicolor*.

Q. PRINUS (*Rock Chestnut Oak*).—A large tree, sometimes attaining a height of 100 ft. with the leaves somewhat chestnut like, and bearing an edible acorn, in dry soil. Eastern States, and Ontario and southwards.

Q. RUBRA (*Red or Champion Oak*).—A

noble forest tree with a maximum height of nearly 150 ft., and one of the finest of American trees, remarkable for the richness of its autumn tints. It is a fine park tree, and also makes a beautiful shade tree for lawns. It grows best on a free and deep soil, and is much more rapid in growth on moist than on dry soils. It has large foliage that hangs in heavy masses on the wide-spreading limbs. Nova Scotia, Canada, and Eastern States.

Q. SESSILIFLORA (*Durmast Oak*) is the second species of British Oak and is often included with *Q. pedunculata* but is distinct from a planter's point of view, not being so long lived or quite so noble a tree. It is, nevertheless, one of the finest forest trees of northern countries, and has a straighter and more cylindrical stem and form of tree even than the common Oak, is of a deeper green, denser foliage, and giving better covert and more leaf soil. The leaves are a little longer than those of our other native Oak, sometimes, in mild winters, remaining on the tree until the others come. Its area of distribution is slightly different, growing less in plains and valleys than our other Oak, but inhabiting plateaux and slopes of hills and mountains rising to elevations of 3,000 or 4,000 ft., and also different from the common Oak in its thriving on gravelly, sandy and calcareous soil, while the common Oak is best in heavy soils. The qualities of the wood of the two kinds have been the subject of much dispute, and perhaps the discussion is often confused by the influence of soils, the wood of *Q. sessiliflora* is generally thought to be less tough and less resisting than that of the common Oak. It has a straighter fibre and finer grain. Like the other Oak this has several varieties of little value.

Q. VELUTINA (*Black Oak*).—A tall tree up to 150 ft., the outer bark a very dark brown with deeply cut leaves with sharp points. This fine tree is rare with us and worth a trial from seed sown where we wish it to grow, or from young seedling plants. Northern United States, Canada and westwards, and also in the southern states. W. R.

EVERGREEN OAKS.

Q. ACUTA is a native of Japan, with dark leathery leaves about the size of those of the common Cherry Laurel. This has not been long enough in the country to enable one to judge the merits of an adult tree, but even as a bush it is a fine object. *Q. Buergeri robusta* is a vigorous large-leaved form.

Q. AGRIFOLIA, the Enceno of the Californian coast, is a distinct Oak rarely seen in gardens, in aspect not unlike some forms of *Q. Ilex*, but the leaves are of a different shade of green. Dr. Engelmann says it is "a large tree, with a stout, low trunk, often 8 to 12 ft., sometimes 16 to 21 ft., in circumference, and with a spread of branches of 120 ft."

Q. CHRYSOLEPIS (*Californian Live Oak*) is found along the coast ranges and along the western slopes of the Sierra Nevada, where it

forms a tree 3 to 5 ft. in diameter of stem, or, at higher elevations, is reduced to a shrub. It has pretty spiny-toothed dark green leaves, somewhat golden on the under surface, and in its native country it is a beautiful evergreen tree.

Q. COCCIFERA.—A dense bush with small spiny dark green leaves, and very small acorns, often hardly larger than a pea, which now and then ripen in Southern England. S. Europe.

Q. DENSIFLORA.—A tree 50 to 60 ft. high, in some positions often a shrub. At Kew this grows freely in rather sheltered places, and produces fine leathery leaves of a dark green colour, in outline somewhat like those of a small Spanish Chestnut. Mountains of California.

Q. GLABRA.—A Japanese Oak, with large handsome leaves, the acorns borne in upright spikes. Several varieties are mentioned in catalogues, but they are hardly distinct. At Kew the species makes a large bush and is thoroughly hardy.

Q. ILEX.—The best-known of Evergreen Oaks, and the most valuable for Britain. Old trees, which have been allowed plenty of space and have been allowed to grow naturally, resemble in form the Olive trees of the Italian coast and of the Riviera. It is one of the most variable of Oaks, but few of the named varieties—and there are many—are so beautiful as the wild kind.

Q. SUBER (*Cork Oak*).—The Cork Oak, which, except for the curious growth of its bark, hardly differs in effect from the Holm Oak. There are fine old trees of this at Mount Edgcumbe, Goodwood, and other places, though the Cork Oak is not hardy enough for our climate generally.

Q. VIRENS (*Live Oak*) is in its native country a tree of the first economic value, and deserves all the encomiums passed on it by Cobbett in his *Woodlands*. All the trees in England I have seen under this name are, however, forms of *Q. Ilex*, and I doubt there being any fine trees of the true *Q. virens* in cultivation in this country.—N.

RAMONDIA (*Rosette Mullien*).—*R. pyrenaica* is an interesting Pyrenean plant, with leaves in rosettes close to the ground, the flowers purple-violet colour, with orange-yellow centre, 1 to 1½ in. across, on stems 2 to 6 in. long, in spring and early summer. There has been a good deal of writing about its cultivation, but it is really not difficult except in soils much charged with lime; growing in cool peat borders on the lower ledges of the rock-garden, or in moist yet well drained chinks. It is found in the valleys of the Pyrenees, on the face of steep and rather shady rocks. There is a rare white variety which does well in borders of American shrubs in peat soil, and a more rosy form has also appeared quite recently. Less known, but more easily

grown, is *R. serbica* from the Balkan Mountains, a rather taller plant, in which the leaves are covered with soft brown hair, and the flowers are pale blue or mauve coloured. A form of this from the Carpathian Mountains, *Nathalia*, is per-

Ramondia pyrenaica.

haps the best of all, though still scarce. Its flowers are darker, with bright orange anthers, and come rather earlier and more freely than in other kinds. This too, however, is not happy where there is much lime in the soil. Seed and division. *Gesneraceæ*.

RANUNCULUS (*Crowfoot Buttercup*).—Mountain, meadow, and marsh herbs, many of them weeds, while others are among the choicest of alpine flowers and perennials for borders. They are for the most part of the simplest culture; only *R. asiaticus* and its many varieties require special treatment.

R. aconitifolius.—A mountain pasture herb. The double-flowered variety which is known as Fair Maids of France is a pretty garden plant about 18 in. high, covered for several weeks in early summer with small rosette-like white blossoms. It is a charming plant in deep moist soils, especially the large-flowered form *grandiflorus*. The single wild plant is worth a place in collections.

R. acris (*Bachelors' Buttons*).—The pretty double form of this plant is also a useful kind, its rich yellow blossoms borne in button-like rosettes: a border plant, and good in moist soil, flowering twice in the year.

R. alpestris (*Alpine Buttercup*).—A native of the alpine regions of Central

Europe, and found chiefly growing in calcareous soil : a handsome kind, forming small tufts of shining, dark-green, prettily cut leaves ; flowers large pure white, with numerous yellow stamens in the centre, and borne singly on erect stems from 2 in. to 6 in. high in June and July. A

Ranunculus aconitifolius fl.-pl. (Fair Maids of France).

good rock-garden plant in light, porous, moist soil. There is a pretty dwarf form, hardly rising above the soil. *R. pyrenæus* comes near this in effect, with large white flowers borne several together on stems of 6 in., but the leaf is a different shape.

R. amplexicaulis (*White Buttercup*) is a lovely garden plant, about 1 ft. high, with slender stems, glaucous-grey leaves, and blossoms 1 in. across, pure white with yellow centres, blooming in April and May : a pretty border and rock-garden plant, doing best in a deep moist loam. Pyrenees and Alps of Provence.

R. asiaticus (*Turban Buttercup*).—An old garden plant, with neat double flowers of many colours, divided into various sections, such as the Dutch, Scotch, Persian, and Turkish, each representing a distinct race, and all beautiful. The culture of this *Ranunculus* is simple if a few essentials are observed. The situation should be open, but not exposed, and the soil a loam mixed with decayed stable manure equal to a third of its bulk. About a month previous to planting, the bed should be prepared to a depth of 15 in., and planting should take place about the last half of February ; in some seasons it may take place in October, though such an early date is not the best. Drills about 5 in. apart and 1½ deep should be made with a small hoe ; the claws of the roots should be placed down-

wards and pressed firmly into the soil, which should be raked over the roots, and a top-dressing of about 2 in. of good loam given. If the surface soil is light, it may be gently beaten with a spade in order to obtain a firm surface, and this may be repeated just before the foliage appears, say about a month or six weeks after the planting. As this *Ranunculus* delights in moist soil, water should be given if there is a scarcity of rain, and in no case should the roots be allowed to become dry. A light top-dressing of artificial manure or guano just as the foliage is above ground will do good. When the flowers are past and the leaves faded, the roots must be taken up, dried, and stored in a cool place in sand till the next planting season, for roots left in the ground are injured by rains and never strong. The Persian varieties are the finest as regards colour, compactness, and symmetry of growth ; but the Turban varieties are of hardier constitution and of freer growth, and therefore are better suited for beds, lines, and masses. The Scotch and Dutch varieties are also fine for masses in beds, being all of highly effective colours. It is useless to enumerate the different varieties, as they are usually sold according to colour, and are mentioned in nearly every bulb catalogue. The large semi-double French (de Caen) and the Italian forms of this plant are good. The wild plant, which I gathered in Egypt both in the yellow and red forms, is a lovely single flower, and as well worth growing as any of its garden varieties, but it is not hardy, and soon perished on my cool stiff soil. To be grown it must be treated like its variety, *i.e.*, the roots taken up yearly.

***R. bulbosus* fl.-pl.** is a showy plant, about 1 ft. in height, with, in early summer, numerous double yellow blossoms, growing well in any soil. There is also a pretty pale yellow form, *pallidus*. Of *R. repens* there are two double varieties, one neat and the other untidy.

R. bullatus is a fine border plant, about 6 in. high, with large orange-yellow blossoms like those of the Marsh Marigold (*Caltha palustris*). It is not so hardy as the majority of the Crowfoots, and should therefore be placed in warm dry soil.

***R. crenatus*.**—A native of alpine and siliceous mountains in Styria, the leaves entire and roundish ; the flowers are large, white, with almost entire petals, two or three together at the extremity of stems 3 or 4 in. high in April and May. Plant in the rock-garden in deep sandy soil in our country, fully exposed to the sun.

R. glacialis (*Glacier Buttercup*).—This is the plant of the icy regions, being found near to the melting snow

Ranunculus lingua.

on the loftiest mountains. The whole plant involuntarily reminds one of melting ice. The thick fleshy leaves of a dark green, and deeply incised, the stem of a brownish-red tint, 3 or 4 in. long, prostrate on the ground, and bearing from one to four flowers, the petals of which are at first of a light pink colour, passing into a bright coppery-red—everything about this plant has a glacial aspect. It thrives

on cool and moist but fully exposed ledges of the rock-garden, in deep gritty soil with white stones or sand on the surface to keep it cool. Alps and Pyrenees.

R. gramineus.—A pretty little plant from the Pyrenees, with slender erect stems of about a foot high, and narrow grass-like leaves of a blue-grey colour. Its golden flowers are produced in great profusion during early summer. A useful plant for the border or moist corner of the rock-garden, and also quite happy if treated as a bog-plant.

R. lingua (*Great Spearwort*).—A native kind, and a noble waterside plant, its leaves rising boldly out of the water to a height of 2 or 3 ft., with large yellow and attractive flowers. Thrives in muddy watersides, and the numerous and handsome flowers are good for cutting for the house.

R. Lyalli (*Rockwood Lily*).—A lovely New Zealand plant; in moist places in the Southern Alps the plant has large rounded leaves and very large handsome waxy white flowers, not unlike those of *Anemone japonica*, with delicate yellow stamens in the centre. In some places in Britain this plant is not hardy, but in others it stands the winter well. A writer in *The Garden* says of a plant at Kew: "It is growing in a deep peaty bed, sheltered from the north and east, and has been

without protection of any kind for over two years. To get the seed of this charming plant to germinate is difficult, as importations in recent years have failed, and like many other similar plants it seems to do best when let alone. It has flowered in a few gardens, and would seem to require cool rock-garden treatment so far as now known."—W. K.

R. montpeliiacus (*Montpelier Buttercup*).—A vigorous plant, growing about 18 in. high, with three-lobed woolly leaves and large flowers like the Common Buttercup. It is hardy—at least in Southern Britain.

R. parnassifolius (*Parnassia-leaved Buttercup*).—A singular-looking plant with thick, entire leaves, woolly on the edges, flowers large, of a pure white colour, borne two or three together on a prostrate stem in the month of May. In the Pyrenees and on the French Alps it is rare to find a flower of this handsome species which possesses the full number of petals. A rock-garden plant, requiring the same treatment as the higher mountain species.

R. rutæfolius (*Rue-leaved Buttercup*) has Rue-like leaves and white flowers with dark yellow centres. Coming from the highest parts of the Alps, it requires the same treatment as the higher alpine plants, in a fully-exposed spot in moist soil with plenty of grit in it.

R. speciosus (*Large Double Buttercup*) is a showy plant, with compact rosette-like flowers of bright yellow in May, succeeding in any light soil. In a full collection, *R. chærophyllus*, *illyricus*, and *fumariæfolius* may be included.

The above is but a selection from a very large family in nature, many of which are little known in gardens, and many of no garden interest.

RAPHIOLEPIS

(*Japanese Hawthorn*).

—*R. ovata* is a beautiful Japanese shrub, hardy in southern districts, and with a little winter protection may even be planted in cold parts. Its thick evergreen leaves are of a dark colour, and its flowers, which are large, white, and sweet-scented, are in clusters terminating the young branches. It is a low, spreading bush, somewhat open and straggling, and should not be crowded with other shrubs. Some of

Raphiolepis indica.

the other species, such as *R. indica* and *R. salicifolia*, both from China, are not hardy enough for the open ground, but make good wall shrubs. A cross between *ovata* and *indica*, named *R. Delacourii*, is intermediate in foliage and bears delicate pale pink flowers. It was raised in France, and does not yet seem to have been tried in the open air with us.

RESEDA (*Mignonette*).—The only species worth growing is *R. odorata* and its varieties. Seed sown in the open ground in March or April produces in a few weeks flowering plants, which continue to bloom till late in autumn. If fine masses be wished for, the seed should be sown in pans about the end of March, the seedlings placed singly in 3-in. pots, and planted out in good soil in an open position. A little attention should be given to thinning out the weak shoots and stopping the vigorous ones. Plants sown in autumn will survive mild winters and produce flowers in early summer, these being finer than those of spring-sown plants. There are now many varieties, as *R. odorata grandiflora*, *R. o. pyramidalis grandiflora*, the compact, strong-growing variety *Machet*, with bold spikes of reddish flowers and broad abundant leaves, and dwarf varieties. *Machet* is the kind grown so largely in pots for the London markets, and it is also a good kind for the open air.

Retinospora. See CUPRESSUS.

A name often wrongly given, and it would be difficult to exaggerate the evil effect in various ways of giving long Latin names to mere forms and "states" of twigs which may unhappily be propagated by cuttings or grafts, and the repeating for ever in nursery catalogues of doubtful generic names such as this which have crowded our catalogues for years. The really distinct plants once known as *Retinosporas*, are now classed with Cupressus. This name *Retinospora*, therefore, may be dropped out of use by those who care to simplify their words and collections of trees. One result of this confusion of mystifying names is that it often keeps willing planters from finding the really great trees among the crowd of names.

RHAMNUS (*Buckthorn*).—An extensive group of shrubs, of minor importance, yet with some useful kinds. *R. Alaternus* is a stout evergreen from the Mediterranean region, with small rounded leaves of firm texture, and variable as to habit, but often straggling. There are many forms of this shrub, the best being that in which the leaves are broadly edged with silver; effective against a sheltered wall and in

poor warm soils. A second variety, *angustifolia*, is one of the finest dwarf evergreens for the rock-garden, of dense growth, perfect in shape, with neat dark green leaves. *R. californica* and *R. crocea* are other evergreen species, the first unarmed and with rather oblong leaves of dark green, and the second (also from California) with small glossy leaves which are bright yellow underneath, and scarlet berries in autumn. The other introduced kinds are summer-leaving. The Common Buckthorn (*R. cathartica*) and the Black Alder (*R. Frangula*) are found in our own hedges and woodlands. They are rarely seen in gardens, though when heavily fruited the clusters of *R. Frangula*, changing from green to bright pink and dark purple, are charming in the wild garden; and the leaves are pretty, especially in the Fern-leaved variety, *R. F. asplenifolia*. *R. crenata* from Japan is ornamental in autumn, when loaded with its glossy black berries. Several kinds are bold and handsome in leaf, especially *R. alpina*, *R. libanotica*, and *R. tinctoria*, and in a less degree others like *Purshiana*, *Caroliniana*, *alniifolia*, and *daurica*. *R. alpina* grows slowly, and may be used in the rock-garden with other mountain kinds like *R. pumila* and *R. saxatilis*, tiny miniature shrubs which grow in the crevices of sunny rocks amid the mountains of central Europe, spreading flatly over their surface, with glossy leaves and small dark fruits. All the kinds are easily grown and not particular as to soil, the free-growing kinds mostly doing best in damp places. The scarcer sorts are commonly budded, but there is no need for this, seeing that all can be layered, or raised from seed or cuttings.

RHAPHITHAMNUS CYANOCARPUS (*Chilian Needle Tree*).—A plant of much beauty, but too tender for any save favoured districts. It is one of the neat, myrtle-like shrubs of South America, with shining dark green leaves, heart-shaped and about half an inch long, thickly set upon graceful stems in clusters of three. With these are an equal number of needle-like spines slightly longer than the leaves, and to these the tree owes its name. The stems are covered with soft thick down of a rusty brown colour. Narrow tubular flowers of white and mauve appear at the leaf-axils towards the ends of the shoots, which are free of spines. Though small, they are pretty, drooping thickly in clusters of five or six at each point, and not unpleasant in smell. The plant reaches the height of a small tree.

RHEUM (*Rhubarb*). — Herbaceous plants of great vigour and picturesque aspect, and their fine leaves are well seen by the margins of shrubberies and in places where luxuriant vegetation is desired. They like deep and rich soil. *R. Emodi* is a fine-leaved plant, for groups in the pleasure-ground, but requiring good soil. It grows about 5 ft. high, and is imposing with its wrinkled leaves and large red veins. *R. officinale*, however, as regards foliage, is the most effective from early in the year, and should be placed near the shrubbery, on the turf, or in the wild garden. In small glades with rich soil a bold effect might be produced by a good selection of Rhubarbs with *Ferulas*, *Heracleums*, *Rhubarbs*, *Acanthuses*, *Yuccas*, the common *Artichoke*, *Gunnera scabra*, and other vigorous hardy plants. *R. palmatum* is a slow-growing plant, and smaller than its variety, *R. p. tanguticum*, which increases rapidly, has fine foliage, and will be welcome to those who grow the other hardy species. *R. nobile* is distinct, forming a dense pyramid of foliage. It is, however, one of the most difficult to cultivate, and in Europe has succeeded only in the Edinburgh Botanic Garden. Indian and Asiatic Mountains. The garden Rhubarbs worth growing are *R. australe*, *R. compactum*, *R. rugosum*, *R. hybridum*, *Victoria Rhubarb* (with very large leaves and long red stalks), *Myatt's* *Linnaeus*, and *Prince Albert*. *Scott's* *Monarch* is the most ornamental of all the garden varieties.

RHEXIA (*Meadow Beauty*).—*R. virginica* is a beautiful dwarf bog plant with vivid, deep rosy flowers 6 or 8 in. high, in sandy swamps in New England and the Eastern States, and is found as far west as Illinois and Wisconsin. *R. Mariana* is even scarcer in this country than *R. virginica*, and less important, growing in drier places. The *Rhexias* must not be divided much, and healthy tufts should be obtained from their native localities, and planted in a sandy peat bed.

RHODANTHE (*Everlasting*).—Charming half-hardy annuals from Australia, valuable as border flowers and for winter bouquets. They are all of slender growth, 1 to 1½ ft. high, and have glaucous-grey foliage and pretty flowers. The original species, *R. Manglesi*, has fine rose-coloured blossoms with yellow centres, and of this there is a double variety. *R. maculata* has a deep crimson ring encircling the eye of the flower; and there is a pure white variety. *R. atro-sanguinea* differs considerably from *R. maculata*,

being not only dwarfer, but more branched. The flowers, of a bright magenta colour, are rather smaller than those of *maculata*, but average 1 in. in diameter. It is rather less hardy than *maculata*, but sufficiently hardy for the open air. All these kinds should be sown thinly in heat in pots in February or March. In the southern counties they may also be sown in the open air in May on warm borders in good soil. In frames, freely watered, and placed in a temperature of 65° to 70°, the seeds quickly germinate, but if insufficiently watered, they remain dormant for several weeks. The seedlings should be pricked while young, as they do not transplant well when large. Plant them in a warm open position, and a well-manured light soil—if peaty, the better. They ought to be protected for a few days after transplanting.

RHODODENDRON (*Rose Tree*).—A noble family of shrubs, so popular that they are often over-planted; that is to say, we see *Rhododendrons* in large and often lumpy masses in many country places where no planting of any other kind worth speaking of is carried out. In districts where they do well, the soil and climate being suitable, monotonous effects arise through their over-use, against which all who care for beautiful gardens should protest. The mild climate of our country and generally our rather mild winters allow many more kinds to grow with us than on the Continent of Europe generally, or in N. America. In severe winters some kinds are touched by frost even with us, and therefore we must be on our guard against planting other than the hardy varieties except in the south of England and Ireland. The hardy American species should be grown more in lowland valleys, as I find that they stand winters which kill *R. ponticum*.

The vast range in our country over which the plant will grow well, alike in Ireland, England, and Scotland, makes the possession of the finest kinds most important. Among the numbers of kinds that have been raised by English nurserymen, a good many poor, dull, or ugly in colour have been sent out, and therefore it is important to get kinds good in colour and to group and arrange them better than has hitherto been done; that is to say, not so much in flat areas and lumpy beds. A far better way is to break them up into bold and simple groups, holding the colours more together and not scattering them about in spotty mixtures. It is important to get plants from layers where possible, and not grafted plants,

as these are apt to perish and their places be taken by the common stock, of which we have already far too much. Hitherto it has been very difficult to get layered plants; but some of our best nurserymen see the change suggested here is a good one, and are providing for it. It makes great difference in the end whether the kind has its own roots and is spread about into many plants, or is on some wretched stock on which it perishes.

each other. They are often too closely planted, and after a few years of rapid growth such plantations cannot show their beauty. It would be much better to plant all the choice kinds rather thinly. Where from previous thick planting the bushes are too close together, thin them promptly and severely, leaving the choicer kinds and the finest-formed bushes. In this way we get light and shade among the plants instead of allowing them to

Rhododendron Falconeri.

Rhododendrons are of free growth in almost any soils except those with lime in them. On many loamy soils free from lime the plants do perfectly well, although perhaps never so much at home as on a sandy peat. Over a large area of Ireland where the limestone prevails it is, I think, not worth trying to cultivate Rhododendrons and it is always better to grow things that do best on one's own soil. Given a peaty or limeless soil, the difficulty is to prevent their growing so quickly as to smother

form one flat level mass. The excellent plan of placing lilies and the other fine handsome hardy flowers among Rhododendrons and like shrubs tends to keep them more open and delightful in every way, their forms as well as flowers being better shown.

The plants, forming generally close balls of earth, are more easily transplanted than most shrubs. This is often done in late spring and summer, as for the London flower-shows, where numbers of the finest kinds are brought in spring and taken

away in summer. In the case of all choice and rare varieties remove the seed-vessels after flowering, thus saving the strength of the plants for future good growth and flowers.

Hardy Rhododendrons seldom flower profusely in consecutive years, but fine displays biennially are usually made. Established plants can take care of themselves and in strong loamy soil artificial waterings are not required. In very dry summers mulching the roots of a few single plants that occupy a rather dry position is often necessary, but where the beds are on level ground they succeed without this attention. This is not so in all cases, as drought in the early autumn months often kills many of the large plants on shallow soils. Rhododendrons are, as a rule, safe from over-dryness at the root until August; then, if the weather should be dry, a good soaking of water twice a week and a mulch over the roots of half-rotten manure, 3 or 4 in. in thickness, will maintain them in health. Some degree of shade is helpful to Rhododendrons, all the more so in dry soils and in the districts with a slight rainfall.

THE EVILS OF GRAFTING.—Apropos of this subject, Mr. Scrase Dickins, writes: "We have a large number of grafted Rhododendrons, planted over thirty years ago, from the base of which every year a thick growth of suckers springs up; these require to be cleared off in the early summer, and again in the autumn, if the intended variety is to retain its claim to existence; but the labour entailed is considerable, and many are overlooked or passed by for want of time. Occasionally one comes across a great bush of the common ponticum, with a small scraggy piece in the centre to show that once it was meant to be a hybrid variety of special beauty; but the worst of the whole business seems to be that the older the plant the larger is the base from which the suckers spring, and consequently the larger is the number of suckers. With Ghent Azaleas the trouble is nearly as bad; the common yellow form on which they are grafted, being a strong grower, soon makes short work in ejecting the less vigorous intruder. It is very unfortunate when, after a certain number of years, the labour and money spent in an endeavour to obtain some specially beautiful effect results in a commonplace arrangement of lilac and yellow. When the snow has prostrated large Rhododendrons, those that are on their own roots will often raise themselves in a

thaw without help; whereas those that are grafted will most likely have broken off short at the base. If the union between the stock and the scion is so imperfect as to give way under these provocations, it follows that the flow of sap and consequent development of the plant must be seriously interfered with. In some cases this may prove beneficial in restraining a coarseness of growth and inducing fertility, but it is the reason why we do not possess in our gardens finer examples of graceful and well-developed natural specimens. In order to gain new and improved varieties, it is necessary to raise a large number of seedlings. If nurserymen were to give their attention more generally to raising seedlings and layered plants, it might with reason be expected that they would raise a large number of new and improved varieties. If planters, looking forward to the future, as planters as a rule must do, would insist on being supplied by the nurserymen with own root plants only, then our successors would have finer examples to thank us for, and we should be increasing our store of what is beautiful among our treasures in garden and wood."

Marked progress has been made with hybrid Rhododendrons of recent years, such fine new kinds as Pink Pearl, White Pearl, Mrs. E. C. Stirling, and others of a like class, having put many of the older kinds in the shade. These varieties are, however, still scarce, and likely for awhile to remain so. The following is a good selection among the best hardy varieties:—

Album elegans.
Album grandiflorum.
Alexander Adie.
Alexander Dancer.
Atro-sanguineum.
Austin Layard.
Bacchus.
Barclayanum.
Baron Schröder.
Baroness Lionel Rothschild.
Blandyanum.
Boule de Neige.
Broughtoni.
Caractacus.
Catawbiense.
Charles Bagley.
Charles Dickens.
Charlie Waterer.
C. S. Sargent.
Cœrulescens.
Coriaceum.
Countess of Clancarty.
Countess of Normanton.
Cynthia.
Delicatissimum.
Doncaster.
Duc de Brabant.
Duchess of Bedford.
Duchess of Connaught.
E. A. Boulton.
Edward S. Rand.
Everestianum.

Fair Helen.
Fastuosum fl. pl.
F. L. Ames.
Frederick Waterer.
Goner Waterer.
Govenianum.
Guido.
Helen Waterer.
H. W. Sargent.
Ingrami.
Jacksoni.
James Bateman.
James Macintosh.
James Mason.
J. Marshall Brooks.
John Spencer.
John Walter.
John Waterer.
Joseph Whitworth.
Kate Waterer.
Kettledrum.
King of Purples.
Lady Annette de Trafford.
Lady Armstrong.
Lady Clementina Mitford.
Lady Clementina Walsh.
Lady Clermont.
Lady Dorothy Neville.
Lady Eleanor Cathcart.
Lady Falmouth.
Lady Grey Egerton.
Lady Godiva.

Limbatum.
 Luciferum.
 Madame Carvalho.
 Marie Stuart.
 Marquis of Waterford.
 Martin Hope Sutton.
 Maximum.
 Maximum Wellsianum.
 Maxwell T. Masters.
 Michael Waterer.
 Minnie.
 Miss Jekyll.
 Miss Owen.
 Mont Blanc.
 Mrs. Beresford Melville.
 Mrs. Chas. Sargent.
 Mrs. E. C. Stirling.
 Mrs. F. J. Kirchner.
 Mrs. Fitzgerald.
 Mrs. Fredk. Hankey.
 Mrs. Harry Ingersoll.
 Mrs. John Clutton.
 Mrs. John Kelk.
 Mrs. John Penn.
 Mrs. John Waterer.
 Mrs. Mendel.
 Mrs. Milner.
 Mrs. R. S. Holford.
 Mrs. Russell Sturgis.
 Mrs. Thomas Agnew.
 Mrs. Tritton.
 Mrs. Walter.
 Mrs. W. Agnew.
 Mrs. William Bovill.

Mum.
 Nero.
 Odoratum.
 Old Port.
 Perfection.
 Pictum.
 Pink Pearl.
 Prince Camille de Rohan.
 Princess Christian.
 Princess Mary of Cambridge.
 Purpureum elegans.
 Purpureum grandiflorum.
 Purity.
 Ralph Sanders.
 Rosabel.
 Roseum elegans.
 Sappho.
 Sherwoodianum.
 Sigismund Rucker.
 Silvio.
 Sir James Clark.
 Snowflake.
 Stella.
 Sultana.
 Surprise.
 The Queen.
 The Warrior.
 Titian.
 Vandyck.
 Vauban.
 Viscount Powerscourt.
 White Pearl.
 William Austin.

RHODODENDRONS GROUPED FOR EFFECT OF COLOUR.—Reds, rose-colours, and pinks with a few whites, viz. Reds—James Marshall Brooks, John Waterer, Atro-sanguineum, Alexander Adie, Baron Schröder. Rose and rosy-pinks—Mrs. Penn, Ingrami, Lady Armstrong, Mrs. Charles Sargent, and Mrs. W. Agnew. Whites—Mrs. John Clutton, Minnie, Madame Carvalho, Duchess of Connaught, and Sappho. Rhododendrons of salmon-red colour are best kept separate from others; of these, good colourings are—Lady Eleanor Cathcart and Mrs. R. S. Holford. Purples must be kept away from reds, but group well with any whites; some of the best for colour are—Everestianum, Album elegans Fastuosum, Cyaneum, Countess of Normanton, Caractacus, and Sigismund Rucker. Pretty shades of pale blush are found in Lady Grey Egerton and Marie Stuart, while for bold groups of one colour, Chas. S. Sargent, Edward S. Rand, and James Mason are clear shades approaching scarlet, and James Macintosh, Maxwell T. Masters, and Warrior rich crimsons.

DWARF KINDS.—There are some dwarf kinds which may be associated with alpine plants in the rock-garden—indeed, some are but a span high. One of the prettiest of these is *R. Chamæcistus*, which has tiny leaves, and in early summer exquisite purple flowers, of the same size as those of *Kalmia latifolia*. It is rarely seen in good health in gardens, and is best in limestone fissures, filled with peat, loam, and sand mixed in about equal proportions. A

native of calcareous rocks in the Tyrol, and one of the most precious of dwarf rock-shrubs. The well-known *R. ferrugineum* and *R. hirsutum* both bear the name of alpine Rose, and often terminate the woody vegetation on the great mountain chains of Europe. They are easily obtained from nurseries, and are well suited for the large rock-garden, where they attain, in deep peat soil, a height of about 18 in., with red flowers from June to August, *hirsutum* having hairy leaves and stems. But the best of all the dwarf Rhododendrons is *R. arbutifolium* (*Wilson's Rhododendron*), a hybrid between *R. ferrugineum* and *R. punctatum*, forming a dense bushy plant with small, oval, pointed, dark glossy green leaves assuming bronzy winter shades, and bearing many clusters of fragrant porcelain-pink flowers in July. For hardiness, freedom, and fine habit, it is a choice little plant when isolated, or as an edging to plantations. *R. myrtifolium* is a cross between *punctatum* and *hirsutum* and intermediate in form and habit, bearing clusters of deep rosy-red. Besides these, there are *R. caucasicum* from the Caucasus Mountains, forming a dense low shrub 2 feet high, with clusters of pink to yellowish-white flowers spotted with green within; the leaves oval, dark green above, and velvety-brown beneath. *R. Metternichii* from Japan, 4 feet high, with narrow leaves and rosy-flowers spotted with purple. Also *R. brachycarpum*, another larger Japanese species, with lighter green and more rounded foliage, and creamy-white flowers spotted with green. These are known to be exceedingly hardy, but are as yet only to be had with difficulty. *R. amœnum*, *R. hybridum*, *R. dauricum-atrovirens*, *R. Govenianum*, *R. odoratum*, and *R. Torlonianum* are other dwarf kinds, which may be used in the rock-garden—the last two being sweet-scented. They should not be planted near minute alpine plants.

THE HARDIEST KINDS.—As providing a more searching test than our own climate affords, we give here a list of kinds proved hardy in the New England winters under very varied trial, over a large range, and for a good many years past: Album Elegans, light blush marked with straw colour, fading to white, free, with an upright habit well suited to the centre of groups; Album Grandiflora, light blush fading to white, strong-growing, and very free; Alexander Dancer, light rose with paler centre, open and irregular habit, with a larger truss than

any other hardy kind ; *Atrosanguineum*, blood-red and early ; *Caractacus*, rich purplish-crimson, one of the best for size and colour of its flowers, gathered into large compact trusses, with fine habit and foliage ; *Charles Bagley*, cherry-red, a late variety of fine colour, with good habit and foliage ; *Charles Dickens*, bright scarlet flowers, coming early as compact trusses ; *C. S. Sargent*, rich crimson flowers, fine habit ; *Cœrulescens*, pale lilac-blue or blush, strong growth, and loose habit ; *Coriaceum*, a late kind, of dwarf habit and creamy-white flowers ; *Delicatissimum*, also late, with white flowers suffused pink, fine habit, and large glossy leaves ; *Everestianum*, one of the best in its freedom of flower and dense habit, flowers rosy-lilac spotted with yellow, and crinkled on the margins ; *F. L. Ames*, pale pink flowers with a band of deeper rose-colour, good foliage, but ungainly habit ; *Guido*, good habit, fine trusses of rich crimson ; *W. H. Sargent*, large crimson trusses and the darkest late kind, but of poor habit ; *James Bateman*, fine habit and rich scarlet flowers ; *Kettledrum*, a deep red, late kind ; *King of Purples*, dark purple, free, and of fine habit ; *Lady Armstrong*, pale rose, beautifully spotted, perhaps the best pink ; *Lady Grey Egerton*, good in foliage, habit, and its immense light mauve or silvery blush trusses : *Mrs. C. S. Sargent*, like *Everestianum*, but with bright pink flowers with a yellow blotch ; *Mrs. Harry Ingersoll*, flowers of deep rosy-lilac blotched green or yellow on the upper lobe ; *Mrs. Milner*, rich crimson flowers, and excellent in other ways ; *Old Port*, distinct in its rich plum colour ; *Purpureum elegans*, purple ; *Purpureum crispum*, clear purple with crimped petals ; *Purpureum grandiflorum*, the best of the purples in colour, habit, and freedom, flowering late ; *Roseum elegans*, flowers deep rosy-purple, with rich glossy foliage ; *Roseum grandiflorum*, near the last. These kinds may be planted with every confidence, even where the winters are long and rigorous.

INDIAN RHODODENDRONS IN SOUTHERN ENGLAND.—The following is an abstract from *The Garden* of a paper by Mr. W. J. Bean, of the Royal Gardens at Kew, on the Indian Rhododendrons in the London district, and therefore of interest to growers in the home counties, less favoured than many districts for the growth of these fine shrubs.

The altitudes at which these grow range between 4,000 ft. and 14,000 ft., but it is at heights of 10,000 ft. and upwards that

the genus is most abundantly represented. Above 12,000 ft. Sir J. Hooker says that three-fourths of the whole vegetation consists of Rhododendrons. The mean temperature at Darjeeling (in which neighbourhood most of the species are found) does not widely differ from that of London, but the extremes of heat and cold are much greater here than there, and it is only a few that can be said to thrive out of doors really well and flower in the London district, although many can remain healthy in foliage when grown in well-sheltered spots. The greatest successes with Himalayan Rhododendrons in the British Isles have been obtained near the sea in the south and south-western counties, where the temperature is equable and moist. The districts in which they are grown to greatest perfection are near Swansea, in Wales, and about Falmouth, in Cornwall, and also in the south of England and Ireland generally, the coast line all round the islands, too, being favourable. A soil which is naturally peaty is no doubt the best, but not essential ; they may be grown out of doors in loam either light or moderately stiff so long as lime is absent, and with plenty of leaf mould. They should always, if possible, be planted near trees—near enough to be screened from the sun for a few hours a day.

The following is a list of species of some proved hardy in Britain in the southern counties and in good suitable soils.

R. ARBOREUM.—The best known of the Himalayan species, and one of the most variable. The various forms may roughly be divided into two groups, the one with foliage that is silvery beneath, the other having the underside of the leaf covered more or less with a reddish tomentum. The leaves of all are from 5 ins. to 8 ins. long, the trusses rounded or sometimes almost conical, with the flowers closely packed, the colour of the bell-shaped corolla varying from rich crimson to almost white. The plants known under the following names belong to the arboreum group, some having been given specific rank : *Campbellia*, flowers rosy purple, leaves rusty beneath ; *limbatum*, flowers rosy purple, leaves silvery beneath ; *nilagiricum*, flowers rosy, leaves reddish beneath ; *cinnamomeum*, flowers almost white ; *Windsori*, flowers and trusses smaller, rich crimson.

R. AUCKLANDI.—This tender species attains the dimensions of a small tree, its stems being of a grey colour with the bark peeling off. A hybrid between it and *Hookeri* called *Kewense* (raised at Kew in 1874) has flowers of a pale flesh colour, not so large as those of *Aucklandi*, but more numerous in the truss. There is also a very pretty hybrid known as *Aucklandi hybridum*, which is hardy in the London dis-

trict; its flowers are pure white. Syn. *R. Griffithianum*.

R. BARBATUM is described as being in a wild state 40 ft. to 60 ft. high; I have seen it about 12 ft. high in Cornwall. The leaves are 5 ins. to 7 ins. long, with flowers of a rich blood-red colour borne in a compact truss 4 ins. or more in diameter. There are many seedling forms of *R. barbatum*, one with flesh-pink flowers being especially good.

R. CAMPANULATUM.—Among the hardiest of the Himalayan species, flowering in April and forming a widely spreading bush. The leaves are coated beneath with a brightly coloured reddish felt, and the flowers are pale purple, changing to nearly white.

R. CAMPYLOCARPUM is closely allied to the preceding and it is of similar habit, but the flowers are pale yellow, borne in a loose truss and scented like honey.

R. CILIATUM.—A bushy plant which thrives well in sheltered positions near London. Its leaves are densely covered with hairs when young, less so as they get older; the flowers are borne loosely in small trusses, rosy white on opening, whiter with age. It has been used for hybridisation, and amongst others *R. praeox* and Rosy Bell have been raised from it.

R. CINNABARINUM.—In "The Flora of British India" this name is made to include what have previously been known as *R. Roylei* and *R. blandfordiae* *florum*. The species is, indeed, a most variable one, having flowers of a brick-red, rich crimson, or sometimes greenish colour. They are all distinguished by the long narrow corolla, resembling a Lapageria.

R. FALCONERI.—A noble kind thriving in Cornish gardens, with oblong leaves about 10 ins. long, coated beneath with reddish down, dark green, slightly downy and curiously wrinkled above. The flowers are of a curious shade of creamy white tinged with lilac towards the base. *R. eximium* is a fine variety of this, differing in its bright pink flowers and the thicker reddish brown fluff on the upper surface of the leaves.

R. FORMOSUM.—There are two very distinct varieties of this in cultivation; the one has narrow leaves, in shape and size almost like those of an Indian Azalea; the other has them many times larger, obovate, and 5 ins. long. Both have the margins ciliated. The flowers are in each variety white, although in the bud stage quite rosy pink. They are about 3 ins. wide and as much in depth. *R. Gibsoni* and *R. Johnstoni* are forms of this species, differing chiefly in the larger leaves.

R. FULGENS.—One of the hardiest and rarest of Himalayan Rhododendrons, blooming out of doors early in March, and not always escaping the damaging spring frosts, but if it does, it is the most brilliantly coloured shrub flowering at that time. The flowers are in compact rounded trusses about 4 ins. across, a bright blood-red, the leaves coated beneath with a rusty felt. The true plant has been

grown outside for many years in the Rhododendron dell at Kew, and it has never been injured by frost, nor does it ever fail to set abundance of bloom. Himalaya, at elevations of 12,000 ft. to 14,000 ft.

R. HODGSONI.—A spreading shrub or small tree, rarely more than 12 ft. high, the stout leaves upwards of 1 ft. long, covered beneath with a grey tomentum, the upper side a bright shade of green, and flowers are of a pale rose-purple. It is hardy in both the Welsh and Cornish gardens.

R. HOOKERI.—A native of Bhotan, and on the Oola Mountain this is said to form entire thickets accompanied by *Pinus excelsa*. The leaves are oblong or oval, 4 ins. long and glaucous beneath, the flowers of a bright red.

R. KEYSI.—A curious species, with flowers more like those of a Correa, brick-red, about 1 in. long, the lobes of the tubular corolla being almost straight.

R. LANATUM.—The young branches, both surfaces of the leaves, and the petioles are covered with a dull white or tawny tomentum; the sulphur-yellow flowers are 2 ins. across.

R. MADDENI.—A shrub 8 ft. to 10 ft. high, with bright green lanceolate leaves. The corolla is pure white, bell-shaped, and about 3 ins. across the mouth. It is known also as *R. Jenkinsi*. *R. calophyllum* is practically the same thing, but a distinction is founded on the shorter calyx lobes and much smaller seed vessels.

R. NIVEUM.—One of the hardiest species, but far from the most showy, the young leaves being covered with a white tomentum, the upper surface afterwards becoming deep green and glabrous, the purplish lilac flowers close in a small head.

R. THOMSONI.—The flowers of this species, of a fine red, are borne in loose trusses, hardy in the London district and flowering in the early part of April; the leaves 3 ins. to 4 ins. long, very dark green above. This is a plant of bushy habit; the largest I have seen is growing at Tremough, near Falmouth—a magnificent garden for these Rhododendrons. It was 12 ft. high and 15 ft. through.

R. WIGHTI.—A small tree, found at elevations of 11,000 ft. to 14,000 ft., bearing yellow flowers $2\frac{1}{2}$ inches across in large rounded trusses. The leaves are firm and stout, 6 ins. to 10 ins. in length, and when young quite white underneath, becoming grey with age.

R. anthopogon, flowers sulphur-yellow; *R. glaucum*, flowers dull rose-purple; and *R. pendulum*, flowers white, are small-leaved dwarf shrubs, chiefly of botanical interest.

NEW HIMALAYAN HYBRIDS.—By far the greater number of our garden Rhododendrons are the product of only four species which have been closely inbred, these being *catarbiense*, *ponticum*, *caucasicum*, and *arboreum*. For many years raisers confined their attention to these species, but of late the field has been

widened by the use of *Rs. Fortunei*, *Aucklandi*, *Thomsoni*, and others, and many of the most remarkable of recent gains have come from this infusion of new blood. Some of these hybrids are from the crossing of wild species, and others are of mixed parentage—crossing of a species with one of the hybrid garden varieties. Among the best of these plants are :—*Thomsoni* hybrids : Ascot

cherrimum, and Russellianum. Others are named Mrs. Henry Shilson, Harry Mangles, Rose Queen, Pride of Penjerrick, Glory of Penjerrick, and Gertrude Jekyl. Though hardy in all that concerns growth, some of these fine plants bloom too early for the open air, losing their flowers by frost before they can expand. Others are fully hardy, but we need to know more about most of these

Tree Rhododendron at Castlewellan, co. Down.

Brilliant, *Luscombei*, and *Luscombei splendens*. *Fortunei* hybrids : Duchess of York, H. M. Ardenne, George Thiselton Dyer, Mrs. Thiselton Dyer, Francis Thiselton Dyer, *Harrisi*, etc. *Aucklandi* hybrids : *Kewense*, Pink Pearl, White Pearl, *Manglesi*, Coombe Royal, Beauty of Tremough, *Gauntletti*, Dawn, Beauty of Littleworth, etc. *Ciliatum* hybrids : *Praecox*, Rosy Bell. *Arboreum* hybrids : Duke of Cornwall, and the old series—*Altaclerense*, *Nobleum*, *venustum*, pul-

kinds before planting them in the flower-garden. Most of them are fully described in *Flora and Sylva*, Vol. III., p. 38. A correspondent in the south of Ireland, in Fermoy, sends to *The Garden* the following account of the kinds he has found to do well there—quite hardy without protection—and also of his failures :—

“As I have taken much pleasure in cultivating and hybridising Rhododendrons for about twenty-five years, especially with a view to acclimatise those of

Sikkim and Bhotan, I think the results at which I have arrived may be interesting. In order to avoid occupying too much space, I shall first give the names, as furnished to me, of those varieties which I have found perfectly hardy trees without the slightest protection, although some of those which bloom early (about March) have their flowers occasionally spoiled by the spring frosts :—

“Alpinum; *Æruginosum*; *Anthopogon*; *Arboreum album*; *Arboreum roseum*, very beautiful; *Arboreum nepalense*; *Barbatum*, magnificent; *Calyculatum*; *Camelliæflorum*; *Campanulatum*; *Campbelli*; *Campylocarpum*; *Ciliatum*; *Cinnamomeum*; *Cinnabarinum*; *Crispiflorum*, not bloomed; *Eximium*, fine, like *Falconeri*; *Falconeri*, grand; *Fulgens*; *Falconeri superbum*, not bloomed; *Glaucum*; *Hodgsoni*, grand, has not yet bloomed; *Hookeri*; *Keysi*; *Lanatum*; *Lancifolium*, not bloomed; *Metternichi*; *Massangei*, beautiful bloom this year; *Niveum*; *Nobile*, a grand plant, never bloomed; *Ochraceum*; *Roylei*; *Virgatum*; *Wallichi*, I think same as *Niveum*; *Wighti*.

“The following were more or less injured last spring (those marked * I have not yet succeeded in acclimatising) :—

“*Argentum*, much injured, growing well, not bloomed yet; *Aucklandi*, much injured, growing well, bloomed well in 1878-79-80; *Calophyllum*, apparently killed, but growing well; * *Dalhousianum*, I do not give this up; * *Edgeworthi*, I do not give this up; *Formosum* *Gibsoni*, much injured, but growing well; *Jenkinsi*, much injured, doing well, never injured in twenty years previous; *Kendricki*, I doubt its name; *Longifolium*, much injured, growing well, has never bloomed; *Lindleyanum*, much injured, growing well; *Maddeni*, much injured, growing well (I see no essential difference between this and *Jenkinsi*; centre of *Jenkinsi* flower, rose, of *Maddeni*, yellow); *Nilghiricum* not bloomed, much injured; * *Nuttali*, many plants killed, I fear hopeless; *Thomsoni*, much injured, but growing; *Windsori*, very much injured, but growing well. The last two plants appear to me less hardy varieties of *R. arboreum*.

“I have not included any European hybrids in my list, of which, between Himalayan sorts alone, I know many, and have a great number of my own rearing also, and the reason I do not give up *Dalhousianum* and *Edgeworthi* is that I have seedlings from crosses of them which promise well to be hardy, one especially, between *Edgeworthi* and, I think, *calophyllum*, which only lost its bloom-buds last spring, I am very proud of; its fragrance is far beyond any I know—Rollisson’s *fragrantissimum* and *Lindleyanum* being, so far, the best. I have named it the Empress of India in honour of our Queen.—H. H.”

RHODODENDRONS IN SCOTLAND.—Indian Mountain Rhododendrons may not only be successful in the southern parts of England and Ireland, but very fine flowers have been sent me from Scotland (Stonefield, Tarbert, Argyleshire), kinds thriving there that do not always prove hardy in the south. Mr. D. Robertson, who sent the flowers, said the effect produced by them was very fine, and the following kinds have flowered in that place without any kind of protection :—

Falconeri, *arboreum*, *arboreum album*, *niveum*, *cinnamomeum*, *Campbelli*, *campylocarpum*, *Thomsoni*, *barbatum*, *fulgens*, *Wallichi*, *ciliatum*, *Roylei*, *Edgeworthi*, *glaucum*, *Gibsoni*, *candelabrum*, *setosum*, and *pumilum*. Another Scotch correspondent, writing from Edinburgh, gives the following additional kinds as hardy and flowering well in his garden :—*Æruginosum*, *argenteum*, *barbatum*, *Blandfordiæflorum*, *cinnabarinum* and its fine form *majus*, *Fortunei*, *fulgens*, *Hodgsoni*, *lepidotum*, *longifolium*, and *virgatum*.

NEW CHINESE RHODODENDRONS.—These are not yet much known in our gardens, and yet a few kinds have already shown their value. There is now at Coombe Wood a great variety of young plants raised from seeds sent home to Messrs. Veitch by Mr. E. H. Wilson, and some at least of them are likely to prove of real importance for us. On the whole they approach the Rhododendrons of Northern India—in fact, several species in the one region have an almost exact counterpart in the other. On the other hand, not a few are quite unlike any other known kinds, such as the charming *R. racemosum*, in which we have a distinct new type of Rhododendron. We may hope, too, from the latitude and elevation at which many of them grow, that they will prove hardier than the Himalayan species.

R. aucubæfolia is a fine species with white flowers, and bold leaves 6 or 8 inches long. *R. Augustinii* has large white, pink, or mauve coloured flowers, finely waved around the edges of the petals. *R. auriculatum*, a fine low tree of 10 to 30 feet, with beautiful white or rosy flowers perhaps finer than in any other Chinese kind. They are funnel-shaped, 3 inches deep and 4½ inches across the mouth; the leaves leathery and 4 to 9 inches long. *R. ciliicalyx* is another charming plant with even larger white flowers flushed with rose, but it is untried as to hardiness. *R. Delavayi*, with dark red flowers, comes very near the Himalayan *R. arboreum*. *R. Fortunei*, though an old kind, is still rare, and one of the best. It is the most fragrant of true Rhododendrons, the flowers composed of finely crisped petals, and clear pale rose fading to white. Some garden crosses have lately come from this kind, which promises to give us a very useful early-flowering group for gardens. *R. lacteum*, grown already to a fine size at Kilmacurragh, Ireland, comes near the Indian *R. Falconeri*, with trusses of white bell-shaped flowers 2 inches across. Its

leaves are a foot long, covered beneath with a beautiful felt, silvery-white at first, turning brown with exposure. *R. racemosum* is the most useful and distinct of these new kinds, growing without any trouble, and readily increased. It makes a low shrub, well adapted to the rock-garden, growing slowly, needing little root-room, and flowering freely from a height of only a few inches. The white or pale rosy flowers are not large, but instead of confined as in other Rhododendrons to a rounded truss at the tips of the shoots, here they also appear all along the shoots as clusters from the leaf-axils, so that in April each branch is transformed into a raceme of flowers. *R. rubiginosum*, a scarce kind which has proved fully hardy at Kew, its flowers bright rose spotted with crimson. It flowers in late April or May, and is easily increased from home-saved seeds. *R. scabrifolium* is a pretty little plant, never growing high, with rosy flowers and hairy leaves and stems. *R. yunnanense*, one of the best, is a beautiful hardy kind of slender open growth, doing best in a sheltered spot, where it blooms in May. The trusses are small but exceedingly graceful, composed of flowers 2 inches or so across, white or rosy-lilac, freely spotted with dark red on the upper petals.

SPECIES OF RHODODENDRON.—According to the Kew list, the following species of Rhododendron are in cultivation. About double the number are in some books, many of them of uncertain value.

R. albiflorum, N. America; *ovatum*, China; *albrechtii*, Japan; *arborescens*, U. States; *calendulaceum*, do.; *dilatatum*, Japan; *flavum*, Caucasus; *indicum*, China and Japan; *ledifolium*, do.; *linearifolium*, Japan; *nudiflorum*, Canada to Florida and Texas; *occidentale*, California; *Rhodora*, N. America; *rhom-bicum*, Japan; *Schlippenbachii*, Mandshuria and Japan; *serpyllifolium*, Japan; *sinense*, China and Japan; *Vaseyi*, Mountains of Carolina; *viscosum*, N. America; *altaclerense*, garden origin; *Anthopogon*, Alpine Himalaya, and N. Asia; *arborescens*, Temperate Himalaya; *ancubifolium*, China; *Augustinii*, China; *auriculatum*, China; *blandianum*, garden origin; *brachycarpum*, Japan; *californicum*, California; *campanulatum*, Alpine Himalaya; *canopylocarpum*, Sikkim; *catarwiense*, Virginia to Georgia; *caucasicum*, Caucasus; *ciliatum*, Sikkim; *cinnabarinum*, do.; *collettianum*, Afghanistan; *Cunninghami*, garden origin; *dauricum*, Dahuria to Mandshuria and Sachalin; *decorum*, Yunnan; *Delavayi*, do.; *ferrugineum*, Alps of Europe; *arbutifolium*, *Hammondi*, *Wilsoni*, all garden origin; *Fortunei*, China; *fulgens*, Mountains of India; *glaucum*, do.; *halense*, Austrian Alps; *hirsutiforme*, do.; *hirsutum*, Alps of Europe; *hypoglaucom*, China; *intermedium*, Tyrol; *kamtchaticum*, North Asia; *Kewense*, garden origin; *Keysii*, Bhotan; *lacteam*, Yunnan; *lepidotum*, Temperate and Alpine Himalaya; *Luscombei*, garden origin; *Manglesii*, do.; *maximum*, N. America; *Metternichii*, Japan; *micranthum*, China; *myrtifolium*, garden origin; *niveum*, Sikkim; *nobleanum*, garden origin; *parvifolium*, Siberia, China, &c.; *pittosporæ-folia*, China; *ponticum*, Spain, Portugal, Asia Minor;

præcox, garden origin; *Przewalskii*, China; *pulcherrimum*, garden origin; *punctatum*, N. America; *racemosum*, Western China; *roseum odoratum*, garden origin; *rubiginosum*, China; *Russellianum*, garden origin; *scabrifolium*, China; *Smirnowi*, Caucasus; *Smithii*, garden origin; *Thomsoni*, Nepaul and Sikkim; *tortonianum*, garden origin; *Ungeri*, Caucasus; *venustum*, garden origin; *virgatum*, Sikkim; *yunnanense*, China; *azaleoides*, *Cartoni*, *gemmaferum*, and *gouvierianum*, all of garden origin.

RHODORA (*Canadian Rhodora*).—*R. canadensis* is a pretty deciduous bush, 2 to 4 ft. high, allied to the Rhododendron, a native of the swamps of Canada, hardy, and needing a moist light soil, though it prefers peat. In very early spring it has clusters of fragrant rosy-purple flowers before the leaves unfold.

RHODOTHAMNUS.—*R. chamæcistus* is a beautiful little alpine bush very rare in gardens and rather difficult to cultivate. It is less than 1 ft. in height, with ovate leaves from a quarter of an inch to half

Rhodothamnus chamæcistus.

an inch long, thickly clustered on the twigs, the margins set with slender hairs. It flowers towards the end of April and the beginning of May, and produces its blossoms in clusters at the ends of the shoots. From two to four flowers are in the cluster, and each is about $1\frac{1}{4}$ inch in diameter, the free portions of the petals fully expanded. The colour is a pale clear pink with a ring of a deeper shade in the centre. A feature of the flower also is the long stamens. It is by no means rare in a wild state, being found in the Tyrol (often in large patches) as well as in Carniola. In cultivating this plant, full exposure of the foliage to sunlight, combined with cool, uniformly moist conditions at the roots are necessary. It should be planted in a sunny position in a crevice or small pocket between the stones, which keep the roots permanently moist and

protected from the hot sun that the leaves enjoy. The compost should consist mainly of good loam, to which a small proportion of peat may be added, and which should be free from calcareous matter. Syn. *Rhododendron chamæcistus*.

RHODOTYPOS (*White Jew's Mallow*).

—*R. Kerrioides* is a summer-leaving shrub from Japan, with a growth and foliage recalling the familiar old Jew's Mallow on cottage-walls, but with white flowers. It is of slender growth, but makes a vigorous bush when well grown, and is usually 5 or 6 ft. high, though against a wall it reaches a height of 10 or 12 ft. It flowers in May, and keeps in bloom a considerable time.

RHUS (*Sumach*).—Low trees, shrubs, or climbers, with an acrid juice, usually hardy, and remarkable for their elegant and picturesque growth, and often brilliantly coloured leaves in autumn. Such good qualities as they have are rarely shown in our gardens, where they are indeed often absent save one or two of

Rhus copallina.

the commoner kinds, and these never grouped or shown in any right way, but perhaps half starved in the conventional muddle of the shrubbery. Several kinds are poisonous, and should not be planted near the house, and, if used at all, should be handled with great care, as accidents are frequent to unsuspecting admirers. Their poisonous character is well known and feared in their native countries. The Sumachs are not difficult as to soil or cultivation, thriving in ordinary garden soils, and rather enjoying poor and dry soils, some of them being suitable, therefore, for grouping on dry banks where little else will grow. They may be in-

creased by root cuttings, layers, and also by seed.

R. CANADENSIS (*Fragrant Sumach*).—A hardy shrub with trifoliate leaves, a native of rocky woods in Canada and New England, and through Eastern America, especially along the mountains. It has pale yellow flowers in short dense clusters, formed in autumn but flowering in spring before the leaves appear. Very useful for dry rocky banks, where it spreads prettily. The variety *trilobata* has the leaflets more deeply cut. Syn. *R. aromatica*.

R. COPALLINA (*Mountain Sumach*).—A shrub or small tree with pinnate leaves of smooth glossy texture, turning a fine colour in autumn in its own country, as they probably would in ours in full sun in warm soil. New England, Canada, and southward and westward.

R. COTINOIDES (*American Smoke Tree*).—A small tree with oval leaves, and somewhat like our European kind, but really better, with larger and thinner leaves, taking also a fine colour in autumn, of a beautiful scarlet, suffused with orange and crimson. A native of Missouri, Indian territory and eastwards. It should be planted in dry, warm soil and sunny positions.

R. COTINUS (*Venetian Sumach*).—A beautiful and distinct shrub, long cultivated though not always well placed, the simple leaves taking a fine colour in autumn and the curious inflorescence giving a very pretty effect. There is a purple variety which is an improvement, and a pendulous variety less important. The Venetian Sumach looks very well as a group in a sunny open situation. Southern and Central Europe, and the East.

R. GLABRA (*Scarlet Sumach*).—A distinct very hardy, bushy kind, with smooth rather small leaves, thriving in any poor dry soil, the leaves taking a very brilliant colour in autumn. Var. *laciniata* is very distinct, the leaflets longer and of much greater breadth than in *R. glabra* itself, but they are cut up into narrow pinnate segments, combining the beauty of the finest *Grevillea* with that of a *Fernfrond*. When unfolding they remind one of a finely-cut umbelliferous plant in spring; when fully grown the midribs are red; and in autumn the leaves glow off into a bright colour after the fashion of American shrubs. The wild plant is much rarer in cultivation than the cut-leaved variety.

R. OSBECKII.—A fine kind from China and Japan, with pinnate leaves much finer than the others, striking foliage, also turning in good seasons and warm soils a good orange colour in autumn. This is one of the kinds that might be cut down annually where plentiful, so as to get the fine effect of the foliage on the young vigorous stems.

R. RADICANS (*Poison Ivy*).—A distinct woody climber very common in the North American hedgerows and copses and also up trees. Its leaves give it somewhat the character of a Virginian Creeper, and some unprincipled

nurserymen sent it out with a new name as *Ampelopsis Hoggi*, under which it has been distributed in many gardens. It is a most poisonous in plant its own country and also in ours, accidents taking place from it in gardens, and the cause of the illness is not

The Venetian Sumach (*Rhus cotinus*).

always known. If kept at all in the garden it should be in rough places where it would not have to be handled or pruned. Syn. *R. toxicodendron*.

R. TYPHINA (*Stag's Horn Sumach*).—In its own country often a small tree or shrub, in ours generally a loose shrub common in gardens. The leaves (and stems) are densely covered with long soft hairs, and often take a fine colour in autumn, which is increased by the persistent crimson seed-clusters. As the plant is common, it may be grown as a fine-leaved plant by cutting hard back every spring, and confining the growth to one or two shoots. It is a native of sandy or rocky soil from Nova Scotia and Canada southwards. There is a lace-leaved form of this species also, in which the segments are very fine.

R. VERNIX (*Poison Sumach*).—This is a shrub or, in its own country, a small tree with pinnate leaves, and growing in swamps in southern Ontario and the coast district of the Eastern States. It is a very poisonous plant,

and must not be brought much into gardens. The leaves are glossy and smooth, and turn a fine colour in autumn.

R. VERNICIFERA is the famous Lacquer Tree of Japan, and a graceful shrub in the

Rhus typhina.

milder parts of Britain, but it is said to be very poisonous.

RIBES (*Currant*).—The favourite old Crimson-flowering Currant (*R. sanguineum*) is typical of the few species that can be called ornamental shrubs. This shrub is so common that I need only allude to the fine varieties of it that are to be obtained from the best nurseries. Perhaps the best form is that named King Edward VII., with very large flowers of intense colour. Deep and rich in colour is the variety *atro-rubens* (called also *splendens*), though the flowers and racemes are smaller. The crimson-red of its blooms forms a striking contrast to the variety named *albidum*, whose flowers are almost white, though slightly suffused with pink. The double sort (*flore-pleno*) is an admirable shrub, with very double flowers, which last a long time in perfection, and, as they expand later than the common kind, prolong the season. The variety *glutinosum* is distinguished by clammy foliage and large pale rosy-pink flowers. A new form with golden leaves has recently come to light, but is not yet generally obtainable.

The Yellow-flowering, or Buffalo Currant (*R. aureum*), deserves to be more commonly grown. It is a different shrub from *R. sanguineum*, having larger flowers of a rich yellow, which appear about the end of April or beginning of May; the leaves also are smaller, more deeply lobed, and of a paler green. The variety *præcox* is so named because it flowers earlier than *R. aureum*, and is most desirable on that account, and the variety *serotinum*, because it flowers late. *Serotinum* is even finer than the type.

R. Gordonianum, a hybrid between *R.*

aureum and *R. sanguineum*, is an old and tolerably common shrub—intermediate in growth as well as in flowers, which are an orange-red ; it is distinct and showy. It is also known as *R. Beatonii* and *R. Loudoni*. Of the numerous other species there is none so fine as the Californian Fuchsia Currant (*R. speciosum*), whose flowers so much resemble miniature Fuchsia-blossoms that in some places it goes by the name of *R. Fuchsoides*. Its deep red blooms have protruding stamens, and hang from the leaf-axils in clusters of two or three. In growth and foliage it resembles a Gooseberry. A densely-flowered bush is extremely pretty and lasts in perfection a long time. Though quite hardy enough to be grown as a bush in the milder parts of England, it is usually seen against a wall, and there are few more elegant wall shrubs. Grown thus it is 6 to 8 ft. in height. Another and newer kind, also very like a Gooseberry when out of flower, is *R. Lobbiani*, from California, with very pretty purple and white flowers like a little Fuchsia, followed by small hairy fruits of agreeable flavour. Most of the other varieties have inconspicuous flowers, but one or two are worth growing for the sake of their autumn foliage, which dies away in various shades of crimson. The Missouri Currant (*R. floridum*), also called *R. missouriense*, is one of the best of these. It is a stock plant in some of the largest nurseries. The Flowering Currants are really an important group of shrubs and deserve the best attention, and instead of being crammed in the usual shrubbery-mixture, should be grouped by themselves.

RICHARDIA (*Calla*).—This name has been accepted by botanists for the last three-quarters of a century, although it is not yet generally used by gardeners.

The genus consists now of various species. They all have a perennial tuberous root-stock, not unlike that of *Caladium*, from which spring the annual leaves and scapes, the former with folding stalks, which form a kind of stem, bearing sagittate leaves, the latter erect, stout, and bearing a large spathe. There is a noteworthy difference between *R. æthiopica* and the others, the former having a rhizome and never naturally dying down.

R. æthiopica (*Lily of the Nile*) was first introduced into Europe from S. Africa in 1687. It is emphatically a Cape plant, and is not found within 1,000 miles or so of the Nile, although it is commonly known as the Lily of the Nile. In some parts of this country, for instance Corn-

wall, it has become naturalised in shallow water, spreading and flowering with the same freedom as in the ditches and swamps of the Cape. It varies considerably in the size of its spathes. I have seen them 10 in. long, and I am told that larger even than this have been grown by cultivators who cut off most of the leaf-blades when the spathes were developing. The plant is useful in ponds and fountain basins in the warmer parts of our country. Syn. *Calla*.

RICINUS (*Castor-oil Plant*).—*R. communis* is a much-grown plant in warm countries, growing out of doors in the warm months in ours, and used for bold and noble beds near those of the more brilliant flowers, but it is not well to associate it closely with bedding plants, because of its strong growth and the shading of its leaves ; it is a good plan to make a compact group of it in the centre of some wide circular bed and to surround this with a band of a dwarfer plant, say *Aralia* or *Caladium*, and to finish with flowering plants. A bold centre may be thus obtained, while the effect of the flowers is enhanced. It requires rich deep earth to form its finest leaves, and to raise the plants a brisk hotbed is needed in February or March, in which to plunge the pots in which the seeds should be sown. The pots should be well drained, and the soil pressed down firmly, with a little sifted soil placed over the seeds. When the plants are large enough, pot them singly into 4-in. pots in soil composed of sandy loam and leaf-mould or rotted manure ; keep them in a warm moist temperature, and give plenty of water at the roots ; when the roots have reached the sides of the pots, place the plants in 6-in. or 8-in. pots. About the end of May gradually inure them to a cool temperature, and after a few weeks place them in a sheltered position out of doors. By the end of June they may be planted out in the beds ; the more sheltered the situation the better. Dig out holes for them, placing in the bottom a few forkfuls of manure, and if this be taken from a warm manure-bed, so much the better. Plant and water them with soft rain water, and mulch the surface with manure. During hot weather manure-water will be of use.

The best varieties are *sanguineus*, *borboniensis*, *Gibsoni* (a very fine dark variety), *giganteus*, *Belot Desfougères* (a very tall and branching kind), *viridis* (of a uniform lively green), *insignis*, *africanus*, *africanus albidus*, *minor*, *hybridus*, *microcarpus*, *macrophyllus*, *atro-purpureus*, and *sanguinolentus*, all of which are forms

of *R. communis*, a native of the East Indies.

ROBINIA (*False Acacia*).—Beautiful flowering trees for lawn or shrubbery. The common *Acacia* or *Locust Tree* (*R. pseudoacacia*) is of quick growth, hardy, and thrives almost anywhere. The ordinary form, with its white Pea-shaped blossom in full beauty about the end of July, is the most familiar. Of the numerous varieties the following are the best : *Decaisneana*, with delicate pink flowers ;

Robinia pseudoacacia.

semperflorens, flowering throughout the summer, and having white blossoms and bright green foliage ; and *Bessoniana*, the thornless branches of which form a dense globular head of deep green foliage, which is retained until very late in autumn, hence its great value as a town or a street tree ; *mimosæfolia*, with finely-divided leaves ; *fastigiata*, of upright growth ; *crispa*, with curled foliage ; *monophylla*, with leaves entire instead of pinnate ; *umbraculifera*, with a spreading head ; *macrophylla*, with large leaves ; *sophoræfolia*, with leaves like the Japanese *Sophora* ; and *inermis*, with a small head of spineless branches.

R. viscosa (*Clammy Locust*) is smaller than the ordinary *False Acacia*, but is elegant in foliage and beautiful in flower. The flowers resemble those of *Decaisne's* variety of the common *Acacia*, being of a pale pink colour, but the clusters are shorter and denser. It is a beautiful lawn tree, flowering while the tree is still small : fully grown it is of picturesque habit, from 30 to 50 ft. high, thriving best in a deep light soil in a sheltered spot.

R. hispida (*Rose Acacia*) is one of the finest of small trees, requiring little room and not fastidious as to soil. It is naturally straggling in growth, 5 to 15 ft. high ; its foliage is much larger than that of the other *Robinias* ; the clear rose-pink flowers are also larger. A well-flowered specimen is a pretty

sight. It flowers in June, but often continues at intervals till autumn. It may be known when not in leaf by the dense rusty hairs covering the young twigs. Its branches are brittle and apt to get broken by high winds, especially if it has been grafted high ; therefore choose a spot sheltered from high winds. If the branches become heavy, especially in flower-time, support them by stakes. It may be grown as an espalier, like a fruit tree, and this will protect it from winds, or it may be trained against a wall. There are several so-called varieties, but none is more beautiful than the type. The variety *macrophylla* (large-leaved) is of stronger growth, and has finer foliage and flowers. N. America.

R. neo-mexicana (*Western Locust Tree*).—A spreading shrub or low tree of 20 to 25 feet. It is a vigorous plant of fine habit, the young shoots, the under-side of the leaves, the flower-stalks, and the seed-pods covered with

Rodgersia podophylla.

short brown bristles ; the branches bear two spines at each node. Its bluish-green leaves are rather long and grace-

fully drooping, while the flowers, of a pale rose colour, are carried in short dense clusters towards the end of the summer. It is a useful addition to the group, hardy, and flowering freely when quite small. This is the only kind found in the western States of America. It does not thrive in heavy cold soils.

RODGERSIA. — *R. podophylla* is a handsome-leaved plant of the Saxifrage family, with bronze-green leaves measuring

us from China, but some of them are not yet fully tried in gardens. *R. pinnata* is the best of these, with stems of rosy flowers 3 or 4 ft. high standing boldly above the handsome emerald-green leaves. The leaves are often bronzed or tinged with red, and are divided into separate leaflets arranged in pairs, with an odd one at the tip of the midrib. *R. pinnata alba* is a distinct wild form, in which the flower panicle is somewhat

Romneya Coulteri.

1 ft. or more across and cleft into five broad divisions. The inconspicuous flowers are produced on tall branching spikes 3 or 4 ft. high, and in effect like a giant Meadow-sweet. The plant is perfectly hardy, enjoying peaty soil and a shady situation. It is easily propagated by cutting the stoloniferous root-stock, and twenty plants can be obtained from a single root-stock in one year. Japan. Several new kinds have recently come to

longer, broader, and more loosely clustered. *R. æsculifolia* is a very graceful plant, with stems $2\frac{1}{2}$ to 5 ft. high bearing large heads of pure white flowers, beneath whose weight they arch prettily. The glossy green leaves are very variable in size, but often 18 in. across, and divided like those of a Horse Chestnut. All require the same treatment, and if well grown flower well every second year. Kinds not yet in general cultivation are

R. Henrici, *R. sambucifolia*, and *R. tabularis*.

ROMNEYA (*White Bush Poppy*).—Among plants of recent introduction perhaps none surpass in stately beauty this fine Californian Poppywort, *R. Coulteri*. In favourable localities it has flowered freely on lengths of the current year's growth, fully 7 ft. high, when, with some twelve or fifteen flowers in bloom at the same time, the plant has a charming effect. The flowers are of a peculiarly delicate texture, the petals somewhat transparent, and yet enduring in a good state for days; their fragrance delicate, something like that of a Magnolia. It is perennial, subshrubby, and the deeply-cut glaucous foliage is retained throughout the winter. It does not appear to flower on the last year's growth, though that growth remains in good condition. The flowers are borne mainly on the points of the new shoots and on laterals nearest the points, more sparingly on the lower laterals. It is hardy in genial soils, enjoying best a warm loam. Where it will not grow well in the open, it would do so in many places against a wall with a southern aspect. It does best on warm soils in very different parts of the country, so that no one need doubt the fitness of this noble plant for English gardens. When once planted it is very averse to root disturbance, often dying outright even though well cut back. When necessary, transplanting should be in spring, just before growth begins.

The best winter protection for Romneya Coulteri is a mulch over the roots of some light and porous material. Pine needles form the best covering, and, after these, rough cocoanut fibre. A straw mat may be placed round the branches during hard frosts, but should be removed as soon as the weather becomes less severe. A point in starting is to get healthy plants in pots, planting in spring and not disturbing the roots much. It may be increased by root-cuttings, suckers (which should be cut well back), and seed. A second species of Romneya, *R. trichocalyx*, has recently come to light in our gardens, but it differs very little from the older kind, and is not quite so good.

ROMULEA.—Bulbous plants of the Iris family. They are of dwarf growth, and have grassy foliage; but though their blossoms are showy, they are not perfectly hardy, and they require to be grown either in frames or in very warm sheltered borders, in light soil. The best known are *R. Bulbocodium*, *ramiflora*, and *Columnæ*, natives of South Europe, and *R. rosea* and *R. Macowani* from the

Cape of Good Hope. The showy Crocus-like flowers of these open fullest in sunshine, and vary as to colour from crimson, purple, and mauve to white and yellow. Perhaps the best of all is *R. Pylia*, a scarce but very beautiful form of *R. Bulbocodium*, with Rush-like leaves a foot long and pure white flowers with a yellow throat, 2 in. across when fully open. This kind thrives in the south-west of Britain, spreading fast and flowering freely in spring.

ROSA (*Rose*).—The flower of flowers has been ill treated in its literature! It would be difficult to imagine anything more confusing than the writings on the Rose and our catalogues of the present day! Almost useless groups, like the Boursault, are dignified as classes, while more important groups like the noble Teas often receive no due notice; the confusion arising from the misleading term "hybrid perpetual" has effectually concealed the fact that the true perpetual bloomers are the Tea Roses, so keeping the noblest of all Roses out of gardens even in the southern counties. For many years Roses far superior to the many so-called "perpetual" in point of continuity of bloom have been raised, and yet, as a result of that ill-chosen name, one may go into some of the largest gardens and hardly see a Rose in the Rose-garden in August. The set idea of the Rose-garden itself, as laid down in all the books, *i.e.* a place apart where one can only see flowers at a certain season, was harmful, as it led to the absence of the Rose from the flower garden. Instead of seeing the Rose in many different attitudes in a country place, we see a wretched mob of standards and half-standards rising out of the ground, generally in a miserable formal arrangement called the Rosery. Instead of forming beautiful Rose-gardens, many growers have distinguished themselves by growing Roses on tall Briers and other stocks, from which they get perhaps one or two flowers bigger than their neighbours' to send to a Rose-show. The Rose exhibitor's Rose-garden is even uglier than the so-called Rosery in the large country seat, and thus the beautiful human and artistic side of the Rose-garden has been forgotten. As, however, that important side of the Rose-garden is treated of in the first part of this book, it only remains here to deal with the kinds and groups most useful for the garden.

TEA ROSES FOR THE FLOWER GARDEN.—These are in many ways so superior to all other Roses, that we might place

them first, yet there is room for a great extension of their culture in gardens, both large and small. We find even standard works on Rose-growing speaking of the Teas as tender and needing protection. Others say that only in a few instances can they be grown in the open ground; and to have them in full beauty, to ensure a constant succession of flowers, and to produce them in all their loveliness and purity of colour, they must be grown under glass. This is not so. Tea Roses may be grown in many gardens where they cannot now be found, and I would urge all who love Roses to try them fairly, for none are more worthy. The variety of lovely tints amongst Tea

the climbing kinds wreath the walls and the dwarfs are grouped in beds and borders solely for effect. None, with me, have ever been protected, but winter winds blow furiously over the garden, and on several occasions more than 20° of frost have been registered among the plants. They may be grown with every prospect of success over quite the southern half of England and in many other favoured spots. The dwarf kinds prefer a soil more light and open than that usually chosen for other Roses. The plants should be either on the Brier stock or on their own roots. The vigorous and perpetual blooming climbing kinds are the best Roses for walls and fences.

Rose, Celeste.

Roses, the delicate odour, the profusion of bloom, the long season over which it is borne, and their charming habit and foliage are great merits. Let us for ever give up the stupid notion of growing our Roses only in a Rosery, in some out-of-the-way spot. The grand Tea Roses now under notice are worthy of the best position in the garden. There are also many excellent kinds for clothing walls, fences, or any other erections about our homes, and we shall need much space if we want to grow all that are good. Here I name all the best Tea Roses, and if we would make our gardens sweet from June to November, these are what we should plant. Every kind is described from experience of it in a flower garden, where

Many of the climbing Teas may be grown away from walls, which for such hardy vigorous kinds only furnish support, shelter not being needed. Plant in groups of from three to twelve plants where they have room to develop; a stake here and there is all the support needed, and they will make huge bushes and bear flowers by the hundred.

TEA ROSES FOR BRITISH GARDENS.—The undermentioned Tea Roses are the best of the varieties opening well in Britain, and the result of a trial of almost every obtainable kind, many thousand plants and for many years, all tried in the open air without protection of any kind at any season. As it is extremely difficult so far to buy strong plants of Tea Roses on their

own roots, the trials were necessarily made with good plants grafted on the Dog Rose, but all my experience tends to show that with many of the best kinds I should have been more successful with plants raised from cuttings struck in the open air in autumn. A simple way is that pursued by cottage gardeners, of putting in cuttings in a bed in the open air without protection except inserting the cuttings sideways, in which way they strike more surely. If there are *cloches* to spare or hand-lights the result is more certain. A great point is to put the cuttings in where

plants of quite different countries and natures. To be quite fair to all these beautiful Roses they should be tried in both ways, and not for one year only. The following list of kinds includes quite the best, though these will be found to vary in excellence in different gardens, as well as in different seasons :—

Anna Oliver, Bridesmaid, Caroline Kuster, Catherine Mermet, Countess de Nadaillac, Corallina, Devoniensis, Ernest Metz, Ethel Brownlow, Etoile de Lyon, François Dubreuil, Franciska Kruger, General Schablikine, Golden

Buds of Tea Rose, Anna Olivier.

we wish the plants to grow. Another is not to let the little plants flower—they try to do so very early, and this must be prevented by constant pinching. If Tea Roses were struck in this way for a year or two, we should get a stock of healthy plants on their own roots, which we could soon compare fairly with the Roses on the various stocks of Manetti, Dog Rose, or other kinds. I feel certain now that many of the kinds I have lost, or that bloomed feebly and died out, were the result of grafting, or arose from the stock itself and conflict of the saps of

Gate, Georges Nabonnand, Hon. Edith Gifford, Innocent Pirola, Jean Ducher, Lady Roberts, Ma Capucine, Mdle. Jeanne Philippe, Mme. Badin, Mme Berkeley, Mme. Chedane Guinoisseau, Mme. Cusin, Mme. de Watteville, Mme. Falcot, Mme. Hoste, Mme. Lambard, Mme. Vermorel, Maman Cochet, Maman Cochet, white, Marie Van Houtte, Medea, Mrs. E. Mawley, Muriel Graham, Niphetos, Papa Gontier, Perle des Jardins, Princess Beatrice, Princess of Wales, Rubens, Souvenir de S. A. Prince, S. de Catherine Guillot, S. de Elise Vardon, S. de

Pierre Notting, S. d'un Ami, S. de Thérèse Levet, and Sylph. These will be found fully described as to form and colour in the catalogues of rose-growers.

CLIMBING ROSES OF THE TEA CHARACTER.—These are among the most precious of all plants, and now include all colours save crimson-scarlets. That their origin is somewhat obscure is clear from our finding the same Roses sometimes among the Noisettes, sometimes among the Teas. That matters little if we remember the good ones, and of those I have grown and found hardy and opening well these are the best: Lamarque, Celine Forestier, Rêve d'Or, Bouquet d'Or, L'Ideale, W. A. Richardson, Mme. Alfred Carriere, Gloire de Dijon, Mme. Berard, Duchesse d'Auerstadt, Aimée Vibert, Mme. Pierre Cochet, and Gaston Chandon.

When a warm wall needs clothing, the Banksian Rose or the various hybrids of the Noisette and Tea Roses may be used, though they are liable to be cut down in cold situations and seasons. For sweetness as well as continuity of bloom Lamarque's clusters of lemon-white flowers must stand first. Maréchal Niel, though unrivalled for the splendour of its golden blooms, is only a shy bloomer in autumn. Climbing Aimée Vibert, which is thoroughly hardy, should be in every garden. Its white clusters are so continuously abundant and its foliage so persistent that it ranks high as a garden Rose. Rêve d'Or is a delightful climber, in a warm situation, and may be called a climbing Mme. Falcot, so bright are its half-expanded buds.

HYBRID PERPETUAL ROSES.—The general name "Perpetual" to all the varieties of this class is a misnomer, as many are not at all perpetual; but some varieties, more especially some of our oldest Roses, keep on blooming until November. Amongst the old H.P. kinds one may instance especially Fisher Holmes and Charles Lefebvre, and amongst newer varieties, Frau Karl Druschki and Victor Hugo as true perpetuals; whereas many H.P.s do not usually bloom after the month of August. To this large class new varieties are continually being added, from which growers will select their favourite shades of colour. Those requiring good garden kinds rather than show flowers will find those just mentioned and the following a good selection: Captain Hayward, Duke of Wellington, Jubilee, Mrs. S. Crawford, Paul's Cheshunt Scarlet, Paul's Early Blush, Prince Camille de Rohan, Senator Vaisse, and Ulrich Brunner.

HYBRID TEAS.—The race of Hybrid Teas was obtained from crossing the

beautiful Tea Rose and the Hybrid Perpetuals; and so we get a group intermediate in form and in colour, and often, as in the case of La France and its varieties, very charming. They are also in some cases very enduring in bloom, which makes them more useful than the usual red Roses of our gardens. The ordinary culture of the Rose-garden suits them well, and the finer kinds should, if possible, be got on their own roots as well as grafted. Picked kinds for colour, and freedom of flower during a long season, are Antoine Rivoire, Augustine Guinoisseau, Camoens, Captain Christy, Caroline Testout, Clara Watson, Gloire Lyonnaise, Gruss an Teplitz, Gustave Regis, Kaiserin Augusta Victoria, Killarney, La France, Lady Battersea, La Tosca, Liberty, L'Innocence, Mme. Abel Chatenay, Mme. Edmee Metz, Mme. Jules Grolez, Mme. Pernet Ducher, Mme. Ravary, Marjorie, Marquise de Salisbury, Mrs. W. J. Grant, Princess Bonnie, Prince de Bulgarie, Purity, Richmond, Souvenir de President Carnot, and Viscountess Folkestone.

THE BEST AUTUMN ROSES.—Of late years it has come to be recognised that good kinds should flower in autumn as well as early summer, and those that will do this are now being specially sought by all who love the Rose. The display seen at recent autumn shows has been a revelation to many who have not followed this development. By a good choice of kinds it is now possible to cut flowers freely from the open garden far into the autumn. Among the many good sorts for their autumn beauty are: Antoine Rivoire, Bardou Job, Camoens, Corallina, Dr. Grill, Fabvier, Grand Duc de Luxembourg, Gruss an Teplitz, Gustave Regis, Hugh Dickson, J. B. Clarke, Killarney, Lady Battersea, Liberty, L'Innocent, Mme. Abel Chatenay, Mme. A. Guinoisseau, Mme. Chas. Monnier, Mme. Eugène Resal, Mme. Jules Grolez, Mme. Pernet Ducher, Mme. Ravary, Papa Gontier, Souvenir du Pres. Carnot, Viscountess Folkestone. But all the Roses of the Bengal and Tea races flower long into the autumn under good culture; hence one of their claims to be better worth growing than the summer-flowering Roses.

CLIMBING ROSES.—In no section of the Rose family has there been such advance as among Climbing Roses. In earlier editions of the *English Flower Garden* we have deplored our lack of anything approaching in charm and luxuriance the Climbing Roses of southern Europe. The best of our Rambling

Roses were at that time stiffly angular compared with the long, lithe shoots that thread their way to a tree-top on the Riviera, and droop thence as pendent trails of loveliness. But of late years the efforts of our raisers have met with such success that, when seen at their best, the Rambling Roses of our gardens can now compare in beauty and luxuriance with those of any clime. True, there are many kinds that bloom but once, yet where cultivation and selection have already

ering a little later. Una, the hybrid with single creamy-white flowers, is mentioned elsewhere, and four other singles, unrivalled for luxuriance and charm, have come to us from Ireland—Irish Beauty, Irish Brightness, Irish Glory, and Irish Pride; all these need space. The success of Turner's Crimson Rambler turned the thoughts of our growers to Rambling Roses, and there are now many kinds raised from it: Philadelphia Rambler, with larger deep crimson flowers; Helene, in

Rose, Gloire Lyonnaise.

done so much, there is good hope of improvement here. Among our new Climbing Roses are many beautiful single kinds, whose simplicity and varied colour are a real gain. It is impossible in one brief paragraph to do justice to all these, but we shall mention some of the most useful kinds for all purposes.

One of the first good gains in this class was Paul's Carmine Pillar, with single blooms 4 in. across, of soft yet brilliant colour. This was followed by the Lion Rambler, also single, rich crimson, flow-

which they approach violet; Psyche, a good companion in salmon-pink; Rubin, with reddish foliage and larger flowers of deeper colour; and Leuchstern, a very pretty single-flowered seedling, in which the flowers are pink with a white centre. Rubin sometimes flowers again in the autumn. The Garland bears wreaths of pure white double flowers, and from this has come Blush Rambler, equally free, in pale pink; White Rambler, a sport from White Pet, is free in flower, but less vigorous in its growth. The Dawson Rose

bears dainty arching sprays of a soft blush colour, and Waltham Climber small rosy flowers with a white eye. Kinds good in autumn are: Purple East, with very large clusters of purple flowers; Mrs. Paul, in which they are deep blush; and Pink Rover, with large pale pink flowers deeper in the centre. When summer is on the wane, there are few kinds better, however, than the old white, Aimée Vibert. The Wallflower Rambler is a good arch-rose, flowering from base to summit, the flowers larger and paler than in Crimson Rambler. Tea Rambler may be grown as a charming weeping standard, with salmon-pink or copper-red flowers; while for sending up a tree there is nothing better than Rambling Rector, with large trusses of white flowers and foliage that is almost evergreen. Ards Pillar and Ards Rover are fine pillar-roses in velvet-crimson and crimson-maroon, and Queen Alexandra, with pyramidal rosy-pink clusters, is excellent for the same purpose.

WICHURAIANA ROSES.—One of the most distinct groups added to our gardens of late years, and now embracing some pretty kinds. Their one fault is that they bloom but once, and though the various kinds cover several weeks in early summer, and their flowers are numerous, these Roses will hardly attain their highest usefulness until perpetual-flowering sorts have been obtained. For covering slopes, walls, trellis, pergolas, and the ground surface of rose-beds they are most valuable, making shoots many feet in length in the season. For mingling with other Roses on pillars, for rambling over tree-roots or about their trunks, or for any free, fountain-like effects on a lawn, nothing can compare with their long pliant shoots covered with neat glossy leaves which are well-nigh evergreen, and loaded with their wreaths of blossom. The parent, *R. Wichuraiana*, is a Japanese Rose bearing trusses of fragrant white flowers from the middle of July. By crossing with Crimson Rambler a fine rosy form was secured, flowering in June, and gains have since continued in this country and America, the early forms crossing so freely with Tea and Noisette Roses that the choice has already become almost bewildering. It is a strange fact that nearly all the seedlings and hybrids of *R. Wichuraiana* bloom considerably earlier than the parent. Among the best kinds are Alberic Barbier, a beautiful tea-scented Rose with double or semi-double creamy-white flowers shading to canary yellow and opening in May; Dorothy

Perkins, with a charming profusion of clear pink blossoms in heavy wreath-like clusters; Jersey Beauty, a cross with Perle des Jardins, vigorous, with single pale yellow flowers 3 inches across, and fragrant; Lady Gay, a new kind, which in the brilliance and wealth of its deep rosy clusters promises to outstrip anything hitherto seen; Manda's Triumph, like the last an American gain, with large clusters of double white flowers; René André with clusters of semi-double flowers two to three inches across, deep rosy-saffron in bud, unfolding in tints of yellow, orange, and red. Other distinct colours are: Adelaide Moulle, violet-rose; Auguste Barbier, lilac and white; Edmund Proust, reddish-copper; Elisa Robichon, buff-yellow; Jean Enichaud, rosy-salmon; and Leontine Gervaise, with the beautiful tinting of its parent Catherine Guillot, but a shade lighter. Pink Roamer and Evergreen Gem, being of specially free habit, are well adapted for weeping standards; Gardenia is remarkable for its strong growth, reaching sometimes 12 feet in a season; while Ferdinand Roussel, Paul Transon, Sweetheart, Jersey Beauty, and other kinds are conspicuous for their fine evergreen foliage. Quite a number of kinds are exceedingly fragrant, among the best in this way being Evergreen Gem, Gardenia, Gerbe Rose, John Burton, La Perle, René André, Rubra, and W. K. Harris. A large number of American seedlings are now finding their way into our gardens, so that this group seems to promise for the near future as wide a choice as many of the older classes. The only pruning required by these Roses is a tipping of the longest shoots or the removal of any that seem exhausted, while the readiness of most kinds to root from cuttings and grow away on their own roots is another point in their favour.

MONTHLY OR CHINA ROSES.—Monthly or China Roses have bright and varied colours, free growth, hardy constitution, and are most constant bloomers. They are the first to open in the early summer, and often continue to produce their buds and blossoms almost until winter has merged into spring again, a Monthly Rose bush in a warm nook being scarcely ever without at least a bud. They are perpetual and perennial in the fullest sense. They grow well either in light or heavy soil, preferring that which is light and warm, but not dry. Severe pruning is good for them, though on walls, when the earliest possible flowers are wished for, a few shoots may be left their full length. There are many varieties, all more or

less distinct in colour or habit, from the lovely dwarf kinds up to the vigorous Crimson Cramoisie Grimpante, which will climb to the top of a two-storied house and bedeck it with rich crimson flowers during most of the year. The original single China Rose forms a bush $1\frac{1}{2}$ to 2 ft. high; its crimson blossoms, like brilliant butterflies hovering about, are lovely. Among the best are Antoinette Cuillerat, Aurora, Blanc Unique, Cerisette, Cora, Cramoisie supérieur, Duke of York, Eugène Beauharnais, Fellenberg, Gloire de Rosomanes, Institutrix Moulin, Irène Watts, Laurette Messimy, Mme. Eugène Resal, Marie Wolkoff, Queen Mab, and Souvenir de Lord Brougham.

where the climate is too severe for Tea Roses or even Hybrid Perpetuals to do well, it is found that when these are crossed with this hardy Japanese Rose the hybrids are not only hardy enough to thrive, but also retain much of the beauty of their more showy parents. In light soils especially these Roses do well, running freely and holding their own in the wilder parts of the kept garden, their varied charms of flower, fruit, and autumn colour lending interest through a long season. Among the kinds with double flowers are *Atropurpurea*, a new kind with very dark crimson flowers, the only one of its colour; Blanch Double de Coubert, pure white; Chédane Guinoisseau, reddish-crimson and

Rose, Harrisoni.

Lemesle is one of the most handsome, deep pink with crimson reverse, which gradually creeps over and suffuses the whole flower; the leaves of this variety have also great substance. Ducher and Rival de Poestum have white flowers. The latter is beautiful, the flowers abundant, not full, but of charming purity and form. Madame Laurette Messimy is perhaps the most distinct variety which has yet appeared, being unlike in colour any previously-known kind, of vigorous growth, and one of the most constant bloomers.—T. S.

JAPANESE BUSH ROSES (*R. rugosa* and its forms).—This section has grown within the last few years, and now includes numerous free-growing garden Roses. In parts

very fragrant, with an abundance of showy fruit; Conrad F. Meyer, the best, with flowers of clear rose of good form, and produced through a long season; Mme. C. F. Worth, reddish-crimson flowers in immense clusters; Mme. George Bruant, pure white, with a long season; Mrs. Anthony Waterer, bright crimson; and Souvenir de Philémon Cochet, with white flowers of distinct form, due to the varying width of the inner and outer petals.

MOSS ROSES.—These are divided into two sections—those which bloom only in summer—that is, during May, June, and July—and the so-called perpetual-flowering kinds. Among the early kinds, the old Common Moss Rose may be found, and beautiful it is. This charming Rose

has been grown in English gardens for more than a century, and remains one of the best, although it is not seen nearly so much as it might be. In a few gardens I have seen this Rose grown as a standard, but it is not a success. Dwarfs or bushes on their own roots are much the best, sending out long vigorous shoots, if planted in rich soil, and these should be pegged down to the ground. Some of the other kinds may also be similarly grown with advantage.

In addition to the Common Moss, there is Little Gem, a charming miniature Rose, with small double crimson and well-mossed flowers. Crimson Globe has well-mossed buds, large, and of a deep crimson colour. Lanei, too, with large rosy-crimson buds, Crested Moss (pale rosy-pink), Marie de Blois (rosy-lilac), Celina (rich crimson), Reine Blanche (pure white), Luxembourg (crimson), Baron de Wassenar (bright red), and White Bath (paper-white), are all good, and there are many others. Other Moss Roses of note are classed separately as perpetual or autumn-flowering kinds, but there appears to be no need for this separation. Blanche Moreau, for example, is one of the best white Moss Roses, but only blooms once. Other so-called autumnal kinds are Madame William Paul, a fine variety with bright rose-coloured flowers, and Madame Moreau, rose-coloured, edged with white. Madame Edouard Ory, with large rosy-carmine flowers, and the Perpetual White Moss, which blooms in clusters, are also worth mentioning. Other good kinds are Salet, and Soupert and Notting (bright rose). The last-named is sweet-scented, but not quite so free in blooming as other varieties. Zenobia is of satiny-rose colour. Considering their charms, it is curious how seldom Moss Roses are well grown in private gardens. They are usually seen at their best in small gardens, where the owner is kind to his soil. Success with Moss Roses cannot be had except in good rich soil. The Moss Rose is a form of the Provence Rose, to which the same remarks as to cultivation apply.

SCOTCH ROSES.—Varieties of our hardy native Rose, they are as callous to frost and snow, wind and storm, as the proverbial Highlander in his plaid; and, if only the ground be well broken and manured when the plants are first put in, they are better able to take care of themselves than any other Rose of garden origin. If carefully planted at first, they will need neither pruning nor protection, training nor top-dressing; they are not

victims of green-fly or mildew, and they may be trusted to thrive for a considerable number of years without special attention. Scotch Roses are not particular as to soil; and, if the soil is poor, a light mulching of short manure in November will keep them in good condition. Scotch Roses are only summer-flowering, but then their delightfully fragrant flowers come so early that they are especially welcome.

There are, unfortunately, in cultivation many very dingy-coloured varieties, which have got these Roses a bad reputation from a decorative point of view, but when only delicately-coloured varieties are grown, nothing can be more charming than a mass of these dwarf, delightfully-fragrant, and very hardy Roses, the buds of which are in miniature the perfection of form—a quality which is maintained in the globular flowers of the more double varieties; while in soils and situations where the cultivation of most other Roses would be hopeless, flourishing plants and flowers in abundance may be had of the Scotch Roses.—T. W. G.

POLYANTHA ROSES.—These are often of a dwarf bushy habit, rarely exceeding a foot in height. The flowers naturally are very small, but fragrant. Among the good varieties are Anne Marie de Montravel, pure white, very free; Perle d'Or, nankeen-yellow; Paquerette, white; Blanche Rebatel; Clothilde Soupert; Gloire des Polyantha; Eugénie Lamesch, orange and yellow; Léonie Lamesch, copper-red and yellow; Mme. Norbert Levavasseur (Baby Rambler), crimson; Mosella, white tinted rose; Perle des Rouges, velvet-crimson; and White Pet, creamy white.

There is, however, some danger in taking up seriously new classes of Roses of this kind, because there are very few that are not inferior in beauty to the lovely Tea and other Roses which are now obtainable. Roses that have not the finest forms, and are unfit for cutting for the house, are likely to take a back place.

THE BANKSIAN ROSE (*Rosa Banksia*), a native of China, was brought to England in 1807, and the best known sorts are *Alba Fortunei*, white, and yellow. The Banksian Roses require a warm wall and dry border, with two or three years' growth to bloom in perfection. Merely cut out a few of the old already-bloomed shoots and any late-growing sappy wood about July. They are very precious for covering house walls in many parts of England, but are not so good on wet and hilly shady places. Remove any growths

that have been injured by severe frosts during the winter, but beyond that little spring pruning is needful.

NOISETTES.—Owing to some of the most important kinds in this group being often classed with the Teas (even in catalogues which class Noisettes apart), there is much confusion. We therefore omit Roses such as Bouquet d'Or, which we group among the Teas. They bloom long and well in clusters, grow freely, and are fragrant and useful for climbing or pillar Roses. If possible they should have a warm and sheltered position, and where the soil is heavy, raised beds are a good way to secure free drainage. The shoots are sometimes injured in hard winters, the best protection being bundles of dried fern or brushwood. The following are good vars.: Aimée Vibert, Céline Forestier, Cloth of Gold, Cornelia Koch, Desprez à Fleur Jaune, Fellenberg, Grandiflora, Isabella Grey, Jeanne d'Arc, Joseph Bernacchi, La Biche, Lamarque, Duchess of Mecklenburg, Madame Carnot, Madame Alfred Carrière, Madame Caroline Kuster, Madame Massot, Ophirie, Solfaterre, Triomphe de Rennes, Unique Jaune.

THE DAMASK ROSE (*R. Damascena*) is a native of Syria, whence it was brought to Europe about 1270 by Thibault IV., Count of Brie, returning from a crusade in the Holy Land. The Damasks have pale green leaves, green shoots, with numerous spines, are of free growth and hardy; the flowers are pretty in form, and very fragrant. They need but little pruning. Among the kinds, besides the common one, are Commandant Beaurepaire, Leda, Madame Hardy, Madame Stoltz, Madame Zoetmans, York and Lancaster (true).

THE PROVENCE ROSE or Cabbage Rose.—Of this the origin is not known, but growing abundantly in Provence, it has received that name, though the French themselves always call it *Rose à Cent-Feuilles*. "The rosarian should devote a small bed of rich soil, well manured, to the cultivation of this charming flower, growing it on its own roots, and pruning closely. The Double Yellow Provence Rose, of a rich, glowing, buttercup-yellow as to complexion, and prettily cupped as to form, full of petal, but of medium size, has almost disappeared from our gardens, and I have only seen it at the Stamford shows, sent there from Burleigh. Although common at one time in this country, it seems never to have been happy or acclimatised."—DEAN HOLE.

BOURBON ROSES are among the most

useful of garden Roses, valuable for their autumn flowers. They seem somewhat capricious, with the exception of Souvenir de la Malmaison. Among the best kinds are: Armosa, Madame Isaac Perrière, Queen, Souvenir de la Malmaison, Empress Eugénie, Kronprinzen Victoria, Lorna Doone, Madame Baron Veillard, Marquis Balbaino, Mrs. Paul, Purity, President de la Rocheterie, Robusta, and Shakespeare.

ALBA ROSES.—The Alba Roses are, from their delicacy of colouring, interesting, and thrive under ordinary cultivation. The moderate growers should be pruned closely, not the others. Blanche Belgique, Belle de Ségur, Celestial, Félicité, Madame Audot, Madame Legras, and Maiden's Blush are among the best kinds.

EVERGREEN ROSES (*R. sempervirens*).—These are Climbing Roses, with large clusters of from ten to fifty blooms each, and holding their dark green shining foliage through a great part of winter; they are free growers and quite hardy. In pruning, the head should be thinned out, a few of the more pendent shoots being left their whole length.

GALLICA ROSES.—This is an old group, that used to be important, but is no longer so because of the other kinds that have been raised. The many kinds may be distinguished by their stiff erect growth, and require close pruning whilst the flowers are fragrant and varied in hue. The striped varieties of this section (*Rosa Mundi*, etc.) are often called York and Lancaster. The following are the best known: Boula de Nanteuil, Blanche fleur, Cynthie, D'Aguesseau, Duchess of Buccleuch, Kean, Œillet Parfait, Ohl, Perle des Panachées, Rosa Mundi, Village Maid.

PENZANCE BRIARS.—These are hybrids, raised by the late Lord Penzance, between the Common Sweetbriar and other roses, the most valuable being those derived from the Austrian Briars (*R. lutea*), of which it is very difficult to obtain pollen. These seedling Briars are of free growth, spreading into large bushes, with abundant and often sweet foliage, good single flowers, and a profusion of handsome fruits. They mostly do well on their own roots, and are thus excellent for hedges and even for pillars, though their habit is too spreading for all positions. They need little pruning, and some are so stout as to stand almost free of support. Six good kinds are Lord Penzance, Lady Penzance, Meg Merrilies, Jeanie Deans, Amy Robsart, and Flora McIvor. A strong grower of this class is Anne of Gierstein, with

Noisette.

R. nitida.

Bracted.

Large-flowered.

Provence.

Glossy.

Small fruit.

R. sinica.

Caucasian.

Musk.

Yellow Briar.

Evergreen.

Some Wild Roses and their Hybrids.

handsome crimson flowers, and a habit well fitted for growth as a specimen.

AYRSHIRE ROSE (*Rosa Arvensis* vars.).—These roses, of native origin, are of rapid growth, often running 15 or 20 ft. in one season, and are of use in covering rough buildings, unsightly banks, and trees. They do not require rich soil, and should be pruned very little, or not at all. Bennett's Seedling, Queen of Ayrshire, Queen of Belgians, Ruga, Dundee Rambler, Splendens, and Virginia Rambler are the best-known sorts.

BOURSAULT ROSE (*Rosa Alpina*).—This is a distinct species, but its varieties form a worthless group, which receives its name from M. Boursault. Most of the varieties are free from thorns and have long reddish shoots. *Amadis* is most grown. It is one of the groups of roses not worth keeping up.

ROSE HEDGES.—If the soil be naturally a good Rose soil, the work will be light. In that case mark out the position of the hedge 2 ft. wide, trench up that space 2 ft. deep, adding as the work proceeds a quantity of well-rotted manure. Where there is any doubt about the staple being of the right sort, remove it, and supply its place with a mixture of three parts loam and one of manure. There are, however, many gardens the soil of which, with the addition of one barrowful of loam to every yard length of hedge, and about half that quantity of manure, will grow Roses well. Plants on their own roots are indispensable, and if from 2 to 3 ft. high so much the better, as they will form a hedge the sooner. The time of planting must depend on the condition of the plants, but if only small plants in pots are to be had, it should be in April or May. In any case it should be done when the soil is moderately dry, and some finely-sifted mould should be placed round the roots, the ground being made moderately firm. Deep planting must be avoided. The crown should be about 2 in. under the surface, as the soil will afford it some protection during severe weather. As soon as the planting is done, give some support to the branches, a neat stake and a strong tie preventing them from being blown about by the wind. Place a layer of short rotten manure over the roots. This should be 3 in. thick, and 1 ft. wide on each side. During the first two years little pruning will be necessary, but the second spring after planting any strong shoots that exceed 3 ft. in length should be cut back to that point. In the ground place a few neat sticks, to which tie some of the lower branches to form the base of the

hedge and bring it into shape. After the second year the growth will gain more vigour and increase in length. Cut down the strongest shoots to 4 ft. the third year, and from that time allow them to increase slowly in height so as to give the lower branches time to fill up the base. Some supports will be necessary to keep the growth in shape. The after management consists in giving the roots a good dressing of rotten manure every winter. Rake away the soil from over the roots, lay the manure on them, and then replace the soil.

WILD AND SINGLE ROSES.

There are many beautiful single Roses, and now that some interest has been awakened in them, we may expect to see them more freely planted. There are vigorous climbers which, allowed to have their own way and a branched tree to support them, will climb to a great height; others, sturdy and bushy, are suitable for planting in bold groups and masses, and rare ones will merit special care. They are free from the pests that infest the double Roses, and above all things when single Roses are present in the garden a roseless June will not happen even in the worst of seasons. When Dog Rose and Sweetbriar toss from the hedges in early June our gardens might and should show some of the Wild Rose beauty, for the single Roses of many lands are at our disposal.

R. ACICULARIS (*The Needle Rose*) is a beautiful Wild Rose, which when leafless might well be mistaken for the Japan Rose, it is so armed with the sharpest needle-pointed spines, and it has the same stout, vigorous bushy habit of growth as *rugosa*. In flower and fruit it is quite different, and is a bright flowered kind, but early and long blooming; and it is always one of the first to open. Its leaves are smaller than those of *rugosa*; the flower large, rich red, with a sweet scent. It also has a showy fruit, which differs from that of the Japan Rose, for, instead of being roundish and smooth, it is long and pear-shaped, of a bright red colour, with its apex covered with spiny bristles. It is a native of Siberia, as hardy as any kind known, but as yet uncommon in gardens.

R. ALPINA (*Alpine Rose*) is really more worthy of a place in the garden than the varieties of which it is the parent—the Boursaults. It grows to a great size, with long, thornless shoots; does not make such a colour display as most kinds, but it is welcome for its earliness, and a bowl of its rosy-red flowers is pretty in the house in May. *Pyrenaica* is a distinct form of this from the Pyrenees, of dwarfer habit and with spiny stems.

R. BRACTEATA (*The Macartney Rose*) is a little tender, but it is so beautiful that it repays

Marsh.

Many-flowered.

R. alba.

Alpine.

R. Lawrenciana.

Long-leaved China.

Bramble-leaved.

Double Glossy.

Hybrid China.

Japanese.

Damask.

Some Wild Roses and their Hybrids.

a little extra care, and is pretty for a low wall, which in a sunny aspect is needed to bring it out in its full beauty. The plant is almost evergreen; leaves dark green and shining; the flowers large, milk-white, sweetly scented, of a pretty cupped form. China.

R. CANINA (*Common Dog Rose*).—This would not come into our garden roses list were it not for the charming kind, *Una*, which has recently come from it. The plant is a cross with a *Dijon Tea*, and of freely rambling habit, well suited to pillars, arches, pergolas, and either to train against tree-trunks or pegged along the ground. The buds are shapely, of a clear buff yellow, opening as large single flowers of pale creamy-white.

R. CAROLINA (*Carolina Rose*) is a very pretty Wild Rose, somewhat resembling *R. lucida*, but distinct, as it blooms during August, when most kinds are over, and it keeps flowering through September. It is a tall, upright grower, established bushes being 6 ft. high. Its wood is smooth, with few spines; the leaflets are long and narrow, and the flowers come in clusters of a dozen or more among plenty of foliage, the buds when opening being rich crimson and the expanded flowers bright rosy-red and sweet-scented. The leaves when handled have a distinct and pleasant fragrance. A useful kind for growing in wet places. The variety *Nuttalliana* is still better, of very strong growth, with larger flowers and an abundance of showy fruits.

R. INDICA (*Indian Rose*).—This species appeals to all who love Roses, as a parent of the best races. In it we see those excellent qualities and continuous bloom, that have been kept through numerous generations, and contribute so much to the charm of the *Tea* and *Monthly* Roses of the present day. Of this species there are two or three forms in cultivation, and though somewhat tender, if given some root protection they are seldom killed. Some of the semi-double or single kinds, such as *sanguinea* and *diversifolia*, are among the deepest and richest coloured of all Roses. At Cheshunt Mr. Paul grows a lovely form, with flowers of a flesh-pink colour; another variety has a large crimson-red flower. Like the *Tea* Roses, this species is ever growing, and blooms from early summer till late autumn.

R. LEVIGATA (*Cherokee Rose*).—This is tender save in a few favoured spots, and would not be worth mention except for its pink form known as *Rose Anemone*, which has come from Japan. This is probably from a cross with some unknown *Tea* Rose, but it retains the fine foliage and form of flower of *R. levigata*, and the dark brown shoots freely armed with thorns and prickles. It is of free growth, hardy, and blooms freely in May and June from its second year, the flowers 4 in. across, rosy-crimson on first opening, fading to a silvery rose threaded with darker veins. The plant climbs freely, and lends itself to pretty uses upon walls, pergolas, and banks; it should have a sunny and sheltered place.

R. LUCIDA (*Glossy Rose*).—One of the best Wild Roses, with leaves of a shining green colour, and just when our native and other early single Roses are passing away this comes into bloom in July and goes on for several weeks. Its flowers are large, opening flat, clear rosy-pink, sweet-scented, in clusters of from five to eight, succeeding one another, so that there is not usually more than one flower open at a time in a cluster. The hips are about as large as a *Hazel-nut*, deep red, and make a bright effect with the fading leaves, which assume autumn tints. The hips hang all the winter, and the leafless wood becomes red like *Dogwood*, and through the dullest time of the year large groups of this Rose are pretty to see. A few plants soon spread into a thick mass, as it runs freely underground, and it is so easily increased by its suckers that it offers every facility for free planting. There are several garden forms of it, including one with double flowers, which are very pretty in their bud stage.

R. LUTEA.—This very distinct Rose is better known through the forms derived from it than in its wild form, pretty as that is, and it would be charming to grow on warm banks. There are two garden varieties, commonly called *Austrian Briars*, one with yellow flowers, the other orange-red, both beautiful for a sunny spot. *Soleil d'Or*, a new hybrid briar allied to this, has double yellow flowers prettily shaded with orange and red, very free, and strongly fragrant.

R. MACRANTHA is one of the early bloomers and a showy kind. The flowers are large and beautiful, chiefly white, but flesh-tinted round the edges and in the centre with a tuft of fine yellow stamens. In the open ground it makes a thick spreading bush, like *R. arvensis* of our hedges. Europe.

R. MICROPHYLLA is a Chinese species allied to *R. rugosa*. It is a sturdy bush, noteworthy for its large yellowish, very prickly fruits. Its stems, on the other hand, have very few prickles, and they are also distinguished by the peeling loose bark. The flowers are delicate pale rose, not very large, but very fragrant. When it is in bloom the bees and flies swarm more to this Rose than any other. It does not come true from seed, but can be increased by layers. There is a variety with double red flowers in cultivation. There is also at Kew a singularly fine hybrid Rose from this species crossed with *R. rugosa*. The flowers, which are of a lively rose, are larger than those of any single Rose I have seen, being about 5 inches across and shaped like a huge azalea.

R. MOSCHATA (*Musk Rose*).—A handsome climbing Rose, and almost worth growing for its fine foliage alone. It is a little tender and should have a good place, with shelter while young, but it is very vigorous, and usually soon repairs any damage inflicted. Its vigour is, indeed, one source of tenderness; the fleshy shoots like a willow-wand, and running to many feet in a season, grow more quickly than they can ripen. Older plants grow more

slowly and ripen better, so that hardiness increases. A good plant is strong enough to cover a house, or a high fence or wall, but it likes best to scramble about freely among other things which give it support and shelter. The flowers come in July as spreading clusters of pure white with a yellow centre, thirty or more blossoms being often crowded into one mass, with nine or a dozen open at once. Each flower is large, opening wide and flat, with sometimes a pale flushing towards the edges of the petals. The musk-like fragrance is not marked unless in a moist atmosphere, such as after rain. The grey-green leaves have seven leaflets, and are scented when young. The wood is chiefly smooth, with small spines only towards the tips of the shoots. For cutting nothing could be finer,

Western America, having the largest flowers and fruits. Its habit is described as stout, the leaves ample and broad, the flowers large, deep rose, and the fruits bright scarlet, half an inch in diameter.

R. POLYANTHA (*Garland Rose*).—A rampant climber, which will quickly climb a tree, cover a building, or, away from any support, spread into an enormous bush. It has long, spineless shoots clothed with glossy green leaves, blooming early in June; a mass of white flowers crowded in a pyramidal truss, with a powerful scent. The variety *grandiflora* is an improvement, with very large flowers and its leaves almost evergreen. It has all the vigour of the type, and its flowers cluster in an immense truss, pure white and sweetly scented. There are now many garden varieties of the Garland

The Austrian Copper Briar.

the flowers coming on long stems, while all the buds unfold in water, their pretty pink colour before opening contrasting finely with the full-blown flowers. There are garden forms known as *floribunda* and *grandiflora*, and one with double flowers; the first is well adapted for isolation on a lawn. The Musk Rose comes from the warm regions extending from South-east Europe to India, being also known by the names of *R. Brunonis*, or the White Indian Rose. Another single Rose of musk fragrance is *R. Pissardii*, with masses of sweet white flowers, like a white Dog Rose in autumn. The *Pink Fissardii*, or "Narrow-water" Rose, is a pretty rosy form of the same plant.

R. NUTKANA, according to the *Garden and Forest*, is one of the most showy species of

Rose, with which we deal under Climbing Roses.

R. POMIFERA (*the Apple Rose*).—Among the roses which claim our notice for the beauty of their fruits, none equal this old but neglected species. It is worth growing for their sake alone. Each fruit is 1 inch to 1½ inch long, apple or sometimes pear-shaped, covered with bristles and surmounted by a crown of large glandular sepals. The colour is a bright red, best seen perhaps in variety *proxima*. This species is European, but does not appear to be British, as it was at one time thought to be. Nearly allied to *R. pomifera* is *R. mollis*, which also bears handsome fruits, but not quite so large.

R. REPENS (or *R. arvensis*) is the wild parent of the Ayrshire Roses. It is a free-

growing plant, but requires some support to get it off the ground at first. We train it up stout Oak branches, and get it a few feet high, then let it ramble at will. There are double forms of it offered by nurserymen which are an improvement on the type, being of sturdier habit, and lasting longer in flower. For covering roots, banks, mounds, pillars, &c., these are excellent, forming at last huge tangled masses of the greatest beauty and elegance in the wild garden. The flowers are white or pale pink.

R. RUBIGINOSA (*Sweetbriar*).—Perhaps as pretty as any Wild Rose in flower, fruit, and delightful fragrance. It is a native Rose, but also distributed through much of Europe and Asia, and, although often planted, is scarcely ever made enough of in country places. It is most useful for forming fences with Quick or even by itself on good banks, as it is so spiny that cattle, which do so much harm to almost every other kind of hedge plant, do not touch this, so that it swings careless in the field where they are. The plant ought to be grown by the thousand, and anybody with a few bushes of it can save the seed for this purpose. It is a delightful plant from the time its buds burst in early spring until the birds have eaten the brilliant berries in winter. There are some garden kinds with double and semi-double flowers, but none are sweeter than the old kind.

R. RUBRIFOLIA (*Red-leaved Rose*) should have a place for its lovely tinted leaves and shoots: it has a rambling or climbing habit, but also grows into a large self-supporting bush or spreads nicely when pegged down. The flowers are red and small, the fruits purplish-red with soft flesh. Its chief charm, however, is in the colour of shoots and leaves. The young, strong shoots are purple-red overlaid with a pale gray bloom, whilst the leaves are of a peculiar glaucous colour brightly tinged with red. North America. Syn. *R. ferruginea*.

R. RUGOSA (*Ramans Rose*).—A strong grower in any soil, it is one of the best, making a handsome bush when isolated, but large gardens should have great groups of it, and in leaf, flower, and fruit it is beautiful; it is a long and persistent bloomer, and reaches the zenith of its beauty when the secondary flowers come with the glowing orange and red fruits that have succeeded the first flowers. Then a second crop of ripe fruit appears late in autumn, when the leaves turn yellow, showing the Rose in another pretty aspect. It makes a good hedge, and where pretty dividing lines are wanted it is one of the best for the purpose. There are purple, pink, and white forms, this last being lovely, and quite the best single white Rose of the non-climbers. They are free enough to plant for covert. An interesting form of the typical *rugosa alba* is *pyrocarpa*, which bears large clusters of pear-shaped orange fruits. The new garden forms of *R. rugosa* are dealt with under a separate heading. *Rosa Regeliana* and *R. kamtschatica* are forms of this species. Japan.

R. SERICEA.—This is one of the early-flowering kinds, often in bloom by the end of May. It is a very pretty Rose both in flower and in leaf, and can be told from all other Roses by its shapely white flowers with four petals which are arranged in the shape of a Maltese cross, five being, of course, the normal number in this family. The leaflets are small and numerous, not unlike those of the Scotch Rose, and in one variety the young stems are quite red. North India. There is a strange form of this Rose from Yunnan, known as *pteracantha*, or the Great Spined Rose. It is remarkable for its stout ruddy stems, set throughout their entire length with broad wing-like spines, their effect unlike anything hitherto seen in the Rose family.

R. SETIGERA (*the Prairie Rose*).—There is no doubt, I think, that of the species native of North America this is the best and most useful in English gardens. It is a climbing plant of vigorous growth, the leaflets, of which there are three to each leaf, being large for a Rose. It blooms in July and August, and is thus one of the latest of all the wild Roses to flower. The flowers are large and showy, and of a deep rose, but without fragrance. This Rose is seen best planted in a large mass, and, given a few rough roots or posts to climb over, it soon makes a large impenetrable thicket. The fruits are small as compared with other wild Roses.

R. SPINOSISSIMA (*Burnet Rose*).—A pretty native Wild Rose, which will grow and flourish in the lightest and hottest of soils, where many

Sweetbriar. *Rosa spinosissima*.

Roses fail. It is the parent of the Scotch Roses, some of which are so very pretty in like soils; the creamy white flowers of the wild plant are pretty and fragrant.

R. XANTHINA.—A charming plant for the

rock-garden, very like the Austrian Briars in general effect, but freer in growth and flower. Its flowers are small (only about 1 in. across), of a beautiful golden yellow, with deeper spots at the base of each petal. The stems are dwarf, slender, and very prickly, wreathed with flowers for a good part of their length. It flowers annually on the rockery at Kew.

R. gigantea, the giant of single white Roses, lately introduced from India, is of doubtful hardiness and uncertain in flower, otherwise it would be a great addition. Its faintly fragrant creamy-white flowers are 5 in. or more across. *R. Beggeriana*, a North American kind, of lowly growth, has white starry flowers. *R. Woodsi*, a garden form of *R. blanda*, has rosy-pink flowers, and continues blooming till stopped by sharp frost. *R. pisocarpa*, from California, makes a straggling bush, with flowers of medium size and bright red, and is well worthy of a place in the rock-garden. *R. berberifolia Hardyi* has flowers like those of a *Cistus*, rich yellow in colour, with a crimson blotch at the base of each petal, but wants heat and bright sun. Hebe's Lip, a garden form of it, is a pretty single Rose with a stout bushy habit of growth, and large, creamy white blossoms that have a distinct Picotee edge of red around the petals.

The above is a selection mostly of the best Wild Roses known to us for the garden or shrubberies and fences near the garden. There are many Wild Roses inhabiting northern and temperate countries, and many that have never been in cultivation, that are very beautiful and deserving of it. It is to be hoped now that the increased cultivation of these beautiful things will lead to further knowledge of them.

WILD SPECIES OF THE ROSE IN CULTIVATION.—According to the Kew list, the following wild species are in cultivation there, and the number deserves to be added to, as no doubt there are many wild kinds in the three continents of the northern world which have never been introduced.

R. acicularis, Siberia; *agrestis*, Europe; *alba*, Europe, &c.; *alpina*, Europe; *anemonæflora*, China; *arkansana*, U. States; *Banksia*, China; *beggeriana*, Asia; *blanda*, N. America; *bracteata*, China; *byzantina*, Eastern Europe; *californica*, Western N. America; *canina*, North Temperate Zone; *carolina*, N. America; *centifolia*, Orient; *cinnamomea*, North Temperate Zone; *damascena*, Eastern Europe, Orient; *Engelmannii*, Western N. America; *fedtschenkoana*, Central Asia; *Fendleri*, New Mexico; *ferruginea*, Mountains of Europe; *foliolosa*, N. America; *fortuneana*, China; *gallica*, S. Europe; *gigantea*, Burmah; *Hardii*, garden origin; *hemisphærica*, Persia and Asia Minor; *hibernica*, England and Ireland; *hispida*, garden origin; *humilis*, N. America; *hybrida*, Europe; *incarnata*, France; *indica*, China; *involuta*, India; *involuta*, Europe; *lævigata*, China; *laxa*, Siberia; *leschenaultiana*, India; *lucida*, N. America; *lutea*, Orient; *macrophylla*, India; *micrantha*, Europe; *microphylla*, China; *mollis*, Europe; *moschata*, S. Europe to India; *multiflora*, China and Japan; *nitida*, N. America; *noisettiana*, garden origin; *nutkana*, N. America; *phanicea*, Orient; *pisocarpa*, Western N. America; *pomifera*, Europe; *repens*, Europe;

rubella, Europe; *rubiginosa*, Europe; *rugosa*, Japan; *sempervirens*, S. Europe; *sericea*, India; *setigera*, N. America; *simplicifolia*, Orient; *spinosissima*, Europe and Siberia; *stylosa*, S. England; *tomentosa*, Europe; *watsoniana*, Japan; *webbiana*, Himalaya; *wichuriana*, China and Japan; *xanthina*, Persia, Afghanistan, &c.

ROSMARINUS (*Rosemary*).—A well-known shrub, *R. officinalis*, is not hardy enough everywhere, but in warm, rocky banks in our southern gardens it is useful; all like its fragrance, and the flowers are pretty when the plant is grown on dry soils. Where it perishes in winter in the open ground it may be grown against a wall. There are several distinct forms, one of erect habit known as *pyramidalis*; one with large pale flowers, and one with darker blue flowers; one with variegated foliage; and one, the best of all, known as *prostrata*, with quite a creeping habit and narrow leaves, very pretty for sunny walls or sheltered ledges of the rock-garden. Cuttings and seed.

RUBUS (*Brambles*).—Trailing and often prickly shrubs, some of the best from America; the finest of these being the Rocky Mountain Bramble (*R. deliciosus*), quite unlike an ordinary Bramble, being without spines or prickles. It makes a rounded spreading bush about

Rubus deliciosus.

4 ft. high, and in June bears snow-white flowers about the size of Dog Roses, and like them in form. It is hardy in most gardens where the soil is light, and in cold districts may be grown against a wall, which it quickly clothes with a beautiful growth, and flowers more abundantly than as a bush. Always select for it the sunniest and warmest place in the garden.

R. odoratus, with large-lobed leaves, and from June till August large clusters

of rich purple flowers. It may be used in the rougher parts of the rock-garden, or in the wild garden, and is very hardy. Like the garden Raspberry, it sends up strong annual shoots, which in rich soils reach 6 ft., bearing scented leaves, the leaves and not the flowers being fragrant. There is no finer shrub for planting under the shade of large trees where the soil is not too full of roots.

R. nutkanus.—This is found from North California to Nootka Sound, and is rather taller in growth than *R. odoratus*,

Rubus nutkanus (the Nootka Sound Raspberry).

the flowers pure white. They are partial to a moist soil, as near the margins of a pond or stream. They are among the best shrubs for the wild garden, where in a short time they spread into large masses if in good soil and partial shade. The Salmon Berry (*R. spectabilis*), from North-west America, has flowers of a bright red and very early. It is best in the rougher parts of the rock-garden or for the wild garden, and grows well under trees if the shade is not too dense.

R. biflorus, or **R. leucodermis** (*White-washed Bramble*), from the Himalayas, has tall wand-like stems often 10 ft. or more in height, whitened with a mealy substance on the bark. Its white flowers are not showy, and are succeeded by edible, Raspberry-like fruits. *R. australis*, from New Zealand, is without true leaves, and prickly. In warm situations on walls it grows several feet high, but it is not fully hardy. The beautiful *R. rosæfolius* (Rose-leaved Bramble), from the Himalayan region, is scarcely hardy enough for the open air except in favoured spots or against sunny walls. Its double variety (*coronarius*) has loose clusters of large white flowers, which are very double; it is often grown as a greenhouse shrub. Among the best native Brambles are the beautiful double varieties of *R. fruticosus*, which flower late in summer. There are the double pink

and the double white kinds, both known under various names; but the names of double pink and double white are sufficient. As they are forms of distinct species or varieties, they differ in habit, the double pink being much the stronger and more free flowering. When well placed the double pink makes a wide-spreading mass like the common Bramble, and gives from the middle of August till autumn an abundance of bloom, every flower being a rosette of delicate pink petals. The double white is a form of *R. tomentosus*, and its flowers are larger than those of the double pink, but less double. The double white and the double pink should be planted near each other, and will clothe banks or associate with bold rocks. Another fine Bramble is the

Rubus laciniatus.

Cut-leaved, or Parsley-leaved Bramble, which has a profusion of white blooms, succeeded by large delicious fruits. The Japanese Wineberry (*R. phænicolasius*) is a strong-growing Bramble, the stems of which are covered with reddish hairs, and the leaves silvery white on the under side. A group planted beside water is very fine in windy weather, when the under-surface is freely exposed. The pink and white flowers are followed by soft red fruits, like a little Raspberry. *R. sorbifolius* is also pretty, with stout erect stems of about 18 in. bearing elegant cut leaves and large white flowers, followed by conical fruits of fine appearance but of poor flavour. Like some other Brambles, this grows well in partial shade. Some of the so-called American Blackberries, such as the Lawton and Kittaninny, do not succeed in our country. Almost all kinds should have their stems cut away after flowering, leaving only the new shoots of the season.

A few of the small kinds, such as *R. arcticus* (which grows a few inches high

and bears numerous rosy-pink blossoms), the Cloud-berry, *R. Chamæmorus* (also dwarf and with white blossoms), the Dew-

Rubus cæsius (Dewberry).

berry (*R. Cæsius*), and *R. saxatilis*, are pretty in partially-shaded spots in the rock-garden in moist peaty soil.

RUDBECKIA (*Coneflower*).—North American Composites, with showy yellow flower-heads, usually with a dark central cone, making striking plants for the hardy border, flowering in late summer and autumn.

R. MAXIMA is a handsome plant 6 or 7 ft. high, having flowers densely set with broad golden rays produced in August and September. The large glaucous oval and entire leaf at once distinguishes it from others of the genus. A native of the warmer States of America, it thrives best in warm gardens and in hot summers, and from time to time it should be renewed from imported seeds.

R. PINNATA grows 4 ft. or 5 ft. high, flowering from July until hard frosts overpower it. It is not a long-lived plant, getting too hard and woody at the base to continue to break well, so it is better to keep a few seedlings on hand. Seed is abundantly produced and easily raised. Plants flower in the second year, and continue about five years more. Syn. *Le-pachys pinnata*.

R. CALIFORNICA is the largest in size of flower and cone, the flower being often about 6 ins. across, and the cone 2 ins. high; leaves, flower-stalks, and root are equally robust. The flowers come early in July; they have few and horizontal rays, and are solitary on the stalks, their size making up for their small number, and the whole plant having a majestic appearance, with its broad, plantain-like leaves. It is better for frequent division, exhausting the soil if left to itself for several years.

R. LACINIATA is the tallest of the cone flowers, 7 to 10 ft. high. The leaves, as the name implies, are unevenly divided into narrow ribbons, or cut into larger lobes, different

individuals varying much in leafage. The flower is large, the rays curved downwards so as nearly to touch the stalk, and the cone is greenish. Plants live many years without spreading much, but are easily divided, and self-sown seedlings come up round if the seed escapes the green linnets and chaffinches, which delight to eat it. There is a garden variety with large double yellow flowers, known popularly as “Autumn Glow”; and *angustifolia*, with finely divided leaves and smaller single flowers.

R. NITIDA.—The general habit of this is that of *R. laciniata*, but the leaves are less incised than in any of that species; the flowers, though smaller in outline, are more regular and plentiful, and have broader and more golden rays. They begin to open when *R. laciniata* is over, and continue into November. It is a very handsome kind, vigorous and hardy, and grows 6 ft. or more high in good soil.

R. SUBTOMENTOSA.—In this the flowers show hardly any raised cone; the disc is very black, and the golden rays, about an inch long, continue horizontal, so that it would hardly be taken for a cone-flower. It grows 4 ft. high, flowering late and very freely. Division. Young plants succeed best; when old they are apt, like *R. pinnata*, to get so hard at the base that large limbs suddenly lose their vital union with the root and wither before flowering.

R. PURPUREA.—In this distinct cone-flower the ray florets are of a reddish or rose-purple hue, and the flowers are fully 4 ins. across. When fully established the plants reach 3 to 4 ft. high, and are effective on account of their free-flowering and erect habit. The plant only rarely produces seeds, and these are generally slow to vegetate, so much so that it is best rather to rely on careful division of the root to ensure maintaining a stock. Other kinds closely allied to this species are *R. pallida*, *R. angustifolia*, *R. purpurea intermedia*, a fine form with branching habit, and *R. p. serotina*.

R. SPECIOSA is given the unauthorised name of *R. Newmanni*, though I never could discover why. It is so well known that I need say little more than advise those who wish it to succeed in hot and dry summers to dress the surface with rich compost and to water it well, or it withers prematurely. The garden form *speciosa conspicua* comes into flower sooner, and gives a longer season for cutting. *R. fulgida* comes near *speciosa*, but with flowers of an orange shade, and growing somewhat taller. In dry hot soils of the south *speciosa* does best in partial shade.

R. HIRTA is said by Asa Gray to be “annual or biennial,” and it certainly requires frequent renewal from seed. Two-year-old plants begin to flower early in June, and continue gay through summer. It is well to select the largest and most golden flowers for seed. This species always attracts notice in my garden from the bright colour of the rays and the good contrast of the black cone.

Excepting *R. maxima*, I have, in a long

gardening experience, found no difficulty in maintaining a stock of all these cone-flowers. *R. pinnata*, *R. laciniata*, *R. hirta* ripen plenty of seed every year. I never found ripe seed on any of the others, but they are all easily divided; the whole tribe likes a rich moist soil and a warm aspect.—C. WOLLEY-DOD.

RUMEX (*Dock*).—The only one worth growing is our great native Water Dock (*R. Hydrolapathum*), sufficiently striking for a place amongst ornamental subjects by the water-side. Its leaves, sometimes 2 ft. or more in length, form erect and imposing tufts; while its flowering stem, frequently 6 ft. in height, has a dense, pyramidal panicle of an olive-fawn or reddish colour. In autumn the leaves change to a lurid red, a colour they retain for some time. A root or two deposited in the mud near the bank of a pond or a slow stream will require no further attention.

RUSCUS (*Butcher's Broom*).—These are distributed throughout Europe, North Africa, and temperate Asia. All the hardy kinds may be planted under the drip and shade of trees where few other evergreens could exist. Propagate by division of the roots. The *R. aculeatus* (Common Butcher's Broom) is a native of our copses and woods, with curious prickly leaves, or rather substitutes for leaves, and small greenish flowers in April, which are succeeded by bright red berries about the size of Peas. This dense, much-branched Evergreen rarely grows more than 2 ft. high, and its thick, white, twining roots strike deep into the ground. The sexes are apart in *Ruscus*, and to enjoy the handsome scarlet fruits the male and female plants should be mingled. The Alexandrian Laurel (*R. racemosus*) is an elegant shrub with glossy dark green leaves. Its stems are valuable for cutting. It is one of the best plants for partial shade, and should have deep loamy soil, but thrives on chalk. S. Europe. *R. Hypophyllum*, a very dwarf kind, and *R. Hypoglossum* are not important.

RUTA (*Rue*).—The common Rue (*R. graveolens*) is not ornamental, but *R. albiflora* is a graceful autumn-flowering plant about 2 ft. high, with leaves resembling those of the common Rue, only more glaucous and finely divided. The small white blossoms, borne profusely in large terminal drooping panicles, last until the frosts. In some localities it is hardy, but, unless planted against a wall, should generally have slight protection in severe weather. It is also known as *Bänninghausenia albiflora*. Nepaul. Another

pretty plant is the Padua Rue (*R. patavina*), 4 to 6 in. high, with small golden-yellow flowers of the same odour as the common Rue, and the plant is about as hardy as *R. albiflora*.

SABBATIA (*American Centaury*).—Pretty N. American plants of the Gentian family. The species introduced are—*S. chloroides*, with large pink flowers; *S. campestris*, with light rose flowers; and *S. angularis*, with purplish-red flowers. *S. chloroides*, being found in bogs, requires a very moist spot; *S. campestris*, an open and drier place; *S. angularis*, a sheltered situation and partial shade, in imitation of that afforded by the vegetation amongst which it grows wild. The soil should consist of equal parts of good fibry loam and finely-sifted leaf-mould, with enough sand to make it open. Seed, which should be sown in summer. The seedlings should be potted off before they become in the least drawn, or weak plants result. They should be wintered in a cold airy frame, and freely pinched to induce a bushy habit. All are biennial, and seed should be sown each year.

SACCHARUM.—*S. aegyptiacum* is a vigorous perennial Grass, forming tufts of reed-like downy stems, 6 to 10 ft. high, and clothed with graceful foliage. It is suited for the margins of pieces of water and for pleasure-grounds, and requires a warm position. In our climate it does not flower, but is a good plant from its leaves and habit. Division in spring, the offsets being started in a frame or pit; in May or June they may be planted out. N. Africa. *S. Maddenii* is a quick-growing, hardy perennial, about 5 ft. high, with graceful leaves, and is well worthy of growing with other large Grasses.

SAGINA (*Pearlwort*).—The only species worthy of culture is the Lawn Pearlwort (*S. glabra*), a plant generally known in consequence of its use a few years since as a substitute for lawn Grass, though it has not answered expectations. It is none the less a pretty little alpine plant, forming on level soils carpets almost as smooth as velvet, starred in early summer with pretty little white flowers. It is multiplied by pulling the tufts into small pieces and then replanting them a few inches apart, when they soon meet and form a carpet. Although *S. glabra* does not form a satisfactory turf, yet by selecting a rather deep sandy soil a turf may be made, but it must be kept perfectly clean and well rolled, and this is rarely worth attempting. When the

plant begins to perish in flakes, it should be taken up and replanted. Corsica. Syn., *Spergula pilifera*.

SAGITTARIA (*Arrowhead*).—These graceful water-plants are not only charming at the waterside, but are from their structure among the most interesting of hardy perennials. Their parts are strangely variable in appearance and structure—the roots being tuberous, fibrous, and stoloniferous (running); the leaves submerged and ribbon-like, floating, or erect, and exceedingly variable in shape; while the flowers are fertile or sterile, single or double. This variety of form is so confusing that uncertainty prevails as to the entire group, some botanists making a hundred species, which others reduce to about ten; there seems indeed to be little fixity of character, the same plant being unlike itself under changed conditions. Several kinds are now in cultivation, and no plants are more easily grown in shallow water, where they spread fast, the only care being to keep them from over-running other things. Their tubers should be planted in mud with water from 6 inches to a foot in depth, though some kinds will make their way in deeper water. The plants are quite happy in partial shade, where the flowers last longer. The following are in cultivation.

S. JAPONICA PLENA.—Quite one of our best hardy water-plants, with large full flowers 2 to 2½ inches across and like a white Stock, gathered into whorls all the way up a stem of nearly 2 feet. The roots spread fast and will grow in water 2 feet deep, though 6 inches is deep enough for planting. The single kind is scarce, though the snowy flowers with golden anthers are very attractive, and the foliage lasts much longer than in our native kind.

S. LANCIFOLIA is a plant of uncertain origin, with several other names. It is of robust growth, with stems 5 feet high and leaves prolonged into a narrow lance shape. The flowers are in whorls of three, the outer petals greenish flushed with rose, and the inner ones pure white, with a cluster of golden stamens. Syns., *S. gigantea* and *S. sinensis*.

S. MACROPHYLLA is a good kind, with large leaves and loose spikes of white flowers, standing about 3 feet high. Not only are the flowers larger than in any other kind, but the plant is worth growing for its fine leaves alone, which take a rich autumn colour.

S. MONTEVIDENSIS is a noble plant from S. America, too tender for the open before the end of May, though it will thrive in the water-garden all summer. The growths stand boldly 4 or 5 feet out of the water, with large creamy-white flowers 2 inches across, marked with a deep purplish blotch at the base of each petal. One good spike will carry 100 flowers. Seeds

sown in February germinate freely, and the young plants flower by July, so that it is often treated as an annual.

S. NATANS.—A very distinct kind from North America, with floating heart-shaped leaves and scanty single white flowers.

S. SAGITTIFOLIA is the wild Arrowhead of our ponds and rivers, familiar in its graceful arrow-headed leaves and the pretty white flowers half an inch across, with purple claws and anthers. It spreads fast and is tenacious of life, having been the last wild flowering plant to flourish on the banks of the Thames in the heart of London. The double-flowered form is that mostly seen in gardens, with very full flowers about an inch across, and pure white like a little Banksian rose. They stand well when cut, lasting longer than the single forms. The plant is most effective in masses, and best in a hot summer. *S. sinensis*, cultivated by the Chinese for its fleshy roots, is probably only a form of this.

S. SIMPLEX is a scarce and neat species, well adapted for growing in tubs or small ornamental basins. Though hardy, it is less vigorous than most kinds, with small leaves of a less decided arrow shape, and delicate flowers of soft pale yellow.

S. VARIABILIS.—The common Arrowhead of North America, and a very variable plant, with a number of distinct forms. It comes near our own kind, but the flowers differ in their greenish centre, free from the purple shading of *sagittifolia*. Among the many varieties are *hastata*, *latifolia*, *obtusata*, *gracilis*—a dwarf form rarely exceeding 12 inches in height, and one with double flowers. J. B.

SALISBURIA (*Maiden-hair Tree*).—*S. adiantifolia* is a beautiful tree in all stages and at all seasons, perhaps most attractive during the autumn, just before the leaves drop, since the foliage assumes then a bright yellow hue. Although it differs much from the Conifers, it belongs to that order, and is one of the few deciduous members of it. Probably its scarcity is accounted for by its not being readily propagated, and by its making slow progress during its earlier stages, since on this account it is not popular in nurseries. A rather deep, fairly moist soil of a loamy nature seems to meet its requirements, but it is not very particular as to soil, for a fine specimen grows on the shallow gravelly subsoil of Kew. Its fruits are said to be eaten in China and Japan, but they are rarely produced here. There are two or three varieties of the species, and when raised from seed, as it always should be, there are individual differences. Syn., *Ginkgo biloba*.

SALIX (*Willow*).—Large and medium sized trees, shrubs, and even alpine trailers of northern and temperate countries, mostly hardy and of singular beauty and

interest for our gardens and home grounds, in which they are much neglected. Notwithstanding the number of trees in the country, I doubt if there is a more picturesque one than the Babylonian Willow, which is not common in many districts about London, although it is by the river and in the eastern counties. There are many, however, who plant this who do not care for handsome Willows of erect habit, but, as we think, with more beauty of colour, such as the scarlet-barked or cardinal Willow, and even the old yellow Willow. Of late years a number of other Weeping Willows have been propagated in Germany and elsewhere, so that we are no longer confined to the old Weeping Willow, which was apt to be cut down occasionally in hard winters. When the

Old Pollarded Willow in Suffolk, after Strutt.

gardener plants a Willow, it is generally some curious one with a mop head, like the "American" Weeping Willow. Country gentlemen should therefore take the Tree Willows under their own care, and plant them in bold groups and colonies here and there, by water or in wet or marshy places. A marshy place planted with underwood formed of the yellow or red Willow would be charmingly picturesque in winter—indeed at all times—and there is no difficulty in getting any of these Willows by the hundred or thousand. In places which are much haunted by the rabbit, young Willows of these kinds go very rapidly, and, planted by streams in meadows where there are cattle, they are nibbled down, so that in certain districts a little care may be wanted to protect them. None of the Willows here mentioned should ever be grafted. I have skeleton Willows alongside some ponds, the sad remains of grafted Willows which were interesting and little-known kinds, all grafted on the common Sallow (*Salix caprea*). The grafted portion gradually died; the stump on which they are grafted

remained sound, and from it have come the vigorous shoots of many Withies. Inasmuch as the whole country and the woods near have many of the same tree, which seeds everywhere, this unsought plantation of a common tree by garden ponds is far from a gain. "As easy to strike as a Willow," is a proverb among gardeners, and there is no good reason for grafting these plants. The graceful Willow, called in our gardens the American Willow, is invariably grafted on the Sallow, and if not watched and the suckers removed, will quickly perish; but if a shoot of this plant be hanging into water it quickly roots, showing how easily the trees could be increased if nurserymen would take the trouble to do it in the right way. The objection to the grafting is, first of all, the frequent death of the tree; secondly, falsified and weak growth, and, where it does not die, endless trouble; thirdly, we lose some of the true uses of the tree, the habit not lending itself always to grafting on the standard form. Why should we not be able to use the Weeping Willows as rock or bank plants, not on standards, in which form the growth is often less graceful than on our own root trees? Though we think the finest Willows for effect in the landscape are the Tree Willows, in all garden ground the Weeping Willows are likely to be the most planted, and we should guard against an excessive use of them in home landscape owing to this same weeping habit. One large isolated Weeping Willow, or a group of such trees on the margin of water, gives a much better effect than a number dotted about. Further, the Weeping Willow ungrafted when isolated has an advantage over many other weeping trees in its beauty of habit, all is grace and softness; like a fountain of water, the branches rise lightly into the air to fall again gracefully. On the other hand, in most other weeping trees artificially made by grafting on standards there is none of this lightness of aspect and of form. Willows are admirably suited for giving us an abundance of shade where this is desired, and they are among the hardy trees that thrive in and near towns. Only the Willows most effective in the home landscape and in the home woods are named here. Some small and alpine Willows are interesting for the rock-garden, but they are more suited for botanical collections. The dwarf creeping kinds grown in gardens are—*S. herbacea*, *S. lanata*, *S. reticulata*, and *S. serpyllifolia*, all natives of the northern parts of Europe and America. They

grow well among stones in ordinary garden soil. Sometimes certain of these dwarf forms are grafted, generally on the Sallow, on which their lives are very short, and it is impossible for us to judge of the value of such kinds as *S. repens* var. *argentea* and *pendula* and *S. cæsia* var. *Zabeli pendula*, when stuck on the ends of sticks of a wholly different nature.

S. ALBA (*White Willow*).—A graceful and stately tree of the marsh lands and river valleys throughout Europe and Asia, common in Britain, and often beautiful. It has several varieties, particularly a silvery one, and a red one (*britzensis*). Sometimes 80 ft. or more high, with a trunk diameter of 6 to 7 ft.

S. BABYLONICA (*Weeping Willow*).—A beautiful weeping tree, and the best known of the Willows of this character, though not the hardiest that we now know, and sometimes

The Weeping Willow.

liable to be cut off in cold districts. There is a crisp-leaved variety. It is called Babylonian because it was thought to be the tree under which the Jews sat down to weep on the banks of the Euphrates River, but it is now known that the tree which grows on the banks of the Euphrates and resembles a Willow is a Poplar, having narrow Willow-like leaves. Japan and China. *S. Salomoni* is a variety of this, and seems to be a free-growing and most graceful Willow, but with us not old enough to show its true form. It is a very rapid growing tree, as, indeed, most Willows are in river bank soils.

S. BLANDA (*Hybrid Weeping Willow*).—This is a vigorous and fine Weeping Willow, though not yet long enough in our country to show its true habit. It is thought to be a hybrid between the Babylon and Crack Willows having regard to its characteristics. The leaves, long even at the base of the branches, are 3 ins. to 5 ins. long by less than 1 in. across.

S. CAPREA (*Withy, Sallow, Goat Willow*).—The commonest Willow, often a round,

headed low tree, in our woodlands, and the one which bears the pretty catkins early in spring, and gathered at Easter, called Palm branches. It is used in nurseries throughout Europe as a stock to secure the greatest growth of various Willows, and usually with a fatal result to the life of each kind grafted on it. The Kilmarnock Willow is a weeping variety of this Willow. It is usually grafted, but in this case grafted on its own wild parent, so that the contest between stock and scion that takes place among grafted Willows does not occur to the same extent, though even in this case it would be best to increase the plant from cuttings or layers, at least for those who so desire it.

S. ELEGANTISSIMA.—A rapid-growing and handsome weeping tree. Willows have a curious way of crossing and intercrossing, hybridising themselves in all sorts of ways, and it is difficult to account for the origin of this; but from a garden point of view this is not of so much consequence. It is tall, with long and pendent branches, a yellowish-green, often stained with russet, with a more spreading habit and a larger crown than *S. babylonica*.

S. FRAGILIS (*Crack Willow; Withy*).—A fine and often picturesque tree of our river valleys, and a native of Northern Europe and Western Asia, including in it a variety of forms, among the best being the Basford Willow and the broad-leaved form, *latifolia*. *S. Russelliana*, the Bedford Willow, is considered a hybrid between this and the White Willow. There is also an orange-twigged form of the Crack Willow (*S. decipiens*).

S. PENTANDRA (*Bay-leaved Willow*).—A glossy leaved distinct looking Willow, sometimes almost a tree; a native of Britain, mostly towards the north or west, and the latest flowering Willow.

S. PURPUREA (*Purple or Bitter Osier*).—A British Willow of some grace of habit, though not quite a tree, and most interesting from being the origin of the Willow called American by mistake. It is really a variety of this species, and a very beautiful weeping bush, which, however, is often lost by being grafted on the common Withy, which soon kills the tree. This Willow and its varieties and hybrids are much grown in osier beds for basket making, though not so much as the osier. The pendulous form of the Purple Weeping Willow, commonly called the American Weeping Willow, is not very high, but has pretty grey slender leaves, with long flexible twigs. It is usually grafted and grown as a single, umbrella-headed tree, although it is much prettier grouped or massed beside the water, and it is only then that one gets its extreme grace. This Willow is grafted on the common Sallow—a usually coarse-growing Willow of which the shoots spring from below the graft. If let alone for a year or two they would soon make an end of the Purple Willow, but by continually removing them one may keep the tree alive. *S. purpurea*

scharfenbergensis is allied to the above, but more elegant, and the branches tinged with a bright russet-brown. It is much to be recommended as a garden tree.

S. ROSMARINIFOLIA (*Greybush Willow*) is a graceful bushy Willow of a nice grey colour, especially for groups near water or in moist ground; hardy and of easy culture. Europe.

S. VIMINALIS (*Osier*).—A distinct and native Willow, frequent in wet places in woods and osier beds, rarely planted in gardens, the leaves and branches are very fine in form. It is the Willow most used for basket making.

S. VITELLINA (*Golden Willow*) is sometimes classed with the White Willow by botanists, but from a planter's point of view it is a distinct tree, never so large as the White Willow, but effective in the colour of its yellow branches and twigs in the winter sun. While old trees of this often become good in form and occasionally pendulous, there is of recent years a distinctly pendulous variety, *S. pendula*, which is very graceful and precious

Salix vitellina.

indeed, and quite hardy, which should never be grafted. Some of the red twiggled willows, such as that called the Cardinal Willow, belong to *S. vitellina*. The twigs are used to a great extent for packing in nurseries and tying fruit trees in gardens.

SALPIGLOSSIS.—*S. sinuata* is a beautiful plant of the Solanum family, and one of the finest of half-hardy annuals; it is slender, and has an erect stem, 1 to 2 ft. high, bearing large funnel-shaped blossoms that have dark veins on a ground which varies from white to crimson, yellow, orange, or purple, and intermediate shades. As the colour of the blossoms is so variable, the plant is known as *S. variabilis*, and its varieties have Latin names according to their tints. It is difficult to make a selection, but a packet of mixed seeds will produce a pretty variety of colours, and will yield a fine display, lasting from late summer till autumn. *S. sinuata* thrives in light, rich,

sandy loam, and should be treated as a half-hardy annual. Chili.

SALVIA (*Sage*).—For lighting up the autumn garden, few plants are more useful than the Sages, with their showy spikes of lipped flowers. They are easily raised

Salpiglossis sinuata.

from seed or cuttings, they grow in almost any soil, and give good colour during several months, according to the kinds used. They are found in all parts of the world, the tender shrubby kinds in the mountains of tropical America, and the hardier perennial sorts in Europe and Asia. Planted in groups, there are few things prettier and more certain in their effect while in flower, while the leaves of many kinds are ornamental and often agreeably scented. All the kinds are better for free exposure in the garden during summer, though many require to be wintered under glass. The hardy perennial species require only a little care in the selection of a suitable situation and soil; the tender kinds are planted out early in June. For glowing colour in early autumn there is nothing to come near masses of *S. splendens*—much improved in its newer forms—and in blue flowers there is nothing better than *S. patens*, *S. cacaliaefolia*, *S. angustifolia*, *S. azurea*, and a few others. The following kinds are those best worth growing:—

S. ALBA CÆRULEA.—A pretty shrubby kind from Mexico, with fine blue and white flowers in long spikes of about a foot in length, during summer. It should be wintered under glass.

S. ARGENTEA (*Silvery Clary*).—A plant from southern Europe which mostly dies after blooming once, though it sometimes lasts longer in light soils. Its pale pinkish-white flowers

are of slight value, but the large flat tufts of leaves, coated with soft, silvery hairs, are handsome in borders when the snails will let them alone. A sheltered place is best, to escape the damage wrought by rough winds.

S. AUREA is a tall shrubby kind from the Cape, long known in gardens, and hardy in the south when planted against sheltered and sunny walls. The flowers are of a rusty yellow, and the small rounded leaves are covered with white down.

S. AZUREA.—A perennial from North America, and one of the finest in its flowers, borne as dense spikes of a beautiful pale blue, during September and October. Its habit is vigorous, with stems long and straight, and it flowers rather too late to be always good with us. There are several forms of this plant, drawn from different parts of its area, including *grandiflora* (syn., *S. Pitcheri*), with down-covered leaves and stems and denser spikes, and *angustifolia*, with narrow leaves and longer spikes of flower. Though often flowered under glass, these plants thrive in the open border in mild districts, and are very useful for cutting.

S. BICOLOR is a good biennial, pretty and distinct, with flowers of violet and white borne in tiers upon stout unbranched stems of 2 to 3 ft. in early summer. It is a neat border plant with downy leaves, needing light soil and a warm place. N. Africa.

S. BOLIVIANA.—This shrubby kind is 3 to 4 ft. high, and one of the best for winter flowers, beginning to bloom in late autumn. The bright scarlet clusters come freely, and contrast well with the dark purplish sepals. Other kinds good in the same way for flowering under glass in winter are *gesneræflora*, with large orange-scarlet flowers; *Heerii*, with bright pure scarlet flowers during early spring; *leucantha* (*ericalyx*), purple and white, and the Pine-apple Sage (*S. rutilans*), with fine crimson-scarlet flowers of fruity fragrance.

S. CACALIÆFOLIA is a perennial of slender habit from the pine forests of Mexico, with stems 2 ft. high bearing fine deep blue flowers, prettily contrasted with grey downy foliage. The plant is hardy in warm gardens and during mild winters, and well worth growing for its fine colour.

S. CANDELABRUM.—This kind from the south of Europe makes a low dense bush not unlike the Common Sage and with a similar herb-like smell. During summer stout angular stems shoot up from the tuft of wrinkled foliage, bearing purple and white flowers upon regularly spaced branchlets. Old plants are apt to die suddenly in a wet or cold season, but are easily renewed from seed.

S. CARDUACEA.—Though mostly treated as an annual, this is a true perennial in good soils, distinct from any other Sage in its finely-cut and spiny leaves, more or less covered with wool. The pale blue flowers with reddish anthers are of peculiar shape and surrounded with Thistle-like bracts. California.

S. CELOVIANA.—A shrubby kind, of free growth, with dark bronze-green foliage and

short spikes of reddish-violet flowers during winter. Though less showy than many kinds, its season of beauty gives it unusual value for seaside gardens in the south-west of England and Ireland, where it blooms freely, even in partial shade.

S. CHAMÆDROIDES is a Mexican species with blue and white flowers, growing about 2 ft. high, and hardy in the south.

S. COCCINEA.—This graceful plant covers a wide area in America, and though small the flowers are bright and well displayed. It is excellent for borders, and a true perennial, though often treated as an annual. The habit and leaves are neat, with bright scarlet flowers in airy spikes of 12 to 18 ins., prettily set on dark hairy stems, lasting for many weeks and good for cutting. There are many seedling forms, including varieties with white and pink flowers; *major*, a tall plant with larger flowers; *pseudo-coccinea*, which is densely hairy; and others of dwarf and spreading habit.

S. DICHROA is a stately shrubby species from the Atlas Mountains, bearing fine blue and white flowers towards the end of summer. On our southern shores this attains a height of many feet if grown in sheltered places or against a warm wall.

S. DISCOLOR from the Andes of Peru bears dark purple flowers in long loose spikes at the tips of its stout erect shoots. Among the scarlet kinds its dark tones are a fine contrast, and it is almost constantly in bloom. Syn., *S. nigricans*.

S. FARINACEA.—Though not showy, this is a pretty and distinct plant, its small flowers of lilac-blue set with a powdery hoariness and carried thickly as rounded heads at the end of short bare stems. It is a half-hardy perennial from the western states of America and Mexico. There is a form with white flowers.

S. GRAHAMI.—This good old kind forms a handsome bush, bearing small bright crimson flowers in light heads during summer. The stems being woody, they last well when cut, and are pretty in vases. It is hardy in the milder parts of Britain, but needs a good place against a wall if it is to flower well. There are varieties with white flowers, and shades inclining to scarlet and purple.

S. GREGGII (*Rosemary-scented Sage*).—One of the hardiest of the shrubby Salvias, coming from the mountains of Texas. It grows about 3 ft. high, with small bluntly-rounded leaves and spikes of crimson and purple flowers 3 to 6 ins. long at the end of drooping branchlets. The plant is hardy in light soils with root protection, and resists drought, blooming through a long season. Seedlings are easily raised, and flower the first season, or a reserve of rooted cuttings may be wintered under glass.

S. HIANIS is a hardy perennial from Cashmere, growing 18 ins. high, with large hairy leaves like the Clary, and fine violet-blue flowers with a pure white lower lip, and carried in bunches of six together. Free in growth and flower, it is one of the best border Salvias.

S. HORMINUM (*Bluebeard*).—A useful annual kind from the south of Europe, of dwarf spreading habit, with oval or wedge-shaped leaves and showy clusters of coloured bracts around inconspicuous blue flowers. These showy clusters are produced on every shoot and last fresh for a long time, their colour varying from white to reddish-violet and deep purple, according to the variety. The plants stand drought and bad weather, are easily raised from seeds sown in February, and are better in poor dry soils than in those that are rich and fertile. The sprays are useful for cutting, and the plant frequently sows itself without trouble.

S. IANTHINA.—A large soft-wooded shrub with bunches of violet-purple flowers surrounded by violet bracts, which, however, are easily detached. They come freely during spring and early summer, upon stout branches covered with wrinkled and downy leaves. Requires greenhouse protection in winter.

S. INTERRUPTA can only be grown out of doors in the warmest of our seaside gardens. It is one of the finest wild flowers of Morocco, with long downy leaves which are deeply cut and rest upon the ground in spreading tufts, from which the blue and white flowers stand out upon long erect stems. It blooms early, and is one of the most beautiful of border plants where it does well.

S. INVOLUCRATA.—A free-growing, erect shrub, with reddish stems and heart-shaped leaves somewhat drooping, their stems and nerves threaded with purple veins. In autumn massive heads of rosy-purple flowers appear, their effect enhanced by bracts of the same colour and the velvet richness of the whole. There are several forms, including *Bethelli*, of better habit, with long rosy-crimson spikes in which the bracts are large and the flowers marked with white; *Deschampsiana* is another good form of bright colour. These make good pot plants, attractive alike in the greenhouse or planted in sheltered coast gardens. Grown against a warm wall, they are hardy in favoured places. Frequent stopping is necessary in the early stages to correct a lank, loose habit.

S. LYRATA is one of the few hardy perennial kinds from North America, with a tuberous root, lyrate leaves, and small spikes of bluish-violet flowers about an inch long.

S. OFFICINALIS (*Common Sage*).—Apart from its value as a garden herb, this is good as a border plant when covered with its flowers, either purple, blue, or white. There are several garden varieties with beauty of leaf, such as *aurea* with golden leaves, *crispa* in which they are finely curled, and others in variegated colours—green and white, green and gold, and *tricolor* with blending shades of grey-green, gold, and rosy-purple. The form *salicifolia* from Spain has long and narrow whitish leaves, and is strongly aromatic.

S. PATENS is without question one of the best plants in cultivation, the intense blue of its flowers making it a charming object. Though tender in most gardens, the tuberous roots are

easily wintered in a frost-proof place, and increase is easy from seed or cuttings rooted in early spring. There is a less vigorous form with white flowers.

S. PRATENSIS (*Wild Sage*) is one of our prettiest native plants, and withal so uncommon as to be worth a place in gardens, its

Salvia patens.

graceful stems of about 2 ft. high bearing showy flowers of rich purple, white, rose, blue, or reddish-purple, according to the variety. The best named kinds are *Baumgarteni*, violet; *lupinoides*, bluish-purple and white; *rosea*, rosy-purple; *Tenorii*, a pretty blue; and a scarce French form with deep pure red spikes.

S. PRUNELLOIDES.—A low perennial border plant, with long slender spikes of small blue flowers, coming in late summer. There is a variety with reddish-purple flowers.

S. PRZEWALSKII is a new hardy kind from China and Central Asia, growing as a stout perennial with conspicuous bluish-violet flowers of a pretty pale shade, coming in June. Its earliness, resistance, and vigour make it a useful border plant.

S. RINGENS is a low shrubby kind, with handsome Sage-like leaves and large flowers of lavender-blue and white. The plant will bear a mild winter in the south of Britain. There is a variety with rosy flowers.

S. ROEMERIANA.—A bright dwarf plant from Texas, of such neat growth as to be well fitted for edgings or the front of borders. It flowers early, and the deep crimson flowers are continued through several weeks. Increase by

seed or cuttings, which should be wintered under glass. Syn., *S. porphyrantha*.

S. SCAPIFORMIS.—A pretty little perennial, with the appearance of an alpine plant about its neat tufts of olive-green leaves resting on the soil, whence spring slender whorled spikes of lavender-blue flowers, 6 to 10 ins. high. Coming from Formosa, this little plant is only useful in the summer garden.

S. SCABIOSÆFOLIA is a good hardy perennial from Asia Minor, and one of the best kinds with white flowers; sometimes, however, they are more or less speckled with pink.

S. SCLARFA (*Clary*).—One of the old plants long grown in British gardens, and still valued in country districts for brewing herb-wine. It is a biennial from the south of Europe, with clammy hairy stems, ample heart-shaped leaves, and bluish-white flowers in August. Freely massed in dry places, this old plant has a fine appearance, and frequently sows itself in warm soils. A strong form of this, known as *bracteata* (*gigantea*), bears pale mauve-coloured bracts; and *S. Forskohlei*, which comes very near *Sclarea*, shows a blending of violet, blue, and white. Where too coarse for the flower garden, a dry bank in the wild garden may be made attractive by a good breadth of Clary.

S. SPLENDENS.—This is the most showy and useful of the family, in its clear green foliage and glowing scarlet flowers. A native of Brazil, it needs care in winter; if in too low a temperature the roots perish, and if too warm the plants become weak and liable to red spider. The old plan was to take cuttings in autumn and winter them under glass, these plants flowering earlier than the more vigorous seedlings. From careful selection, however, there are now good early-flowering varieties which come fairly true from seed, and (except it be for a small stock of the best named kinds) this is the best means of increase. These forms are vastly superior to the original plant, which, besides being of ungainly habit, had few and small flowers. Wherever a glowing touch is wanted in the autumn garden, nothing is more useful than one or other of the following named varieties, raised for the most part in France and Germany, and differing widely from one another.

Two kinds rising to a good height are *grandiflora* and *gigantea*; though Fanfare and Feu de Joie are fairly tall, they begin to flower early; Gloire de Stuttgart and Rudolph Pfitzer are shorter; and Boule de Feu, Alfred Rage-neau, Bolide, Phare Poitevin, and Lord Fauntleroy are very dwarf kinds, flowering through a long season and admirable for massing in the front of borders. There are also colour variations—*atropurpurea*, with flowers of dark violet-purple; *atrosanguinea*, deep crimson; and *M. Issanchou*, a blend of red and white, from which a poor white form has since been developed. In an American seedling called Drooping Clusters the spikes hang down with a pretty effect, while in Charles Le Couteulx the flowers are gathered into rounded masses rather than spikes. There are forms

with variegated leaves, and one called Silver Spot in which they are speckled over with pale yellow. These garden forms have all come by careful selection within the last few years, giving proof of the value of systematic cultivation in such cases.

S. SYLVESTRIS (*Wood Sage*).—A hardy perennial with hairy leaves, fine as a border plant with its long spikes of bluish-purple flowers in late summer, coming well in partial shade. There is a variety with white flowers.

S. TARAXACIFOLIA is a rare and pretty shrubby plant from the north of Africa, with its lower leaves like those of a Dandelion, and pale pink or purple flowers with a yellow lip, gathered in whorls of six to ten together. It needs light soil and a sunny place in the rock-garden, but is of doubtful hardiness even under the best conditions, and plants should always be held in reserve.

S. TURKEYSTANICA is a hardy perennial kind from Western Asia, with angular stems 3 ft. high, ample foliage which is strongly fragrant, and large white flowers gathered in whorls and surrounded by pale pink-edged bracts. The plant is so hardy and vigorous, and indifferent to heat and cold, that it promises to render good service in the border.

S. VERBENACEA is a pretty native plant about 18 ins. high, with oblong wrinkled leaves and blue or whitish flowers gathered in sixes upon its numerous spikes. It is coarse for the border, but interesting in the wild garden.

S. VIRGATA is a good kind for massing freely, where its abundant blue flowers and violet bracts give good effect in July and August. The plant is of low growth, fully hardy, and easily increased by seed or division.

S. YUNNANENSIS.—A hardy perennial kind from China, growing at a height of 6,000 ft., where it forms low tufts of leaves with light flower-spikes of a pretty cobalt blue.

Few of those described require special treatment, the herbaceous perennials being rapidly propagated by division or seed, and the half-shrubby species by cuttings of the young soft shoots in heat. In August and September they should be raised in a close cold frame, and in spring they should be treated like *Heliotropes* or *Ageratums*. When large plants are required, the old ones can either be potted, or put close together in deep boxes; and, if potted, they should be cut down to within 6 in. of the soil. Both old plants and potted cuttings are easily wintered in any dry place where frost is excluded. The tender Sages thrive in any good garden soil.

SAMBUCUS (*Elder*).—Our native Elder is little valued in gardens, yet a well-grown tree, laden with its clusters of creamy-white blossoms or a profusion of purple fruits, is not without effect. Added to this, it will hold its own in any poor, dry

soil, the leaves are seldom attacked by insects, and all the kinds bear hard pruning and are of easy increase from cuttings.

The wild kinds are perhaps less important for our purpose than their garden forms.

S. NIGRA (the *Common Elder*) is most useful in its variety *aurea* with leaves of a golden hue, particularly during the summer and early autumn months. They are not variegated, but entirely yellow, and so effective that when in good condition and planted with judgment it is perhaps the most valuable golden-leaved shrub that we have. Planted in a mass and cut down to the ground annually is a good way of growing it. Other varieties of the Common Elder are *variegata*, with leaves freely variegated with creamy-white; *flore-plena*, and *flore-roseo plena*, double forms with creamy-white and pinkish flowers respectively; *laciniata*, whose leaflets are prettily cut and fringed; *leucocarpa*, with white fruits; *rotundifolia*, with curiously rounded leaflets; and *virescens*, whose fruits when ripe are greenish.

S. CANADENSIS, from North America, was introduced long ago, but until recently has remained almost unknown. In full flower it is handsome and at its best in August, when most flowering shrubs are past. Though less woody than the common species, it attains a height of 6 feet to 12 feet, with bold, handsome leafage, and flattened clusters of creamy-white, fragrant flowers, which measure sometimes as much as 18 inches across. A new and beautiful form of this shrub has recently come to light in *S. canadensis acutiloba*, the leaves of which are cut into segments as fine as any fern-frond. Though perhaps not yet to be had easily, it will give a new charm to our collections of hardy shrubs.

S. EBULUS (*Dane-wort*).—An herbaceous Elder from North Africa, China, and Europe, including the British Isles. The popular name refers to the legend that the plant first sprang from the blood of Danish invaders. It is a rough, rank-smelling weed, growing from 2 to 4 feet high, with finely cut leaves and whitish flowers. Its only value is for dry banks in the wild garden, or in coverts and rough places.

S. GLAUCA.—A little-known kind, from Western North America, where it is said to form a tree of 30 to 50 feet. In this country it does not appear likely to be of great value. The name is derived from the glaucous bloom with which the berries

are covered, which is so intense that though really blackish they appear to be bluish-white.

S. RACEMOSA (*Scarlet Elder*).—Although not a native of this country, *S. racemosa* occurs wild throughout much of the northern hemisphere. Its popular name is derived from the colour of its ripe fruits, and when borne freely they are very ornamental, but in this country they are often only sparingly produced; where the summers are brighter than ours, it fruits freely. In appearance the Scarlet Elder somewhat resembles our own species, but is readily known by the flowers expanding much earlier, by their coming in a pyramidal-shaped (instead of a flat) cluster, and the bright red berries, which ripen long in advance of the Common Elder. A cool, moist soil and a sunny spot seem to suit the Scarlet-berried Elder the best. It has given rise to many varieties, in which the leafage often forms the distinguishing feature. Chief among them are—*laciniata*, *ovata*, *plumosa*, *pteridifolia*, and *serratifolia*, all with leaves cut and slashed to a greater or less extent. A form of *plumosa* which originated in Holland has leaves of a rich yellow, like the golden form of the Common Elder, but less vigorous. The variety *tenuifolia* is a striking plant in which the leaf segments are reduced to long, narrow strips, seldom more than an eighth of an inch in width. The flowers of *spectabilis* are less green than those of the others, while in *rosaflorea* they are pinkish. A wild variety is *pubescens*, of North America, by some authorities separated from *S. racemosa*.

SAMOLUS.—*S. littoralis* is a pretty trailing plant, with long slender stems, small evergreen foliage, and numerous pink blossoms in summer. It thrives in the bog-garden or moist spots in the rock-garden, delighting in moisture and a peaty soil. New Zealand.

SANGUINARIA (*Bloodroot*).—*S. canadensis* is a pretty and distinct hardy plant, its thick creeping root-stocks sending up glaucous leaves about 6 in. high; the flowers, borne singly on stems as high as the leaves, are 1 in. across, white, with a tassel of yellow stamens in spring, in good-sized tufts, having a pretty effect. Sometimes the flowers are pinkish. It grows well in any border, but under the branches of deciduous trees on lawns it spreads about, and, without attention, becomes a charming wildling, in moist soil. It is strongest and best in moist peaty bottoms in woods or otherwise. It may be increased by division in autumn,

but its fleshy stems must not be kept long out of the ground. Poppy family. Nova Scotia, Canada, and westwards and southwards on the mountains. There are two varieties of this little plant—*major*, with

showier, they are a bright yellow. *S. procumbens* flowers from July till late in September, and owing to its dwarf compact growth it is useful for masses in beds or for the front rows of borders, or in suspended baskets, as the slender branches droop gracefully over. It may be sown in any ordinary garden soil—in autumn for spring flowering, or in March and April for summer flowering.

Sanguinaria canadensis.

large flowers, and *plena*, in which there are extra petals.

SANTOLINA (*Lavender Cotton*).—Dwarf half-shrubby plants, of neat habit and pretty hoary foliage. One of the most distinct and useful of them is *S. incana*, a small grey shrub, with close habit and narrow leaves covered with dense white down. The pale greenish-yellow flowers are small, not showy, but the plant is useful from its form and silvery hue, for groups and edgings, growing readily in ordinary soil on the level border, or on slopes of the rock-garden. It is considered a variety of the better-known *S. Chamæcyparissus* (Lavender Cotton), which is pretty for banks and rock-gardens, forming silvery bushes 2 ft. high, but it is not suited for association with very dwarf alpine plants. Other species of Santolina suited for rock-gardens are *S. pectinata* and *S. viridis*, which form bushes something like the Lavender Cotton. *S. alpina* is of more alpine habit, forming dense tufts close to the ground, from these arising slender stems bearing yellow button-like flowers. It grows in any soil, and may be used in the less important parts of the rock-garden. Division. Cuttings of the shrubby species strike readily in spring or autumn.

SANVITALIA.—*S. procumbens* is a hardy annual from Mexico, with trailing branches and bright yellow flowers. In the single-flowered kind the blossoms have a dark purple centre, but in the double (*S. procumbens fl.-pl.*), which is by far the

ful rose-coloured blossoms appear towards the end of June. It forms rosettes of linear leaves, thick, glabrous; the flowers, forming a thick cluster, are supported by short stout stems. This graceful little plant is valuable for the rock-garden. A sandy soil suits it best, and it endures our winters. A little plant known as *S. Boissieri* is a cross between this kind and *S. ocymoides*, intermediate in character, making spreading tufts covered with bright pink flowers.

S. calabrica is a pretty prostrate hardy annual, 6 to 9 in. high, its slender stems covered with small pink blossoms all the summer. There is a white variety. It is much used for beds and edgings. Seeds may be sown in the open border in April, or earlier in heat if bloom is required early in the season, in rich sandy loam.

S. lutea is a pretty little rock-plant from Savoy and Piedmont, 3 to 6 in. high, with narrow leaves like those of the Alpine Catchfly, and a neat tufted habit. The pale yellow flowers come as close woolly heads in early summer.

S. ocymoides is a beautiful trailing rock-plant, with prostrate stems, its rosy flowers completely covering its leaves and branches in early summer. It is most valuable for clothing arid parts of the rock-garden, where a drooping plant is desired, as the shoots fall over the face of the rocks and become masses of rosy bloom. It is also excellent for old walls, and the seed should be sown in mossy chinks where a little soil has gathered. It thrives in ordinary soil, and is often a

good dwarf border plant. Two or three garden varieties are now grown, the best being *splendens* with much brighter flowers, *alba* with pale flowers, best in partial shade. Seeds and cuttings. Southern and Central Europe.

S. officinalis (*Soapwort*).—This is a handsome native plant about 2 ft. high, with large fragrant blossoms, usually rose-pink, the double variety being best. It is a rambling plant, and soon spreads rapidly; therefore it should not be planted in select borders, but is pretty for rough places in the pleasure-ground and wild garden, as it grows in any soil. Division.

Sarana. See FRITILLARIA.

SARRACENIA (*Huntsman's Horn*).—This singular plant, *S. purpurea*, belongs to a family of Pitcher-plants, natives of North America, it being the hardiest, and handsome when well grown. Its curious leaves, hollowed like a horn, are blood-red in colour, and form a compact tuft 1 ft. or more in height and the same in breadth; the flowers, singular in shape, are not very showy. It is a good plant for the bog-garden or for damp spots in the rock-garden, in an open and fully-exposed position with the choicer bog-plants, in fibrous peat well mixed with Sphagnum Moss, which is common in marshy places. A layer of living Moss should be placed round the plant to keep it moist. The plant is hardy under these conditions, but precautions should be taken to prevent birds from disturbing the soil and exposing the roots. Some of the hybrids between it and others may be hardy. *S. flava*, the hardiest species next to *S. purpurea*, is rarely satisfactory in the open air, but does well in favoured spots, as at Leonardslee, near Horsham. Other species, including *Drummondii*, *psittacina*, *rubra*, and *variolaris*, do well in the open air in parts of Ireland, if covered with a thick layer of moss in hard weather.

SASSAFRAS (*Ague Tree*).—*S. officinale* is a distinct and remarkable tree, sometimes growing over 100 ft. high, with a trunk 6 ft. or more in diameter, and a rough aromatic bark in sandy soils in New England, Canada, and westwards and southwards. The leaves are three-lobed, and vary much in shape. In our country this plant should have soils similar to those in which it grows in its own, as our cool summers are less likely to ripen the wood. Syn., *Laurus sassafras*.

SAXIFRAGA (*Rockfoil*).—This genus includes perhaps more true alpine flowers than any other. In the Arctic circle, in the highest alpine regions, on the arid

mountains of Southern and Eastern Europe and Northern Africa, and throughout the length and breadth of Europe and of Northern Asia, they are found in many interesting varieties of form and colour. One might expect them to be as difficult of cultivation as most alpine plants, but they are the easiest to grow of all. They were common in collections of alpine flowers where few other families were represented. Of late years many pretty species have been introduced, and the variety in the family is now so great that a very interesting garden might be made of Saxifrages alone. For the purposes of cultivation some rough division is convenient, as Saxifrages are very different in aspect and uses. The most ordinary form is the Mossy or *hypnoides* section, of which there are many kinds in cultivation. Their delicate Moss-like spreading tufts of foliage, so freshly green, especially in autumn and winter, when most plants decay, and their countless white flowers in spring, make them very precious. They are especially suited for the tasteful practice of carpeting the bare ground beneath taller plants. They are also admirable for the fresh green hue with which they clothe rocks and banks in winter. Next to these we may place the very extensive silvery group. These have their greyish leathery leaves margined with dots of white, so as to give to the whole a silvery character. This group is represented by such kinds as *S. aizoon* and the great pyramidal-flowering *S. cotyledon* of the Alps. Considering the freedom with which they grow in all cool climates, even on level ground, and their beauty of flower and foliage, they are perhaps the most precious group of alpine flowers we possess. Anybody with a cottage garden can grow them. The London Pride section is another of great beauty, the plants thriving under ordinary conditions in lowland gardens, and soon naturalising themselves in lowland woods and copses. But the most brilliant, so far as flower is concerned, are found in the purple Saxifrage (*S. oppositifolia*) group and its near allies. Here we have tufts of splendid colour in spring with dwarfness and perfect hardiness. The large leathery-leaved group, of which the Siberian *S. crassifolia* is best known, is also of much importance, the plants thriving in ordinary soil and on the level ground. There are various minor groups. Such of the smaller and rarer alpine species as require any particular attention should be planted in moist sandy loam

mingled with grit and broken stone, and made very firm. Very dwarf and rather slow-growing kinds, like *S. cæsia* and *S. aretioides*, should be surrounded by half-buried pieces of stone, to prevent their being trampled on or overrun. Stone will also help to preserve the ground in a moist healthy condition in the dry season, when the plants are most likely to suffer. Very dry winds in spring sometimes have a bad effect when such precautions are not taken. Established tufts are apt to throw out stem-roots into their own cushions, so to say. These cushions are frequently moist during the autumn and winter months. When the tufts are suddenly dried, the plants suffer if the ground-roots be dried too.

The following are among the most important cultivated kinds, though the list excludes many species that are difficult to grow or to procure, and which are found only in very full collections.

S. aizoides.—A native plant, very abundant in Scotland, the north of England, and some parts of Ireland, and generally found in wet places and by the sides of mountain rills or streams. At the end of summer or in autumn it has an abundance of flowers, $\frac{1}{2}$ in. across, bright yellow (inclining to orange in the form *aurantiaca*), dotted with red towards the base. It forms dense masses of dwarf bright green leaves, and has leafy branched flower-stems, which distinguish it from other yellow Saxifrages. Although a mountain plant, it is easy to grow in lowland gardens in moist ground. Wherever a rill or streamlet is introduced into the rock-garden or its neighbourhood, *S. aizoides* may be planted to form wide-spreading masses, as it does on its native mountains. Easily propagated by division or by seed. Syn., *S. autumnalis*.

S. aizoon is a good rock, border, and edging plant. Plants established for two or three years form grey-silvery tufts, which do not flower so freely as the wild plants, but this need not be regretted, as it is the silvery mass, and not the flowers, that is sought. This Rockfoil is often grown in pots, but it flourishes as freely as any native plant, and is best perhaps when exposed to the full sun. There is a host of named varieties offered in trade lists, but they are mostly only slight variations from the type. Division in spring.

S. Andrewsii.—Among the green-leaved Saxifrages there is no better kind than this. Its flowers are freely produced, prettily spotted, and larger than those of *S. umbrosa*. The plant is finer in the rock-garden than London Pride, grows as freely on any border soil, and merely requires to be replanted occasionally, when it spreads into very large tufts, or to have a dressing of fine light compost sprinkled over it annually. A distinct variety, *Guthrieana*, is from the Pyrenees.

S. apiculata.—A cross between *S. rocheliana*

and *S. sancta*, making neat green cushions covered very early in the year with beautiful pale yellow flowers. *S. Malyi* comes very near this, but the flowers are a deeper yellow and more crowded.

S. aretioides.—A real gem of the encrusted section, forming cushions of silvery rosettes about $\frac{1}{2}$ in. high. It has rich golden-yellow flowers, in April, on stems a little more than 1 in. high, which remind one of the flowers of *Aretia vitalliana*. *S. aretioides* requires a moist and well-drained soil, and being so tiny, must be protected from coarser neighbours. There is a new and pretty form of it with pale yellow flowers, called *primulina*. Seed and careful division.

S. biflora.—A dwarf kind coming near *S. oppositifolia*, but larger in growth and in its rosy flowers, fading to violet and clustered loosely in twos and threes. It grows in the loose, moist grit of the alpine ice-fields, flowering as soon as the snow melts in June.

S. Burseriana.—None of the Rockfoils surpasses *S. Burseriana* in vernal beauty. It is almost Moss-like in habit, forms broad patches, and spreads rapidly over the earthy interstices of warm moist sandstone, if planted where it will not suffer from stagnant moisture. The blossoms are borne singly on slender red stalks, which rise 2 or 3 in. above the general surface of the plant, and are pure white, the margins of the overlapping petals elegantly frilled or crisped. They appear freely in January and February. Before they are expanded, their crimson-brown unopened buds have a cheerful effect as they emerge from the compact silvery tufts of foliage, while interspersed among full-blown flowers they enhance the pearly whiteness of the petals. *S. Burseriana* soon forms good-sized tufts in the open border or in the rock-garden, but prefers a dry sunny situation and calcareous soil. All lovers of hardy spring flowers should possess it. There are two or three distinct forms which differ from each other chiefly in habit or time of flower, one being much more tufted than the others. There are forms with larger flowers than the parent; that called *major* is good, and *grandiflora* less so, though its flowers are very large. Large panfuls of this early Rockfoil are pretty in the greenhouse. Austrian Alps.

S. cæsia resembles an Androsace in the neatness of its tufts. On the Alps it covers the rocks and stones like a silvery Moss, and on level ground, where it has some depth of soil, develops into beautiful little cushions 2 to 6 in. across. It has pretty white flowers in summer on smooth thread-like stems, 1 to 3 in. high. Though a native of the high Alps and Pyrenees, it thrives in our gardens in very firm sandy soil, if fully exposed and well watered in summer. It may also be grown in pots and pans in cold frames near the glass; but, being very minute, should always be kept distinct from coarse neighbours, as even the smallest weeds will injure or obscure it. Seeds or careful division. Of similar character are

S. calyciflora, *S. luteo-viridis*, *S. Kotschyi*, *S. valdensis*, *S. squarrosa*, and *S. diaphanoides*, all dwarf, and for the most part difficult to grow, though their beauty amply repays the trouble bestowed on them. They should be grown in the same way as *S. caesia*.

S. cæspitosa.—A dwarf kind forming a dense carpet arranged in neat tufts and studded in summer with white blossoms. It succeeds in

strong tufts in any good garden soil, and is adapted for any kind of rock-garden, whether grown in level tufts on the flat portions or in sheets overhanging the brows of rocks. Spain. Seed or division. Similar to this species are *S. paniculata*, *ladanifera*, *Wilkommiana*, *geranioides*, *irrigua*, *ajugæfolia*, and *aquatica*.

S. ciliata.—One of the broad-leaved or *Megasea* section, with large broad leaves

Saxifraga pyramidalis (the great alpine Rockfoil).

almost any situation in any garden soil, is useful for margins to herbaceous borders, and makes a beautiful covering for moist banks. It is one of the most variable of Saxifrages, its most distinct form being *purpurea*, with rosy flowers.

S. ceratophylla (*Stag's-horn Rockfoil*).—This is really only a fine-flowered form of *S. trifurcata*, an ornamental species of the mossy section, with dark, finely-divided leaves and numerous pure white flowers in loose panicles in early summer. It quickly forms

covered with soft hair, and carried on creeping stems. The flower-stems are 6 to 9 in. high, and bear numerous large flesh-coloured flowers in spring. A native of North India, *S. ciliata* is suitable for open-air culture in the south of England only, but is so handsome and distinct that it should be tried wherever it can be grown. A sheltered nook in the rock garden, partially shaded, suits it best.

S. cordifolia.—This Siberian plant differs in aspect from the ordinary dwarf Rockfoils, having ample heart-shaped leaves on long and

thick stalks. Its clear rose-coloured flowers in early spring are arranged in dense masses, and half concealed among the great leaves, as if hiding from the cutting breath of March. *S. cordifolia* and its varieties flower in any soil and position, but to encourage early flowering place them in warm sunny positions, where their fine flowers may be induced to open well. These Saxifrages are perhaps more fitted for association with the larger spring flowers and herbaceous plants than dwarf alpines, and may be naturalised on banks, in wild sunny parts of the pleasure-ground, or by wood walks. They may also be used with effect near cascades, or on rough rock or root work, or on the rocky margins of streams or artificial water; in fact, they are the fine-foliaged plants of the rocks. There are several handsome varieties of *S. cordifolia*, the finest of all the group being one called *purpurea*.

S. cotyledon (*Pyramidal Saxifrage*).—This embellishes with its great silvery rosettes and elegant pyramids of white flowers many parts of the great mountain ranges of Europe, from the Pyrenees to Lapland. It is the largest of the cultivated Saxifrages, and also the finest, except *S. longifolia*, the linear leaves of which it does not possess. There is considerable difference in the size of the rosettes, which when grown in tufts are generally much smaller than in isolated specimens. The flower-stem varies from 6 to 30 in. high, and about London, in common soil, often reaches 20 in. In cultivation the plant usually attains a greater size than on its native rocks. A variety more pyramidal and more robust is known in gardens under the erroneous name of *S. nepalensis*, and sometimes by the more appropriate one of *S. pyramidalis*. To get good specimens, denude the parent plant of the offsets as they appear. Many market growers have large stocks of this Rockfoil in pots. It is superb thus grown, but will succeed well in the rock-garden or ordinary border.

S. crassifolia.—A well-known Siberian species of the *Megasea* section, with large broad leaves. The flowers rise from the terminal shoots in showy pendent masses, and are pale rose with a suspicion of lilac. The plant fulfils the same purposes as *S. cordifolia*. The chief varieties are *ovata*, which carries its deep rose-coloured flowers well above the foliage; *rubra*, similar to the last, but with flowers of a deeper tinge of rose; *orbicularis*, producing an abundance of light rosy flowers, well above the foliage, and sometimes considered a species, but in reality only a smaller form of *ovata*, with rather broader leaves and a more branching habit; and *media*, a distinct variety, with large dark, shining green leaves and clusters of bright rosy-pink flowers on strong stems. There is also a variety with variegated foliage.

S. cymbalaria.—Little tufts of this Rockfoil form in early spring masses of bright yellow flowers set in light green, glossy, ivy-like leaves, the whole not above 3 in. high. In-

stead of fading, it preserves its little rounded pyramids of golden flowers until autumn, when it is about 12 in. high. It is an annual or biennial, sows itself abundantly, and is suitable for moist spots on or near the rock-garden or on level ground, and in large pleasure-grounds is readily naturalised on the margins of a rocky stream and elsewhere.

S. Elizabethæ.—A garden cross of fine habit, with soft yellow flowers on red stems, early in spring. It grows quickly and is quite one of the best early kinds. *S. Boydii* is a new kind of similar parentage, and, like this, very early, and the clear yellow flowers very beautiful; it is, however, not so easy to grow, and less fine in habit.

S. flagellaris is distinct and free in growth. Like its ally, *S. Hirculus*, it has large bright yellow blossoms. Each rosette throws off thread-like stolons, which root at the tips and in moist, peaty, and gritty soil quickly form new rosettes.

S. Fortunei has large panicles of white blossoms which rise in profusion from rosettes of dark green rounded leaves. It is a desirable plant, for it flowers in autumn and is not particular as to treatment.

S. granulata (*Meadow Saxifrage*).—A low-land plant, with several small scaly bulbs in a crown at the root, and numerous white flowers three-quarters of an inch across. It is common in meadows and banks in England, its double form being very handsome; also useful as a border plant in the spring garden or in the rougher parts of the rock-garden.

S. Grisebachii.—A little gem, with early flowers unfolding slowly from a crimson bud, and very distinct in their crimson-purple colour. It is quite a new plant, from Albania, and at certain stages not unlike a small form of *S. longifolia*, but at other seasons plainly a very different plant.

S. hypnoides (*Mossy Saxifrage*) is a very variable plant as regards stems, leaves, and flowers, but usually forms mossy tufts of the freshest green, and no plant is more useful for carpets in winter. For this reason it is suited for the low rocky borders of town and villa gardens, thriving in the rock-garden or on level ground, either in half-shady positions or fully exposed. When exposed it forms the fullest tufts, flowering profusely in early summer. Nothing can be easier to grow or to increase by division. Under this species may be grouped *S. hirta*, *S. affinis*, *S. incurvifolia*, *S. platypetala*, *S. decipiens*, and several others, all showing differences which some think sufficient to mark them as species. They are as free as *S. hypnoides*, and appear to suffer only from drought or drying winds. If when first planted a few rather large stones are buried in the earth round each, the plants will soon lap over them and preserve the moisture in the tufts. *S. densa* and *S. Whitlavi* are the best free-growing species, and, being compact and always green, are suitable for a margin.

S. juniperifolia (*Juniper Saxifrage*) is one of the most desirable, with spine-pointed

leaves densely set in cushioned masses. The yellow flowers appear in summer, and are arranged in spikes on a leafy stem. *S. juniperina* thrives in moist, sandy, firm soil, and is well worthy of a place in the rock-garden. Caucasus. Seed and careful division.

S. lantoscana.—One of the finest of the incrustated-leaved section. Though similar to

broadly obovate leaves, bearing flowers in small cymose panicles. The flowers are white, with a rosy tint towards the margin of the petals and crimson anthers. Its early growth renders it tender, and repeated injury is fatal. It should therefore have shelter and a little shade. The varieties *rubra* and *speciosa*, particularly the latter, are finer than

Saxifraga longifolia.

the pyramidal variety of *S. cotyledon*, it is smaller, its leaves narrower and more crowded, whilst its slightly drooping flower-spike is more densely furnished with flowers. It is easily grown in a fully-exposed position in well-drained gritty soil. It remains long in flower, and is one of the best of alpine plants. *S. lingulata* comes very near this, and indeed *S. lantoscana* is now classed as a form of it.

S. ligulata (*Nepaul Rockfoil*).—This has

the type, and *thysanoides* bears pale flowers. *S. ligulata* may be associated with others of the Megasea section.

S. longifolia.—This Pyrenean plant has single rosettes often 6, 7, and 8 in. in diameter. Its greyish leathery leaves are beautifully dotted with white on the margins, and in early summer it pushes up fox-brushlike columns of white flowers from 1 to 2 ft. long, the stems covered with short, stiff, gland-tipped

hairs. It is perfectly hardy, and may be grown in various ways. In some perpendicular chink of a rock-garden, where it can root deeply, it is very striking when the long outer leaves of the rosette spread away from the densely-packed centre. It may also be grown on the face of an old wall by carefully packing a small plant of it into a chink with a little soil. The stiff leaves will, when they roll out, adhere firmly to the wall in the form of a large silver star. *S. longifolia* will thrive on a raised bed or border if surrounded by a few stones to prevent evaporation and injury, also in a greenhouse or frame, and perhaps the best way to develop a weak young nursery plant into a sturdy rosette is to put it in a 6-in. pot well drained and filled with a mixture of sandy loam and stable manure. Place it in a sunny pit or frame, giving it plenty of water in spring, summer, and autumn. Increase is by seeds, which ripen from the bottom of the stem upwards, so that the lower seed-vessels should be cut off first, leaving those above to mature. Visit the plant frequently to collect the seeds as they ripen. *S. lingulata* chiefly differs from this kind in having smaller flowers and shorter stems. It is a charming rock-plant, and will succeed in the same position as *S. longifolia*. *S. crustata* is considered a very small variety of *S. longifolia*, and should be associated with dwarfer plants.

S. Maweana is a handsome species of the *caespitosa* section, and larger than any other in foliage and flowers. The latter, about the size of a shilling, form dense white masses in early summer. After flowering, this species forms buds on the stems, which remain dormant till the following spring. Though rare, it is of easy culture. Similar, but finer, is *S. Wallacei*, which is far more robust, earlier, and freer as regards flowering, but which does not develop buds during summer. It is a most desirable plant for the border or the rock-garden, and easily propagated. Potfuls of this are pretty, as the flowers are large, and so free as to form a mass of white.

S. muscoides (*Mossy Saxifrage*).—A beautiful little plant, forming a dense bright green carpet like *S. hypnoides* and *S. caespitosa*. There are several forms of it, one of the best being *atropurpurea*, which produces a dense mass of deep red-purple blossoms on stalks a few inches high. Other forms bear yellowish or rosy flowers, the best being *S. Rhei*, with large bright pink flowers borne very freely on long stalks, and Guildford Seedling, a new kind, with large crimson-purple flowers of fine effect. The varieties *pygmaea* and *crocea* are pretty, also the allied kinds *S. exarata*, *S. pedemontana*, *S. aromatica*, and a few others; they grow in almost any soil.

S. oppositifolia.—It is impossible to speak too highly of the beauties of this bright little mountain-plant, in colour and in habit so distinct from others of its family. The moment the snow melts, it glows into solid sheets of purplish-rose colour. Of the several varieties, that known as *splendens* has flowers of far

greater brilliancy, though slightly smaller and less abundant than those of the parent; in bud especially the colour is almost carmine and most beautiful. This variety was found many years ago on the mountains of Scotland. *S. o. major* has flowers twice the size of the type, clear rose, inclining to cherry, and has less of a purple tinge. In *S. o. pyrenaica* the shoots are much stronger and the flowers larger than in other forms. A fine form is *S. o. p. maxima*, with lovely light rose blossoms as large as a shilling; while *S. o. alba* has white flowers, in pleasing contrast to other varieties. Perhaps the best form of all is a new seedling, W. A. Clark, with abundant rosy flowers of a very bright shade. *S. Rudolphiana* has a more

Group of Silvery Rockfoils.

spreading habit of growth, and its rosy-purple flowers are sometimes borne singly and sometimes (though rarely) in pairs. It is allied to *S. biflora* and *S. Kotschyi*, the last with rosy-purple flowers in twos and fours at the tips of the shoots. The foliage of *S. retusa* is firm and compact, with small flowers borne in clusters at the tips of erect stalks; their narrow petals are usually a pale rose colour, sometimes brighter. It blooms rather later than the forms of *S. oppositifolia*. *S. Wulfeniana* is closely allied to *S. retusa*. *S. oppositifolia* and its varieties succeed in deep, open, rich, loamy soil, and are finest in a fissure or on a ledge of the rock-garden, where the roots can ramble backwards or down to any depth. For the soil, a rich light loam mixed with fragments of limestone or grit, small fragments of any rock, and a little river sand will do. These plants must have sunshine, for though they will grow in the shade, they will not flower freely. The same treatment, with the addition of a little

peat or vegetable mould, suits *S. retusa* and *S. Wulfeniana*. The Tyrolese species (*S. biflora* and *S. Rudolphiana*) are less easy to please. They grow wild on the moraines of glaciers, where light vegetable soil, sand, and débris of every kind blend with massive rocks, coating the surface, and filling the interstices where water drips or oozes around and frequently flows in volume within 2 or 3 ft., so as to soak the bases of the rocks on which their rosy carpet is spread. They will grow in pots, but not like the forms of *S. oppositifolia*.

S. peltata.—The shield-like leaves of *S. peltata* make it unique among Saxifrages, and on this account some have classed it apart

S. Rocheliana (*Rochel's Saxifrage*).—A compact and dwarf kind, forming dense silvery rosettes of tongue-shaped leaves with white margins and distinct dots. In spring appear large white flowers on sturdy little stems. There is no more exquisite plant for the rock-garden, pans, and for small rocky or elevated borders. Any free, moist loam suits it, and in London it thrives on borders exposed to the full sun. Austria. Seeds or careful division. *S. coriophylla* is similar but not so valuable. *S. Salomonii* is a cross between this kind and *S. Burseriana*, of strong growth, and its large white flowers very early but too scanty for fine effect.

Saxifraga Wallacei.

under the name *Peltiphyllum*. From a thick fleshy root-stock rise stout erect leaf-stalks, at the ends of which grow the target-like leaves, 1 ft. or more in diameter. The white or pale pink flowers appear in spring, a little before the leaves, on stalks 1 to 2 ft. high, and in loose clusters 3 to 6 in. in diameter. It is found beside streamlets throughout the Sierra Nevada of California, and is best in deep moist peaty soil. Division or seeds.

S. purpurascens is the finest of the *Megasea* section. The stem is 10 to 12 in. high, and the flowers are produced in pendent masses of red and purple. The ample foliage takes on charming autumn tints in purple and crimson. Succeeds best in a moist peaty soil in a rather sheltered spot. High elevations about Sikkim.

S. sancta.—A beautiful species, forming a dense mass of deep green foliage, studded in early spring with bright yellow blossoms on short stems. It grows freely in any position in the rock-garden, but needs free exposure to flower well.

S. sarmentosa (*Mother of Thousands*).—A well-known plant, with roundish leaves and numbers of slender runners spreading Strawberry fashion. It grows freely in the dry air of a sitting-room, and may often be seen in cottage windows, but is most at home running wild in the cool greenhouse or conservatory, where it flowers during summer. In mild parts of England it lives in the open air, and may be used with Ferns and other creeping plants. There is a pretty but rather delicate form in which the leaves are finely variegated

with yellow and crimson. China. Closely allied is the delicate *S. cuscutaformis*, with its thread-like runners similar to the stems of a Dodder, and distinguished from *S. sarmentosa* by smaller leaves and more uniform petals. It may be used in much the same way, but requires more care. It is a beautiful plant for growing in Moss in a cool fernery, for it is perfectly at home, and the delicate markings of its leaves show up against the green of its surroundings.

Saxifraga sarmentosa.

S. Stracheyi is a strong plant with leaves nearly as broad as long. Its flowers, produced on broad branching panicles, are of a light pink with a shade of lilac. It is hardier than its closest ally, *S. ciliata*, blooms in March, and should be sheltered against bleak winds. It is suited for borders and rock-gardens.

S. tenella.—A handsome plant, forming tufts of delicate fine-leaved branches, 4 or 5 in. high, which root as they grow. The flowers, which appear in summer, are numerous, whitish-yellow, and arranged in a loose panicle. Similar in growth are *S. aspera*, *S. bryoides*, *S. sedoides*, *S. Seguieri*, *S. stelleriana*, and *S. tricuspidata*, all suitable for clothing the bare parts of the rock-garden and slopes, but require moist soil and cool positions. Division in spring or the end of summer.

S. umbrosa (*London Pride*).—This almost universally-cultivated plant is abundant on the mountains round Killarney, though it has long been grown in our gardens. In old gardens it is much used for edging, and, being a pretty evergreen, should be freely used in the rough parts of rock-gardens, the fringes of cascades, etc. It is naturalised in several parts of England, and grows freely in dwarf herbage, or in rocky parts of woods. There are several

varieties—for example, *S. punctata*, *S. serratifolia*, and *Ogilvieana*, which is a most distinct form with pinkish blossoms in dense dwarf panicles not over 6 in. high. *S. rotundifolia* and similar kinds are related to *S. umbrosa*, but are unimportant. This plant and its forms will thrive in the cold shade of high walls where few other things will live.

There are other good kinds, but less important than the foregoing, such as *S. mutata*, *S. florulenta*, very difficult to grow, the London Pride-like *S. Geum*, the native *S. Hirculus*, and the small grey tufted *S. aspera*.

GIANT ROCKFOIL HYBRIDS.—From all the other Saxifrages these are known by their massive size and breadth of leaf, while as a general rule they are of evergreen habit, and so are effective at all times. Most of them are beautiful when in blossom during the earlier months of spring. Now and then, it is true, their flowers become nipped in the bud by spring frosts, but general results justify their culture. Besides, it is so easy to pot up the plants in autumn and give them the shelter of a cold frame or an awning of mats, since plants so treated bloom freely and form handsome plants for the cool greenhouse or conservatory.

One of the best for pot and tub culture is *M. crassifolia*, with clusters of peach or almond tinted blossoms on tall stalks, its fragrance on a warm day being like that of Hawthorn. Another fine variety is *cordifolia purpurea*, with pendulous bell-shaped flowers on vivid red scapes 18 in. or 2 ft. in height, the blossoms darker in colour than those of *crassifolia*.

Other very fine species are *purpurascens*, *Stracheyi*, *cordifolia*, and *ciliata*, the last with large hairy leaves, but it is the most tender of the whole group, and its leaves succumb to the first sharp frosts. Its flowers are whitish with a rosy-red centre, and effective in warm sheltered localities under cold frame culture in pots or tubs, as above recommended.

The following species and varieties are given in books: *Megasea cordifolia*, *c. purpurea*, *crassifolia*, *ligulata*, *l. ciliata*, *purpurascens*, *Stracheyi*, *S. alba*, *S. Milesi*, *hybrida splendens*.

Numerous hybrids have been reared in this section of Saxifrage from time to time. One of the first was the seedling from *cordifolia*, now known as *cordifolia purpurea*, a noble plant at its best. *Milesi* is dwarf growing, and nearly if not quite deciduous, its presumed parentage being *ciliata* crossed with pollen of *Stracheyi*. As seen in its early bud stage of blossoming, it is a distinct and beautiful plant.

and is lovely grown in pots in a cold house or sunny frame. Its scapes are so short that its rose and white flowers are splashed by rains unless protected.

A fine series of hybrid Megaseas is that due to Mr. T. Smith, of Newry, resulting from crosses between *cordifolia* × *purpurascens*, and with the good qualities of both parents. The plants are all robust,

Irish Rockfoil.

although varying much in colour of flower and in stature. *Hybrida splendens* is one of the finest in the group, but the following are all good :—

Brilliant.—Leaves large, richly tinted in autumn and winter ; flowers purple ; calyces and pedicels crimson ; fine. *Campana*.—Very neat dwarf crowded foliage ; scape 1½ ft. with bell-shaped head of rosy-lilac flowers. *Corrugata*.—Dwarf habit ; large rough leaves ; flowers pink. *Distinction*.—Dwarf crowded habit, with enor-

mous head of pale pink flowers. *Nana*.—A miniature of *hybrida splendens*. *Progress*.—A free-growing plant, with tall scapes of rosy purple ; bell-shaped blossoms, which are 1¼ in. across ; extra fine. *Sturdy*.—Compact habit, with short stout scape of rose-coloured flowers.

One charm of these great Rockfoils is their rich autumnal and winter colouring. *M. Stracheyi* and *M. purpurascens* are good in this way, and many of Mr. Smith's hybrids also, when in exposed positions ; with other fine-leaved plants they show to advantage, some having leaves suffused with crimson, red, and soft yellow, while others are vivid crimson and brown. We have here a group of fine-leaved and flowering plants worthy of every attention, for we do not believe that these hybrids, fine as they are, offer the full measure of possible improvement. We anticipate yet finer plants, free from all cultural difficulties—plants that a cottager may grow in his garden, or a townsman in his window boxes, and handsome enough to be worthy of care and attention in the garden of a queen.—F. W. B.

SCABIOSA (*Scabious*).—Annual, biennial, and perennial plants, forming by far the largest proportion of the Teasel family cultivated in our gardens. The old English name of Pincushion Flower, from the resemblance of the flower-heads to that useful article, is perhaps a little more appropriate than it is elegant, although it serves its purpose very well, and, indeed, we have been told these plants are known by no other name in the country. Although comprising a large number of species, very few are found outside the botanic garden, and were all the known kinds hunted up, not a dozen would prove worth growing.

S. atro-purpurea (*Sweet Scabious*), the commonest Scabious, grown in distinct varieties, which add much to the beauty of our mixed flower borders, as well as being largely used for greenhouse and conservatory decoration. The normal colour is said to be deep crimson, but under cultivation all shades of crimson, purplish-yellow, and white may be seen. Many varieties have double flowers and are preferred by some growers, but I think the single varieties are best, and they are also extremely useful for cutting. Under the name Saudade the flower-heads of this plant are used for funeral wreaths by the Portuguese and other nations ; indeed, the white varieties are of such purity that they might be so employed in our own country, as they may be had at almost any season if sown and grown under glass.

To secure gay groups for the flower borders, order mixed packets of seeds, which should be sown in the reserve ground along with other annuals in May, or even later, to bloom the following year. If sown earlier, however, the Scabious will bloom the same year, for though considered a biennial by many growers, we have always looked upon it as a hardy annual. By sowing the seed in the open towards the end of March and thinning out as required, the plants will bloom well towards the latter end of summer. To get earlier bloom, those sown the previous autumn may be transplanted in early spring to their flowering quarters; the succession will then be continued from early summer until late autumn. South-western Europe.

S. caucasica (*Caucasian Scabious*) is the handsomest and most useful. It flowers from early summer to late autumn, a true perennial on warm soils, but often perishes on cool soils. It forms dense tufts, which yield large quantities of blue flower-heads, each usually from 3 to 4 in. in diameter, on long foot-stalks, and useful for cutting, as they last a long time. There is a white variety, and others such as *atrocarulea*, which is very dark; *fimbriata*, with the petals finely fringed; and *perfecta*, with semi-double flowers. *S. amœna* comes very near *caucasica*, but is more vigorous and with flowers of rosy-lilac colour. Caucasus. Division and seed.

S. graminifolia (*Grass-leaved S.*).—A graceful Scabious from 1½ to 2 ft. high, with pale blue flowers and silvery white leaves; it is very useful for the rock-garden. Southern Europe. June to October. Division and seed.

S. maritima (*Sea Scabious*).—This resembles *S. atropurpurea*, and is equally beautiful, a hardy annual, yielding abundance of purple-crimson flowers, useful for cutting.

S. pterocephala (*Wing-headed S.*) is a very dwarf-tufted hardy perennial, with greyish-green foliage, and rarely exceeding 4 in. or 6 in. in height even when in flower; flower-heads pale purple in summer. We find it very useful and less troublesome than most of the other species. Greece. Division. Syns., *S. Parnassi* and *Pterocephalus Parnassi*.

S. Webbiana is another useful species for the rock-garden or border, forming neat little masses of hoary leaves, which are attractive, especially when the plant is grown in poor soil. Its creamy yellow flowers, borne on long stalks, are pretty from July to August. Division.

Other kinds are *succisa*, *arvensis*, *Porta*, *suaveolens*, *Columbaria*, *gramuntia*, but

the above will be found a fair selection for most gardens. In addition to the annual species given above, *S. stellata* will no doubt find a place in many gardens. It grows about 2 ft. in height, the large florets spreading open like a star, of a pale purple colour, perhaps more curious than beautiful. A near ally of the above is *S. palestina*, a little taller, flowers larger, but paler; both are hardy annuals, but not to be compared with the Sweet Scabious and its varieties.—D. K.

SCHISTOSTEGA (*Iridescent Moss*).—This Moss (*S. pennata*) is so small that it would hardly be noticed by the naked eye but for the iridescent gleams of beautiful colour which it displays in suitable positions. Some of the stones and sods on which it grows look as if sown with a mixture of gold and the material that forms the wings of green humming-birds. It was supposed to require a particular kind of rock, but its wonderful coruscations have lately been seen to spread over sods of turf and masses of peat, as well as over chips of rock brought from its native place. Messrs. Backhouse have it in perfection in the open air, in a quiet deep gorge of rocks, where it obtains sufficient moisture without being washed by rains.

SCHIZANDRA.—A small group of summer-leaving climbing shrubs allied to Magnolia, and mostly from the Far East, but with one kind from North America. The best known is *S. chinensis*, with twining stems of 10 to 25 feet, bearing simple glossy leaves and pale rosy flowers during early summer, half an inch across, and fragrant. These are followed by dense clusters of showy scarlet berries, which ripen in August and hang far into the winter. China and Japan. The plant needs a sheltered place if it is to do well, but with protection in winter is hardy over at least the south of Britain. A rich sandy loam, moist yet well-drained, and partial shade during the hottest hours of the day, are the best conditions. Though mostly grown against a trellis or sunny wall, in sheltered places it is quite at home roaming among shrubs and low trees, as in its own land. Increase by cuttings of the ripened shoots, root-cuttings, layers, and suckers when these can be had. Syn., *Maximowiczia sinensis*.

SCHIZANTHUS (*Fringe-flower*).—Pretty annuals of elegant growth, which bear in summer many showy and curiously-shaped blossoms. There are in cultivation a few species, and these have yielded numerous varieties. The hardy kinds are *S. pinnatus*, 1½ to 3 ft. high, its rosy-

purple and yellow blossoms copiously spotted. Its chief varieties are—*papilionaceus* (purple spotted), *Priesti* (white), *atro-purpureus* (deep purple with dark eye), and Tom Thumb (a dwarf compact variety). *S. porrigens* is similar to *S. pinnatus*, but has larger flowers. The half-hardy kinds are *S. retusus* (deep rose and orange flowers with crimson tips), *Grahami* (lilac and orange), and *Hookeri* (pale rose and yellow). These are also beautiful, and worthy of being grown well. One of the best for growing in pots is *Wisetonensis*, a compact pyramidal form of *S. retusus*, with large flowers in blending white, pink, and yellow. This should be grown cool, just like a greenhouse Cineraria. Garaway's is a good strain of large-flowered forms, very useful for cutting or decoration. If treated as half-hardy annuals, the seed should be sown in heat in spring, but if treated as biennials, the seed should be sown in August, the plants preserved in the greenhouse till May, and then planted out in rich, sandy loam. Chili.

SCHIZOCODON (*Japanese Moon-wort*).

—*S. soldanelloides* was introduced by Captain Torrens, who in 1891 found the plants growing beside sulphur springs in the mountains of Japan, and, after carrying them hundreds of miles, succeeded at last in bringing home three or four living plants. The flowers of the Schizocodon are like those of a large Soldanella, prettily fringed, deep rose in the centre, passing into blush or almost white towards the edges. It requires much the same treatment as Shortia, thriving in well-drained sandy loam and peat, in cool and moist but not wet or shady places. Partial shade allows a finer development of the rich crimson leaf-tints in autumn. Captain Torrens says:—"The plant I found in an overhanging bank surrounded by moss and moisture. Since I brought it home I have kept it in a pot with peat and sand. It is a hardy plant, and I have had it out two winters in a cold frame, and it seems to have stood the climate well."

SCHIZOPETALON.—*S. Walkeri* is a curious cruciferous half-hardy annual from Chili, about 1 ft. high, with slender stems, and numerous white almond-scented elegantly fringed blossoms. If sown in April or May, in light, warm, rich soil in the open border, it flowers in July and August, and may also be sown in pots, but the ball of earth must not be broken, as the plant will not bear transplanting.

SCHIZOPHRAGMA (*Climbing Hydrangea*).—*S. hydrangeoides* is a Japanese

climbing shrub allied to the Hydrangea, with tall slender stems that send out roots which will fix it to a wall. Its wood is of a soft character, resembling that of the slower-growing Ivies, and it annually gives off fresh sets of roots along its branches, by means of which it clings to rocks, stone, stucco, bricks, and even wooden palings. Its leaves are much less in size than those of the climbing Hydrangea, sharply toothed at the edges, and of a lovely shade of green, which contrasts prettily with the reddish tinted young wood. It is deciduous, of free growth, and flowers freely in sunny positions. The sterile flowers, though similar in effect to those of the Hydrangea, are readily distinguished, being composed of a single bract, whereas the Hydrangea flower is made up of four. I know one case where a plant has grown in a sunny corner of the house near French windows, up the sides of which there is lattice-work, and so charmed were the owners with the tender foliage, feathering the coign of the window, that they made more lattice-work in front of the window so that the creeper could extend and form a natural sunshade before the glass. In a few years a plant had grown 11 ft. high and as much in width.

SCHIZOSTYLIS (*Kaffir Lily*).—*S. coccinea* is a handsome bulbous plant from Kaffraria, with the habit of a Gladiolus, from 2 to 3 ft. high. The flowers appear late in the autumn on a one-sided spike opening from below upward, of a bright crimson colour, resembling in form those of *Tritonia aurea*, and should be well grown wherever cut flowers are desired in winter. It is hardy, and in a mild autumn will flower out of doors, but should have some protection. A good row planted close to a wall or fence, with some temporary protection against severe frosts, will give many spikes for cutting. *S. coccinea* loves moisture both in the air and in the soil. "When residing close to the sea in Dorset," says West Dorset, "I could grow this winter Flag splendidly in a shallow trench in good rich soil. In summer it was deluged with water when the weather was dry, and in autumn a splendid crop of strong spikes of bloom resulted. In North Hants, with a hot, dry, light soil, I never could grow it well, although I always kept it watered at the roots during summer." Increase by seeds, or division in spring.

SCIADOPITYS VERTICILLATA (*Umbrella Pine*).—A stately evergreen tree attaining a height of upwards of 100 feet in its own land, and forming a dense pyramid of verdure of remarkable beauty.

It is not clearly allied to any other known tree, and seems, like the *Salisburia*, to be a last trace of some long-past geological period. Though fully hardy with us, it grows slowly and only thrives in moist open soils rich in humus. Where *Rhododendrons* do well the *Sciadopitys* also flourishes, but it fails completely on wet heavy soils and on those that are poor and dry, and until established is much tried by cold winds. The finest trees in the country are not yet much over 20 feet high, and are to be found in Cornwall, where the rainfall is heavy and the atmosphere moist; all the same, there are good ones at Kew, Bagshot, and many other places. The leaves vary in length from 2 to 4 inches, coming as whorled clusters of 20 or 30 together, radiating like the rays of an umbrella, each whorl continuing for three years and separated from its successor by the length of the annual woody growth. The branches are also whorled, making this one of the most characteristic of conifers. The cones are 2 to 3 inches long, borne at the tips of the shoots, and composed of thin imbricated scales. They yield fertile seeds in this country, ripening in their second season. The young leaves are usually a pale yellow green, but when in full luxuriance the mature foliage is of a rich deep tone. The young trees vary in size of leaf, rate of growth, and in habit—some being dense and rigid, and others freer and more luxuriant. There is also a variety in which golden or striped leaves mingle with the green ones in a pretty way, but this variegation is apt to disappear. The growth outwards is almost equal to that in height, and this spreading tendency is fostered when stock is grown from cuttings instead of seed. With their passion for the miniature, the Japs increase it in this way for their temple gardens, and these trees seldom approach the fine proportions of those growing untended on the mountain slopes of Nippon. Like all conifers, the *Sciadopitys* should be planted finally while small, larger trees being averse to removal.

SCILLA.—Beautiful spring flowers and bulbs, mostly natives of the colder parts of Europe or the Alps, and some precious for our gardens. These all flower in spring, and are of the simplest culture.

In early autumn, when the plants are at rest, they should be planted a few inches deep in any good garden soil, not too heavy. They need not be disturbed for years, except, perhaps, for a slight

yearly top-dressing of manure. Some kinds, especially the many-coloured varieties of the Spanish *Scilla*, are suited for planting by the sides of woodland walks, or on the margins of shrubberies, and in the wild garden. Offsets may be taken from established clumps during summer.

Raising *Scillas* from seed is interesting, though slow. In some seasons seed is plentiful, and many improvements in size and colour have been obtained in this way. We retain the name *Scilla* as far prettier than the English one of "Squill."

The following are best kinds:—

S. amœna (*Star Hyacinth*).—This flowers in early spring, opening about three weeks after *S. sibirica*. It is less ornamental than any other kind, for its flowers have none of the grace of *S. campanulata* and the varieties of *S. nutans*, nor the dwarfness and brilliancy of *S. sibirica*. The leaves, usually about half an inch across, are about 1 ft. high, and easily injured by cold or wind, so that a sheltered position is necessary. It is not exactly suited for the choice rock-garden, though worth a place on sunny banks in semi-wild spots. Tyrol. Seeds or separation of the bulbs.

S. bifolia.—Not so well known as *S. sibirica*, but quite as welcome. In the very dawn of spring, and indeed often in winter, this bears rich masses of dark blue flowers, and forms handsome tufts. The flowers are four to six on a spike, and the plant varies from 6 to 10 in. high, according to the soil and warmth and shelter of the position. It thrives in almost any position in ordinary garden soil, the lighter the better, but must be left to seed and increase as it likes. Although earlier than *S. sibirica*, it does not so well withstand cold rains and storms, and therefore some tufts of it should be placed in warm sunny spots of the rock-garden or sheltered border. Southern and Central Europe. Of all *Scillas*, *S. bifolia* is the most variable, and most of the garden forms are better than the type. *S. præcox* is a stronger grower, the flowers larger, more abundant, and earlier. In *purpureo-cœrulea* the ovary and base of the segments are rosy-purple, gradually merging into blue, which becomes intense towards the tips, harmonising with the black and gold-banded anthers. It is a free flowerer, and the blooms individually are nearly as large as a shilling. In the Taurian variety, *S. b. taurica*, the flowers are much larger than in *S. bifolia*, and, with the exception of the white base, greatly resemble those of some of the forms of *Chionodoxa Luciliae*. They vary

from ten to twenty on each scape, and the leaves are larger and broader than those of *S. bifolia*. The white form of *S. b. taurica* is very scarce. *S. b. alba*, a pretty ivory-white form, has flowers not larger than those of the type. *S. b. rosea* is a new garden form with deep rosy flowers, and *carnea* a paler variation.

S. festalis (*Wood Hyacinth* or *Bluebell*).—Though the Bluebell abounds in every wood and copse, its beautiful varieties are uncommon. Amongst the best are—the white variety, *alba*; the rose-coloured variety, *rosea*; the pale blue variety, *cærulea*; and a pleasing “French-white” variety. There are now selected large-flowered strains of all these colour varieties, mostly distinguished as *major* or *grandiflora*. The variety *bracteata* has

parts, and is a noble flower; still larger is a new form, *Excelsior*, with large deep blue bells, and *Skyblue*, with flowers of a paler shade. Good new colour variations, still rather scarce, are *Rose Queen* and *Rosalind* in shades of pink, and *alba maxima*, an improved white with fine bells. The older white and rosy forms are also welcome, the white being much grown for market. *S. hispanica* is never better seen than in the fringes of shrubberies and beds of Evergreens. The shelter so received protects its large leaves from strong winds, but it is sturdy enough for any position. It deserves to be naturalised by wood-walks and in the grassy parts of the pleasure-ground. *S. Europe*. Syn., *S. campanulata*.

S. italica (*Italian S.*).—This kind, with

Scilla hispanica.

long bracts, and *cernua* is a Portuguese form with reddish flowers. *S. patula* is closely allied to the Bluebell, its flowers being of a pleasing violet-blue, but not sweet or arranged on one side like those of the Bluebell. They are larger and more open, and have narrow bracts. All these kinds should be planted here and there in tufts among common Bluebells, along the margins of shrubberies, near the rock-garden, or for borders or woods. Syn., *S. nutans*.

S. hispanica (*Spanish Scilla*).—One of the finest of early summer bulbs, and, though from Portugal and Spain, quite one of the most robust of the family. It is easily known by its strong pyramidal raceme of pendent, short-stalked, large, bell-shaped flowers, usually of a clear light blue. A variety *major* is larger in all its

its pale blue flowers, intensely blue stamens, and delicious odour, is the most brilliant of the Scillas. It grows from 5 to 10 in. high, the flowers small and spreading in short conical racemes, which open in May. *S. italica* is hardy in almost any soil, but thrives best in warm and sandy places sheltered from east winds. Divide and replant in fresh positions every three or four years, not oftener. *S. Europe*.

S. sibirica (*Siberian S.*).—A minute gem among the flowers of earliest spring, and no rock-garden, or garden of any kind, is complete without the striking and peculiar shade of porcelain-blue which distinguishes this from all other Scillas. *S. sibirica* has many names, but, unlike *S. bifolia*, it has sported into few varieties, the chief being *alba*, a pure white kind,

very good for early forcing, and *multi-flora*, an early variety blooming three weeks in advance of its parent. Varieties with larger flowers, and with one on a stem instead of two or five, are preserved in herbariums and sometimes cultivated, but the difference between these and the type is trifling, arising often from the conditions in which the plants are placed. *S. sibirica* is hardy, and thrives best in a good sandy soil. Bulbs used for forcing should never be thrown away, for they thrive well if allowed to fully develop their leaves and go to rest in a pit or frame,

Scilla festalis (Bluebell).

afterwards being planted out in open spots in warm soil, where their usual vigour is soon restored. They may then be lifted and forced as before. It is unnecessary to disturb the tufts, except every two or three years for division, when they grow vigorously. *S. sibirica* flowers a little later than *S. bifolia*, but withstands the storms better, remaining also much longer in bloom. In places where it does not thrive freely, whether from coldness of the soil or from other causes, give it a sheltered position, to prevent injury to its leaves. The Siberian Squill may be used as an

edging to beds of spring flowers or choice alpine shrubs.

OTHER CULTIVATED KINDS.—Amongst Scillas not generally found in gardens, but hardy in dry situations, may be named *S. peruviana*, a large species, with beautiful broad leaves, Yucca-like and very distinct; it stands well in sheltered nooks, or even in the open border in southern districts. The numerous fine blue flowers are in a superb umbel-like pyramid, which lengthens during the flowering period. There are varieties, one named *alba*, and there are reddish varieties, such as *elegans*, also whitish and yellowish forms. Tufts of the Peruvian Scilla should be taken up every three or four years, when it is at rest. Divide the bulbs and replant immediately. The variety *Clusi* also succeeds. *S. maritima* is properly a greenhouse species, but in the places indicated for *S. peruviana* it may be grown outside without hurt, though it rarely flowers. *S. lilio-hyacintha* is hardy, whilst *S. hyacinthoides*, *S. pratensis* (*amethystina*), *S. obtusifolia* (an Algerian species), *autumnalis*, *Aristidis*, *patula*, and its various forms, including *cernua* and others, differ little from one another.

SCIRPUS (*Bulrush*).—Sedge-like plants fringing lakes and ponds. There are numerous native species that might be readily transplanted, and the best of these are *S. triqueter*, *S. sylvaticus*, and *S. lacustris*. These are from 3 to 8 ft. high, and effective on the margins of lakes or streams with other tall plants. A distinct kind is *S. Eriophorum* from North America, a handsome grassy plant with drooping heads of a cinnamon-red colour. *S. cernuus* has very graceful drooping stems, and *S. vallisus* runs easily to a height of 6 or 8 ft. in rich alluvial soil. Handsome variegated forms with alternate bands of green and yellow are *S. Holoschæus zebrinus* and *S. Tabernæmontani zebrinus*. There is also a scarcer but very pretty variegated form of *S. maritimus*. Increase by seeds, suckers, or division.

SCOLOPENDRIUM (*Hart's-tongue*).—*S. vulgare* is one of the best known of hardy evergreen British Ferns, and broken into numberless interesting forms and varieties, some being very beautiful. It prefers shade, and though sometimes met with on dry stone and brick walls, its favourite place is by the side of a stream in a shady ravine. Fine specimens have been seen between the joints of brickwork at the tops of old wells, the fronds developing fine proportions. A suitable soil consists of equal portions of fibrous peat and

loam, good sharp sand being added, together with broken oyster-shells or limestone. Scolopendriums should be associated with Lastreas, Polystichums, and Lady Ferns, or be placed in groups on the rock-garden with some flowering plant that will thrive in the same spot. During hot dusty weather in summer a daily afternoon syringing will much refresh and invigorate the plants. All the Hart's-tongues thrive in pots, and are useful for rooms and tables. The easiest means of increase for the varieties of *S. vulgare* is by division, for though they come readily from seed, the seedlings are often quite unlike the parent.

No fewer than 400 varieties of the Hart's-tongue were described thirty years ago, and since then this number has been much increased. Most of these, however, are deformities—vegetable cripples, so to speak. A few of the characteristic forms of each group might be used where collections of hardy Ferns are being formed, being evergreen and diversified in form. Of the following selection, commencing with simple forms and ending with much-divided ones, *S. latifolium* is a fine bold variety, having wavy spreading fronds, 8 to 10 in. long and 2 to 3 in. broad. *S. reniforme* has oblong, roundish, or kidney-shaped fronds. *S. cornutum* is interesting, the point of the frond being prolonged into a horn-like appendage. *S. marginatum* is very distinct, with fronds crenated at the margin. Some of the best forms of *S. pinnatifidum* are attractive, and *S. crispum* is an old favourite, its fronds retaining the habit of the type, but the margin is frilled. A form of it called *grandidens* has the margin deeply incised. *Stansfeldi* has curled incisions, and *Wrigleyi* is a luxuriant form with erect fronds upwards of 3 ft. in length. *S. laceratum* has broad flat fronds, deeply cut into lobes of variable length and breadth, whilst *S. sagittato-cristatum* has fronds with wavy margins and crested lobes. *S. acrocladon* has a narrow frond slightly widened at the base, and divided at the upper end into several wedge-shaped divisions, the upper margins deeply incised. The fronds of *S. patulum* are cut down near to the base into two or three divisions, each having a narrow wing and a broad terminal crest. *S. digitatum* has pleasing fronds 1 ft. or more in length, with the divisions terminated by a forked and twisted crest. *S. Kelwayi* is a handsome form, the fronds terminating in a large crest 6 to 10 in. broad. *S. ramosa-marginatum* resembles it in form of frond, but has a broad-winged stalk. Its crest

is nearly flat and not unlike the tasselled frond-extremity of the maximum form of *Pteris serrulata cristata*. The base of the frond of *S. corymbiferum* is like the type, but the upper half has innumerable contorted and twisted incisions, and looks like the leaf-ends of some of the ragged Kales. *S. Coolingi* is very similar to *S. corymbiferum*, but the divisions form an intricate mass of slender segments, curled and twisted in various ways so as to form a globular head. This kind of division represents the extreme form of variation. There are also several prettily variegated forms in cultivation.

SCUTELLARIA (*Skullcap*).—Hardy perennials, of which several are in cultivation, but few are good garden plants. These few are handsome flowers for the border, and their dwarf neat growth is also suited to the rock-garden in an open sunny situation in any soil. *S. baicalensis*, from Siberia, is the finest of all the species. It is an excellent alpine perennial, forming a hard woody root-stock, is 9 in. high, and produces an abundance of rich, velvety, dark blue flowers, finer in colour than those of *S. japonica*, though this is a handsome plant. The alpine Skullcap (*S. alpina*) is a spreading plant with all the vigour of the coarsest weeds of its natural order, but neat in habit and ornamental in flower. The stems are prostrate, but so abundant that they rise in a full round tuft, 1 ft. or more high in the centre. The leaves are ovate, roundish or heart-shaped at the base, and have very notched and very short stalks, while the flowers are borne in terminal heads, short at first, but afterwards elongating. These flowers are purplish, or have the lower lip white or yellow. Its forms, *bicolor*, with the upper lip purplish and the lower white, and *S. lupulina*, with yellow flowers, are very pretty. Pyrenees, Swiss and Tyrolean Alps, and many other parts of Europe and Asia. Division. These kinds are admirably suited for borders, the margins of shrubberies, and the rougher parts of the rock-garden, flowering free in summer. *S. orientalis*, *S. scordiifolia*, *S. altaica*, *S. galericulata*, *S. peregrina*, and the British *S. minor*, an interesting little plant for the artificial bog, are among the best of the other kinds, but it is doubtful if they are worth a place save in a large collection. Division or seed.

SCYPHANTHUS (*Cup-flower*).—*S. elegans* is a beautiful slender climber, 5 to 8 ft. high, with forked stems, and valuable for trailing over a trellis or against a wall. Its leaves are deeply cut, and the flowers come singly in the forks of the branches.

They are cup-like in shape, and of a bright golden-yellow with fine red spots inside, coming freely from August till October. *S. elegans* is easily grown as a half-hardy annual in rich light soil. Chili.

SEDUM (*Stonecrop*).—Rock and alpine plants which thrive in any soil. They may be grown in the ordinary border, in the rock-garden, on walls, and on ruins, and indeed in any place where the roots find foothold. Like the Saxifrages, they differ in habit, some, like *S. acre*, being humble and creeping, while others, like *S. spectabile*, are stately plants for the border. A great many are in cultivation,

S. Maximowiczii and *S. Selskianum* are similar.

S. Ewersi.—A neat hardy plant, about 6 in. high, with broad silvery leaves and clusters of purplish flowers. N. India and Asia.

S. hispanicum.—A minute grey plant, forming spreading tufts of short stems densely clothed with thick leaves and inconspicuous flowers. Other Sedums nearly allied to it are *S. dasyphyllum*, *S. glanduliferum*, *S. farinosum* and *S. brevifolium*; but though hardy on walls and rocks, they have not the vigour of many Stonecrops. Syn. *S. glaucum*.

S. Lydium.—A pretty little plant from Asia Minor, scarcely an inch high, similar to *S. hispanicum*, except that the tiny crowded

The Japanese Stonecrop (*Sedum spectabile*).

and we mention the best of the hardy kinds.

S. acre (*Wall Pepper*).—This little plant, with its small, thick, bright green leaves and its brilliant yellow flowers, grows abundantly on walls, thatch, rocks, and sandy places. It is beautiful in the winter garden; its golden tips peep out in November, and only vanish with the heat of May. The variegated variety (*aureum*) has shoots with tips of a yellow hue in early spring, and the tufts or flakes look quite showy. The silvery tones of the variety *elegans* are less effective and the plant less vigorous. *S. sexangulare* is similar to *S. acre*.

S. Aizoon is 1 ft. or more in height, with erect stems crowned by dense clusters of yellow flowers. It is an old garden plant for the border or rock-garden, and requires open positions and a light soil. Siberia and Japan.

leaves are greenish and tipped with red. For edgings or slopes bordering footpaths it is one of the best, and likes plenty of moisture. It roots on the surface with great rapidity, and may therefore be speedily propagated. Very small pieces put in the soil in spring soon form a mass of rich evergreen verdure, scarcely an inch in height and level as turf.

S. maximum, like *S. Telephium*, is variable, there being no fewer than a dozen named varieties. Of these by far the most important is *hematodes*, or *atro-purpureum*, so called from the vivid purple of the stems and large fleshy leaves. It grows from 1 to 2 ft. high, and though the flowers are not showy, it is stately and well suited for massing. It should be planted in poor, stony soil, and smoke will not injure it. There is also a variety with variegated foliage.

S. pulchellum (*Purple American Stonecrop*).

—A pretty species, with purplish flowers, arranged in several spreading and recurved branchlets, bird's-foot fashion, with numerous spreading stems. It is abundant in North America, and in France is a good deal used for edging. It is also appropriate for the rock-garden or the front margin of a mixed border, growing in any soil, and flowering in summer.

S. rupestre (*Rock Stonecrop*).—A densely-tufted native plant, with rather loose corymbs of yellow flowers, and spreading shoots generally rooting at the base, but quite erect at the top. It is used as an edging or border plant. There are several similar kinds, such as the glaucous-leaved *S. pruinaum*; *S. Fosterianum*, with light green leaves; and *S. reflexum*, of which there are several varieties, including *cristatum*, a curious crested variety, some-

January in gentle heat, plunging the pot in water before sowing, so that the soil may not get dry. As soon as large enough pot off singly. If well watered, they ought by the end of the summer to be as large as a crown-piece. During autumn and winter the plants must only be just kept moist enough to keep their leaves fresh. Wrongly called *Umbilicus sempervivum*, this being quite a distinct plant. Asia Minor and the Caucasus.

S. Sieboldi.—A well-known kind frequently grown in pots. Its roundish leaves are glaucous, and in late autumn often assume a lovely rosy-coral hue. They are in whorls of three on numerous stems, which in autumn bear soft rosy flowers which look pretty in pots, small baskets, or vases. The plant is hardy, and merits a place in the rock-garden, especially where its branches may fall without

Sedum kamtschaticum.

times known as *monstrosum* or *fasciatum*. *S. album*, another native kind, has brownish-green leaves and white or pinkish flowers. Like the Stonecrop, it occurs on old roofs and rocky places in many parts of Europe. All these kinds are worth naturalising on walls or old ruins, in places where they do not occur naturally, also on the margins of the pathways and the less important surfaces of the rock-garden.

S. sempervivoides (*Scarlet Stonecrop*).—This beautiful kind has rosettes of leaves like those of the common Houseleek (*Sempervivum tectorum*), and the brilliant scarlet flowers form a dense head similar to the well-known *Rochea falcata*. It dies after flowering, and is not hardy, but during summer grows freely on a dry bank. In winter it stands dry frost, but frost and wet combined are fatal to it. Seeds germinate freely, and should be sown in

touching the earth and its graceful habit may be well seen; but, except in favoured places, it does not make strong growth. There is a variegated variety, more tender than the ordinary form. Japan. Division.

S. spectabile.—This is distinct and beautiful, erect, and with broad glaucous leaves. Its rosy-purple flowers appear in dense broad corymbs about the middle of August, and remain in perfection for two months or more. The glaucous foliage, even before the flowers come, is a pleasant relief to any high-coloured plant that may be near it. It withstands extreme cold, heat, or wet, and unlike most plants will grow and flower to perfection in shaded places, thriving in any soil. Varieties with darker flowers have recently come to light, the best being *atropurpureum*, with flowers of rich dark crimson-purple. Japan.

S. Stahliei.—A new kind and one of the

very few found in America, It is of distinct appearance, with very thick fleshy leaves, oval in shape and of a reddish colour, detaching themselves very readily from the stems. These are slender, 4 or 5 in. high, some sterile and trailing, and others erect with clusters of bright yellow flowers. Mountains of Mexico.

S. stoloniferum (*Purple Stonecrop*).—The best of the Sedums with large flat leaves is the Purple Stonecrop. It flowers late in summer, and often through the autumn makes a bright display, and is suited for edgings, the margins of mixed borders, and for the rock-garden. *S. ibericum* is a form of this with slender stems and white flowers. Syns., *S. dentatum* and *S. spurium*. Caucasus.

S. Telephium.—This is the most variable Stonecrop. No fewer than twenty forms have received names either as sub-species or as varieties, but our native form is as showy as any. It is 1 to 2 ft. high, the stout erect stems furnished with fleshy leaves, and in late summer and autumn bearing dense broad clusters of bright rosy-purple but sometimes white flowers. *S. Telephium* is distributed about the country, usually in hedgerows and thickets. Like all other kinds about the same size, it is useful for dry borders and the rough parts of the rock-garden, but when well grown will flower the more vigorously. Cut blooms last a long time, hence are often called Everlasting Livelong.

The Sedums mentioned are the most distinct. The pretty *S. caruleum* is an annual, and *S. carneum variegatum* is not hardy enough for our winters. The Orange Stonecrop (*S. kamtschaticum*) has dark orange-yellow flowers in summer, and is hardy in almost any soil, but is best in warm rich loam. There are in cultivation many kinds of the easiest culture.

SELAGINELLA.—A few hardy kinds of this large family of Lycopods are valuable for carpeting the fernery or clothing shady spots in the rock-garden. These kinds are *S. denticulata*, *S. helvetica*, and *S. rupestris*, small trailing plants of a delicate green, mossy growth. *S. Kraussiana*, generally known in plant-houses as *S. denticulata*, is also hardy in many places, and in Ireland grows and thrives better than any of the kinds mentioned. All these plants require a well-drained peaty soil, shade, and a sheltered position.

SEMPERVIVUM (*Houseleek*).—Succulent Rock and Alpine plants, of which the common Houseleek (*S. tectorum*), often seen on old roofs and walls, is the most familiar. There is a strong family likeness throughout, and they form rosette-like tufts of fleshy leaves, which chiefly differ in the colour of the foliage, some deep red, others pale green. The flowers of most of them are of a reddish tinge, and several are yellow. All the hardy

kinds will grow well in dry sandy parts of the rock-garden where few other alpine plants thrive, or on old walls, ruins, and the like, merely requiring to be placed in chinks with a little soil. Most of them thrive on any border, if the soil be not too stiff and damp, but they prefer a dry elevated position, and full exposure to the sun. Nearly all are easily increased by their abundant offsets. Of late years some of the larger kinds, such as *S. calcareum*, have been used for beds. Europe and W. Asia.

S. arachnoideum (*Cobweb Houseleek*).—One of the most singular of alpine plants, with tiny rosettes of fleshy leaves covered at the top with a thick white down, which intertwines itself all over the leaves like a spider's web. It is rarely seen in our gardens except in a frame, but thrives in moist sandy loam and exposed spots in sunny arid parts of the rock-garden. Its sheets of whitish rosettes look as if a thousand spiders had been at work upon them, and in summer send up pretty rose-coloured flowers. About London it sometimes suffers from sparrows plundering the "down." Division. Similar to this species are *S. tortuosum* (or *Webbianum* of gardens), *S. Fauconneti*, *S. heterotrichum*, and *S. Laggeri*, which have the rosettes of leaves united by a web of white threads.

S. arenarium (*Sand Houseleek*).—Grown in dense patches, this plant has a lovely effect. It is much smaller than its ally *S. globiferum*, and, unlike the latter species, the leaves of the rosettes are not incurved. The flowers are small, yellow, pretty, and the leaves usually rich crimson. *S. Henfelli*, a similar species, has in autumn almost chocolate-crimson foliage, the flowers being yellow. Other species of similar character are *S. hirtum*, *S. Neilreichi*, and *S. soboliferum*, which is often confused with *S. globiferum*.

S. calcareum (*Glaucous Houseleek*).—No finer Houseleek has ever been introduced than this, sometimes called *S. californicum*. It is as easily grown and as hardy as the common Houseleek (*S. tectorum*), and thrives in any soil. Planted singly, its rosettes are sometimes nearly 5 in. across, the leaves glaucous, and tipped at the points with chocolate. It is deservedly popular for edgings in the flower garden, and also admirable for the rock-garden. Other cultivated kinds are *S. glaucum*, *S. Camollei*, *S. Lamottei*, *S. Verloti*, and *S. juratense*, and these are all desirable for a full collection.

S. fimbriatum (*Fringed Houseleek*).—One of the most profusely blooming kinds, the dark rose-coloured flowers appearing in summer on stems 6 to 10 in. high. The leaves, which are in small rosettes, are smooth on both sides, strongly fringed, and terminate in a long point, being marked at the end with a large purple spot. *S. Funcki*, *S. Powellii*, *S. barbatulum*, *S. atlanticum*, and *S. piliferum* are similar.

S. globiferum (*Hen-and-chicken Houseleek*).

—This grows in firm dense tufts, its little round offsets being so abundantly thrown off that they are pushed clear above the tufts, and lie on the surface in small brownish-green balls. The small leaves of the young rosettes all turn inward, and appear of a purplish colour, but in the full-grown rosettes are light green, the tips of the under side being of a decided chocolate, brown for nearly one-third of their length; the flowers are small and yellow. This kind is well suited for forming wide tufts in the rock-garden and on banks below the eye. It grows freely in any soil, and is also known as *S. soboliferum*, but this is the name of another kind similar to *S. arenarium*.

S. montanum (*Mountain Houseleek*).—A dark green kind, smaller than the common Houseleek, the leaves forming neat rosettes, from which spring dull rosy flowers in summer. It is suitable for edgings or for the rock-garden, grows in any soil, and is easily propagated. Alps. *S. assimile* and *S. flagelliforme* are similar.

S. tectorum (*Common Houseleek*).—Though a native of rocky places in the great mountain ranges of Europe and Asia, the common Houseleek, having been cultivated from time immemorial on housetops and on old walls, is well known to everybody. It may be used in flower-gardening, but it would be better to select some of the rarer species for edgings and other purposes. It varies somewhat, and a glaucous form called *rusticum* is one of the most distinct. Other similar varieties are *Royeni*, *Ragnerianum*, *Sequieri*, *calcaratum*, and *Greenei*. *Greenei* resembles the common Houseleek, but is smaller.

S. triste is distinct from other Houseleeks, as its rosettes of leaves are of a deep dull red, which makes it a handsome plant. It is about the size of *S. tectorum*, and in light warm soil is quite as vigorous and rapid a grower. Its singular colour makes it a valuable contrast to other plants, but at present it is not much known.

Besides these kinds there are several tender species which are now largely used for summer gardening. The most popular of these are—*S. tabuleforme*, a singularly handsome kind, with broad rosettes of leaves that lie flat on the soil; *S. Bolli*, with leaves that form a dense cup-like tuft from 3 to 6 in. across; and *S. arboreum*, a tall, straggling plant, with stout branches terminated by a rosette of foliage. Propagated by quantity in heat in spring or autumn from offsets.

SENECIO (*Groundsel*).—An immense genus of over a thousand described species, most of them worthless weeds, but with a few plants of value. They are exceedingly variable in habit, including annuals and herbaceous perennials, shrubby plants and low trees, climbers, and even succulents, but there is much sameness in the flowers, which are yellow or orange in most kinds, though sometimes purple or white. They are among the

most easily grown of plants, and readily increased from seeds, cuttings, division, or root-cuttings. The silvery and down-covered kinds do best in dry corners and fully exposed, while others, such as the large-leaved, tall-growing herbs, thrive in rich moist soil at the waterside, with some shelter from wind. The following are the best of the few cultivated kinds:—

S. ADONIDIFOLIUS.—A neat hardy perennial, common in France and distinct from other wild kinds of Europe. The rigidly erect stems measure 2 to 3 ft., with glossy and finely-cut foliage and bright orange-yellow flowers in July. As it spreads from the root, its true place is the rougher part of the garden, where it is well worth a place. Coming near this, but a much smaller plant, is *S. Tyrolensis*, with bright orange-red flowers and finely-cut leaves.

S. ARTEMISIÆFOLIUS.—A neat perennial with broad clusters of showy yellow flowers on stems of 12 to 18 in. high. The deep green leaves are finely cut and give a feathery appearance. *S. abrotanifolius* has similar foliage, but its orange-yellow flowers are larger and fewer. These are hardy European plants of the easiest culture in the rock-garden or border.

S. CAMPESTRIS is a native plant, only worth growing in its scarcer form *maritima* (syn., *S. spathulæfolius*) found wild with us in a few spots, but only common in the south of Europe. It is an interesting and pretty plant, with orange-yellow flowers of the size of a shilling carried as clustered heads upon stems of 6 to 12 in. high. A similar species is the Piedmont Groundsel (*S. Balbisianus*) from the mountains of N. Italy, and growing from 3 to 9 in. high, with a ring of hoary root-leaves. The golden flowers, contrasted with the foliage, have a very bright appearance. Both these kinds like a light rubbly soil and a dry sunny place.

S. CINERARIA (*Dusty Miller*).—A fine-leaved, half-shrubby perennial from the Mediterranean coast, where it grows from 1½ to 3 ft. in height, with much-cut silvery leaves and clustered heads of yellow flowers late in summer. It is tender in many gardens, and especially in cold wet soils, but is useful for its brightness during summer when planted in May or June. Cuttings taken in autumn will root slowly on a greenhouse shelf, but need careful watering in winter. This is the best means of increase, for though readily grown from seed, the seedlings are often poor. There are several good garden forms with very white leaves more or less finely cut, the best of these being *candidissima*, and a French form, *Diamant*.

S. CLIVORUM is a new border plant from China, with large heart-shaped leaves of shining green, a foot or more across, and tall much-branched heads of orange-yellow flowers with a brown centre, 2 to 3 in. wide,

in July and August. A bold waterside plant, of easy culture and not particular as to soil.

S. DORONICUM is one of the showiest and most useful of the group, 1 ft. to 3 ft. high, with stout stalks of large bright yellow flowers in early summer. It is hardy anywhere and in any soil. Seed or division. Central Europe.

S. DOUGLASII.—A much-branched plant of 3 ft., with a shrubby base, and known as the Squaw Aster in N. W. America. Its leaves are small and narrow or much cut, and the flowers appear as very large heads of pale yellow flowers, each an inch or more across. To do well this needs a sheltered sunny corner and dry soil.

S. ELEGANS (*Purple Jacobaea*).—This beautiful half-hardy annual has long been a favourite in gardens. It has a dwarf form (*nana*) about a foot high, and there are varieties with double flowers which are showy and desirable, ranging in colour from white to deep crimson, and lasting a long while. The plant does best in rich sandy loam and planted in bold masses, which flower from July to October, according to the time of sowing. Cape of Good Hope.

S. GRAYI is a curious hardy shrub of 3 to 4 ft. from New Zealand, with oval silvery leaves and loose heads of yellow flowers. There are several allied shrubs from New Zealand and South America, which are sometimes planted in collections of the rarer evergreens, and are more or less hardy according to local conditions. *S. elcagnifolius* is a shrub of 10 or 12 feet, with woolly branches, smooth oval leaves, and heads of small yellow flowers; *S. compactus*, with grey-green leaves prettily edged with white; and *S. argenteus*, a low silvery-leaved shrub from Chili. All these are increased from cuttings, and are hardy in the warmer parts of the south and south-west.

S. JAPONICUS.—One of the finest of the large kinds, standing about 5 ft. high with us, its leaves nearly a foot across and divided into about nine divisions. The flower-stems are slightly branched, and bear flowers 3 in. across of a rich orange colour, in autumn. This is a hardy, moisture-loving plant, and should be grown in rich and moderately stiff loamy soil, and beside a lake or pond where it will never lack moisture. Japan—where it is said to reach a height of 15 ft. Syn., *Erythrochete palmatifida*.

S. KAEMPFERI (*Leopard Plant*)—A handsome perennial with a fleshy rootstock and large leaves 6 to 12 in. across, shaped like those of a Coltsfoot, and borne upon stout woolly stems. The form most grown is *aurcomaculatus*, in which the leaves are finely blotched with yellow, white, and pale rose. Sometimes these shades occur in the same leaf, but oftener the yellow and white colouring is found in distinct plants; another variation is *argenteus*, in which glaucous-green leaves are edged with creamy white. These plants are tender except in the warmer parts of the

south and south-west, but are sometimes grown for their fine effect in the summer garden, and wintered under glass. They thrive in free moist soils rich in humus, and in half-shade, but even under the best conditions they grow slowly. Increase by division, the offsets being potted and kept in a propagating-house or frame until established. Syns., *Farfugium grande* and *Ligularia Kaempferi*.

S. LEDEBOURII is a vigorous kind with an erect stem 4 or 5 ft. high, and very large grey-green leaves of striking appearance. The flowers are yellow, borne in a long dense spike. Free, moist, and somewhat peaty soil is the most suitable for this plant, which is increased by careful division in spring or autumn. It is useful for grouping with fine-leaved herbaceous plants, but seldom finds a place in the flower-garden. Siberia. Syn., *Ligularia macrophylla*. Allied kinds for useful bold leaf effect in moist places are *S. sibirica*, *S. Fischeri*, and *S. thyrsoides*.

S. LEUCOSTACHYS.—A tender shrubby kind which should be wintered under glass, but is used in the summer garden for its finely-cut foliage of a glistening whiteness. A good plant for warm dry banks. Seed or cuttings. S. America.

S. MACROPHYLLUS is a stout leafy perennial, 6 ft. high when full-grown, the glossy green leaves and much-branched heads of small yellow flowers of stately effect when grown boldly on the lawn or in the wild garden.

S. PALUDOSUS.—A handsome water-plant for the wild garden, found in our own fen district and in wet places throughout Europe. It stands 4 to 6 ft. high, with long narrow leaves which are coarsely toothed and white with cottony down while young. The bright yellow flowers appear in July and August. Division.

S. PULCHER.—One of the handsomest of perennials, 2 to 3 ft. high, bearing in late autumn rosy-purple flowers 2 to 3 in. across. The plant is hardy, but its beauty is often marred by frost and bad weather. It grows best in deep moist loam and where some protection can be given from autumn frosts. With us it rarely ripens seed, but is easily increased in spring by cuttings of the roots, an inch long, pricked into pans of light sandy soil and placed on a shelf in the greenhouse. Buenos Ayres.

S. ROTUNDIFOLIUS.—A newly introduced shrub from New Zealand, with large rounded leathery leaves covered with a yellowish felt underneath. It is said to be a good seaside plant in its own land, despite its large leaves, and though as yet on trial in this country, it has endured 16 degrees of frost without injury upon the south coast.

S. SARACENICUS.—In moist places in the west of England this plant grows wild, reaching a height of 4 or 5 ft. It is useful for the margins of ponds or streams, where it spreads fast, and, associated with the Willow Herb, gives a beautiful effect. Similar to this is *S. Dorio*, also well suited to the wild garden.

S. TANGUTICUS is another new kind from China, with stout spiry stems of 6 or 7 ft., and bold leaves cut into irregular lobes. The yellow flowers are small, appearing in autumn, when the general effect of the plant is bold and pleasing, growing apart on the lawn or in the wild garden.

Two handsome tender kinds which thrive in our warmest gardens, but nowhere else, are *S. grandifolius* of Mexico, a stout shrubby plant with large leaves and heads of many small flowers, and *S. Petasitis*, handsome in leaf and flower, and well worth a place in the conservatory for its beauty during winter. *S. sagittifolius* is a stately perennial which from a spreading rosette of large grey-green leaves sends up stout stems 5 to 8 ft. high with heads of large creamy-white flowers. The mid-rib of the leaf is often curiously crested in this plant. Uruguay. Very different is *S. leucophylla*, a little alpine plant of only a few inches high, its leaves so densely clothed with white wool as to render it one of the most silvery of rock-plants. It thrives in gritty or sandy soil, in a sunny and well-drained position. *S. uniflorus*, from Switzerland, also with hairy white foliage, hardly rises above the ground, spreading into silvery sheets, from which the flowers should be clipped as they appear.

SEQUOIA.—Enormous cone-bearing evergreen trees of the Pacific coast of North America, just hardy enough to be the object of numerous experiments in our country, far from successful either from an artistic or most other points of view. In some of the books it is said that these great trees are readily propagated by cuttings inserted under glass in autumn, but we would beg everybody never to plant any tree of the kind except from seed.

S. GIGANTEA (*Big Tree*).—A colossal tree in its own country, inhabiting mostly, in scattered groups or groves, the Californian Mountains for a distance of over 250 miles in length, existing trees being over 300 ft. high. No tree ever introduced has excited so much interest or been the subject of so much costly experiment in this country. It succeeds well in various districts, and even as far north as Scotland, but after it grows up the growth is very apt to be seared by harsh east winds. The tree is not good in form, while in very few cases will it ever attain the dignity of size that it does in its native country, one of the finest climates in the world. Even where the tree does well, the effect is seldom good in the home landscape. The variegated and golden forms are rubbish. Syn., *Wellingtonia gigantea*.

S. SEMPERVIRENS (*Red Wood*).—A noble evergreen tree, thriving somewhat better in our country than the Big Tree, but, planted as it usually is by itself, it is often torn about by sleet storms in our climate, which is so very different from that of its native country. Still it grows rapidly in good free soils, and is worth

trying grown in a wood or grove so that the trees may shelter each other. Sheltering groves or woods of it would give good timber in quick time, as it is a very rapid grower. The variegated forms are not worth planting. Coast range of Western America. Syn., *Taxodium sempervirens*.

SERAPIAS.—Terrestrial Orchids from S. Europe, worthy of a collection of hardy Orchids, as the flowers are always singular and in some kinds beautiful. The most desirable are *S. cordigera*, with large showy flowers, chiefly of a blood-red colour; *S. lingua*, with peculiar brownish-purple flowers; and *S. longipetala*, with large rosy-red flowers. These are all 9 to 12 in. high, and their flowers are densely arranged on broad erect stems. The plants succeed best in a soil composed of two parts of peat, one of loam, and one of sand and leaf-mould. The position should be partially shaded, and well sheltered from cold winds.

SESELI (*Gum Seseli*).—*S. gummiferum* is a handsome plant, 1½ to 3 ft. high, with elegantly-divided leaves of a peculiarly pleasing glaucous or almost silvery tone. Though a biennial, it is so distinct that some may like to grow it. The best position for it is on dry and sunny banks, or in raised beds or borders. *S. glauca* is also cultivated for its graceful white foliage and curious heads of flowers.

SHAMROCK.—This little plant is often grown in gardens for the sake of its sentimental interest, but as several totally different plants do duty for the Shamrock, the following note by Mr. Hemsley of Kew may be of interest:—

“The plant commonly sold at Covent Garden as Shamrock is *Trifolium minus*, a small yellow-flowered Clover, and the same plant is now in use as such in Ireland in the counties of Antrim, Down, Meath, Fermanagh, Dublin, Wicklow, Carlow, Westmeath, Wexford, Limerick, Waterford, Cork, and Kerry. This plant, therefore, so far as present usage is concerned, has the greatest claim to the name of true Shamrock. Black Medick (*Medicago lupulina*), a very similar plant, is sometimes substituted for the Clover, from which it may be distinguished by the leaflets being rounded, not notched, at the top, and by the tiny pod being twisted. The common red Clover (*Trifolium pratense*), the white Clover (*T. repens*), and the Wood-Sorrel are other plants more or less commonly known and used as Shamrock. Occasionally one or the other of the plants named produces leaves having four leaflets, then called the four-leaved Shamrock.”

SHEFFIELDIA.—*S. repens* is a hardy little New Zealand creeper, with small leaves, small slender stems, and tiny white flowers which appear in summer. It is interesting for the rock-garden, and grows in any good well-drained soil. Primula Order.

SHEPHERDIA.—A small group of American shrubs, grown for their bright silvery foliage, the flowers being inconspicuous, though one kind bears an excellent fruit. All are hardy and of easy culture, resisting cold and drought even on dry banks where few other plants can exist. *S. canadensis* is excellent in this way, reaching a height of 6 to 8 ft. with oval green leaves, reddish underneath, and small red or yellow berries. *S. argentea*, the Buffalo Berry, is a taller shrub of nearly 20 feet, with thorny stems, silvery leaves, and juicy red or yellow berries, prized for jellies and preserves by the Western colonists. *S. rotundifolia* is an evergreen kind with silvery leaves, from Utah.

SHORTIA.—*S. galacifolia* is an interesting and beautiful plant, first discovered over a hundred years ago by Michaux in the mountains of North Carolina, and rediscovered in 1877. It was found growing with *Galax aphylla*, and forms runners like that plant, and is propagated by this means. The plant is of tufted habit, the flowers reminding one of those of a Soldanella, but large, with cut edges to the segments, like a frill, and pure white, passing to rose as they get older. There is now a pretty variety in which the flowers are of a delicate pink from the very first, and plants with semi-double flowers also occur. There is much beauty in the leaves, which are of rather oval shape, deep green, tinged with brownish-crimson, changing in winter to quite a crimson, when it forms a bright bit of colour in the rock-garden or border. A correspondent writing in *The Garden* says: "The cultural directions given in catalogues to keep the plant in a shady situation and grow it in Sphagnum and peat deprive us of its chief charm—i.e., the handsome-coloured leaves during the winter and spring months. Instead of choosing a shady spot I selected a fully exposed one, and here two plants have been for over a year, one in peat and the other in sandy loam. Both are vigorous." It succeeds well in various soils, as described, and is hardy. It is also a delightful plant in a pot, as the flowers on their crimson stems are pretty, and one gets also the prettily tinted leaves. N. America. A new species, *S. uniflora*, has recently

come to us from Japan, but is still rare. While not unlike the American plant, this differs from it in having larger flowers, broader and more prostrate leaves, and shorter flower-stems, some of the

Shortia uniflora.

flowers hardly rising above the leaves, which turn a fine crimson from August to the following spring. The plant thrives in a mixture of peat and loam, in full sun, and is fully hardy.

SIBTHORPIA (*Moneywort*).—*S. europæa* is a little native creeper with slender stems and tiny round leaves. In summer it forms a dense carpet on moist soil, and should always be grown in the bog-garden or moist ferneries. The variegated form is prettier but more delicate than the type, and rarely succeeds in the open, but thrives in a cool house or frame. Shady banks and ditches suit it. The purple flowers are inconspicuous.

SIDA.—*S. dioica* and *S. Napæa* are stout vigorous plants with ample foliage, and suitable chiefly for the wild garden and shrubbery borders.

SIDALCEA (*Greek Mallow*).—A group of graceful herbs from N.W. America, with showy white, pink, or purple flowers in long erect spikes like a miniature Hollyhock. Those in cultivation are perennials, but do best if frequently renewed from seed sown as soon as ripe, the seedlings being wintered in a frame, and planted out in spring. In sheltered places and in warm soils these plants will pass the winter in the open, but they prove a little tender in many places, and the autumn-sown plants bloom earlier and more finely than those raised in heat early in the year. The Sidalceas are fast becoming better known, and being profuse in flower, excellent for cutting, and of the easiest culture, they deserve attention. The best kinds are *S. candida*, with

pretty white flowers an inch across, on tall stems of 2 to 3 feet—a showy plant when freely grouped. Rosy Gem is

Sibthorpia europæa variegata (Moneywort).

identical with this, save in its fine rosy colour; it gained an award when shown before the R.H.S. *S. malvaeflora*, is of stout erect growth and fine habit, with deep rosy-purple flowers nearly 2 in. across when fully expanded. A form of this, *S. Listeri*, is charming, with spikes of soft rosy flowers beautifully fringed at the edges. Others are *atropurpurea* with deep purple spikes, and *Murrayana*, a dwarf plant, in which the flowers are a deep rose-crimson. *S. oregana* has smaller rosy flowers; *S. incarnata*, slender and rigid red spikes; while in *S. spicata* they are rosy-purple.

SILENE (*Catchfly*).—A large family containing few showy plants, but with some of great beauty. Southern and Central Europe is the home of the Silene, though a few extend west to America, or east to Siberia, and a sprinkling is found on the southern shores of the Mediterranean and in Asia Minor. The following dwarf kinds are suitable chiefly for the rock-garden:—

S. acaulis (*Cushion Pink*).—A dwarf alpine herb tufted into light green masses like a wide-

spreading Moss, but quite firm. In summer it becomes a mass of pink, rose, or crimson flowers barely peeping above the leaves. Spots on the mountains of Scotland, Northern Ireland, North Wales, and the Lake District of England are sheeted over with its firm flat tufts, often several feet across. In gardens it is as beautiful as when wild, growing freely in almost any soil, but not shaded, or in pots and pans. There are several varieties: *alba*; *exscapa*, with paler flowers and flower stems even shorter than in the type; *muscoïdes*, dwarfer still; *elongata* and *grandiflora* forms with finely coloured flowers on longer stems; *aurea* with yellow foliage; and *flore pleno*, perhaps the best of all the garden forms, most of which are little removed from the wild parent. A new species of Silene, *S. Palestina*, from Asia Minor, comes near our Cushion Pink, with heads of deep rosy flowers.

S. alpestris (*Alpine Catchfly*).—A very dwarf and compact alpine plant, hardy, and beautiful when covered with white flowers in May. It succeeds in any soil and is 4 to 6 in. high. It should be used freely in every rock-garden. Some forms are quite sticky with viscid matter, while others are free from it. *S. quadridentata* and *quadrifida* are similar. All the alpine Silenes are propagated by division in spring, or by seed.

S. Armeria is a showy annual kind with leafy stems of 12 to 18 in. high, bluish-green foliage, and dense clustered heads of white, pink, or crimson flowers from July to September. When established on old walls and in rough places it will set itself freely with fine effect, some of the prettiest wild pictures of Southern Europe having arisen in this way. It is already naturalised in parts of Britain and is just the plant for a wild garden, in light and well-drained soils.

S. Elisabethæ.—A richly beautiful alpine plant, the flowers looking more like those of some handsome but tiny *Clarkia* than of the Silenes commonly grown. They are very large, bright rose with the claws or bases of the petals white. One to seven flowers are borne on stems 3 to 4 in. high. It is considered difficult to grow, but strong plants are as easy to manage as the Cushion Pink. It is rare in a wild state, but occurs in the Tyrol and Italy, amidst shattered fragments of rock, and sometimes in flaky rocks without any soil. It wants a warm nook in the rock-garden, in a mixture of about one-third good loam, one-third peat, and one-third broken stones, and should be planted where its roots can run far back, into this soil. Flowers rather late in summer. Seeds.

S. Hookeri.—A dwarf and rare Californian species, with downy leaves of two different shapes, trailing stems, and large deeply-notched rose-coloured flowers 2 in. across. The plant thrives in deep sandy soil and in open and well-drained positions in the alpine garden, nestled among the larger rocks which reflect the sun and protect from cold winds.

S. maritima.—The handsome double variety

(*S. maritima fl.-pl.*) of this British plant is noteworthy, not only for its white flowers like those of a small double Pink, but for its dense spreading sea-green carpet of leaves, pleasing on the margins of raised borders, or hanging over the faces of stones in the rougher parts of the rock-garden. The flowers appear in June, and those of the double variety rarely rise more than a couple of inches above the leaves which form a tuft about 2 in. deep. There is a pretty rose-coloured form, less rambling than the parent,

S. pendula.—There are many garden forms of this fine biennial, notably *compacta*, *compacta alba Bonnetti*, *ruberrima*, and *variegata*, all improvements on the original. There are double-flowered forms of all these variations, which last longer in flower than the single kinds, and also many named selections such as Triumph, Snow King, Elfride, Venus, and Empress of India. These *compacta* varieties are mostly used for spring-bedding, and form compact rounded tufts about 4 in. high. The other forms are 6 to 12 in. high. To obtain the finest plants for spring-flowering, seed should be sown in the reserve garden in autumn, and afterwards transplanted to permanent beds. Flowers appear from May to August according to the season of sowing. Italy and Sicily.

S. pennsylvanica.—The wild Pink of America is a dwarf and handsome plant, forming dense patches, with clusters of six or eight purplish-rose flowers, about 1 in. across, and standing 4 to 7 in. high from April to June. It thrives in light sandy soil, but is not fastidious, coming from sandy, gravelly places in many parts of N. America. It will occasionally flower the first year from seed, but mostly not till the second season, and may also be readily increased by cuttings.

S. Pumilio.—A beautiful species, like our Cushion Pink in its dwarf firm tufts of shining green leaves, though these are a little more fleshy and not so spiny. The rose-coloured flowers are also much larger, handsomer, and taller, though scarcely more than 1 in. above the flat mass of leaves, so that the whole plant is seldom more than 3 in. high. It thrives in rock-gardens as well as the Cushion Pink, and should be planted in deep sandy loam on a well-drained and thoroughly-exposed spot, sufficiently moist in summer, facing the south. Place a few stones round the neck of the young plant to keep it firm and to hold moisture. Once it begins to spread, it will take care of itself. There is a white variety which is not cultivated. Tyrol.

S. Saxifraga is a little tufted plant of 4 to 6 in. with narrow pointed leaves, and flowers white above and red beneath, borne singly on long stems, or a few together on the same stem. This is not a showy plant, but good for covering the ground beneath taller things, as it prefers a little shade in the light and sandy soils in which it thrives best. Easily increased by seed or division, autumn seedlings being wintered in cold frames in the north.

S. Schafta.—A spreading hardy plant from the Caucasus forming very neat tufts, 4 to 6 in. high, covered with large purplish-rose flowers. As it flowers late (from July to September, or later), it should not be used where early bloom is sought, but in summer is exceedingly useful for edgings, or for the front of the mixed border. It grows, however, in the rock-garden in almost any position. Seed, or division of established tufts.

S. virginica (Fire Pink).—A brilliant perennial, with flowers of the brightest scarlet, 2 in. across, and sometimes more. The somewhat slender stalks lie flat on the soil and the flowers are borne a few inches above it. The Fire Pink succeeds in a well-drained rock-garden; but requires careful attention, particularly in winter, as at that season excessive moisture is hurtful. It comes from open woods in America, from New York southwards, flowering from June to August. The best plants are obtained from seed, as it does not bear division well. *S. rupestris*, a sparkling-looking white species, little more than 3 in. high when in bloom, is rather like a dwarf *S. alpestris*, but better worthy of a place. It is, however, a little particular as to soil, thriving best in rocky débris, and refusing to grow where there is much lime. *S. stellata* is a graceful plant from American woods, with starry white flowers deeply fringed at the edges, on stems of 18 in. high. *S. Zawadski*, a neat Austrian species with white flowers in spring, needs the same treatment as for *S. Schafta*.

SILPHIUM (*Rosin Plant*).—Stout North American Sunflower-like perennials, of stately habit, and among those which suggested the idea of the "wild garden" to me. There they are at home among the most vigorous growers, as they thrive and flower freely on the worst clay soils. *S. laciniatum* is a vigorous perennial with a stout stem, often 8 ft. in height, and fine yellow-coloured flowers, on drooping heads, which have the peculiarity of facing the east. *S. perfoliatum* (Cup Plant) is 4 to 8 ft. in height, and has broad yellow leaves 6 to 15 in. long and flower-heads about 2 in. across. *S. terebinthinaceum* (Prairie Dock) has stems 4 to 10 ft. high, panicked at the summit, and bearing many small heads of light yellow flowers. A variety (*pinnatifidum*), has leaves deeply cut or pinnatifid. *S. terebinthinaceum* has a strong turpentine odour. Other species are *S. trifoliatum*, *S. integrifolium*, *S. ternatum*, and *S. albiflorum*, in which the flowers are creamy-white and nearly 4 in. across. If planted in numbers in bold masses, these plants produce a stately effect in the wild garden, especially in autumn, but to do well they need an open and sunny space.

SILYBUM (*Milk Thistle*).—*S. mari-*

anum is a vigorous native biennial, five feet or more in height, worth growing among fine-foliaged plants. Its large leaves are cut and undulated, and tipped and margined with scattered spines; they are bright glistening green, and variegated with broad white veins. The Milk Thistle is easily raised from seed, and thrives in almost any well-drained soil. The foliage is more vigorous if the flower-stems are pinched off as soon as they appear. A few plants raised in the garden and planted out in rough and somewhat bare places or banks, will soon establish themselves. *S. eburneum* is much like the above, but with spines like ivory. *Syn.*, *Carduus*.

shrubs from Japan, distinct, compact, and charming for peat beds or large rock-gardens.

The only ones worth cultivating are *S. japonica* and *S. Fortunei*. There has been much confusion between these plants, that universally known in gardens as *S. japonica* not being Japanese at all, but a native of China, its proper name being *Skimmia Fortunei*. It is much dwarfer and does well as a pot-plant for window decoration, because of the greater freedom with which it bears its handsome red berries. Unlike *S. Fortunei*, the true Japanese plant is diœcious, and both sexes have received specific names, *S. fragrans* being simply the male of the true *S. jap-*

Skimmia fragrans.

SISYRINCHIUM (*Satin-flower*).—Iridaceous plants from North-West America, of which only one species is worth growing, namely *S. grandiflorum*, a beautiful perennial with narrow, Grass-like leaves that blooms in early spring. The flowers, borne on slender stems 6 to 12 in. high, are bell-shaped and drooping, more like a *Campanula* than an *Iris*, and rich purple in colour, which becomes a transparent white in the variety *album*. No garden should be without them for they soon spread into pretty colonies. They are charming for the rock-garden or borders, but like best a light peaty soil or sandy loam. Division.

SKIMMIA.—Beautiful dwarf evergreen

onica. When *S. japonica* first flowered in this country it was under the name *S. oblata*. That name has been transferred to it, and the one called *S. japonica* in gardens is now called *S. Fortunei*. The *Skimmias* thrive as well in strong clay as in poor sandy soil and peat, doing best in partial shade and never growing fast at any time. *S. japonica* is one of the very best town Evergreens we possess. Other forms of it are *S. Foremani*, *S. Rogersi*, *S. oblata ovata*, *S. o. Veitchi*, and *S. fragrantissima*. To produce well-berried plants, put the two sexes near to each other. Of *S. Fortunei* (the *S. japonica* of gardens) *S. rubella* is a seedling form. *S. Fortunei argentea* is a

seedling or sport, only differing from the type in having the leaves bordered with white. Increase by seeds sown as soon as ripe, cuttings struck in sandy soil and gentle heat, and layers.

SMILACINA (*Wild Spikenard*).—Graceful but not showy hardy perennials, somewhat resembling Solomon's Seal. They are easily managed plants, and the North American species will be found useful for mixed herbaceous borders, having rich green foliage and white feathery flower-heads in May and June.

S. oleracea is a native of temperate Sikkim, and has been grown for many years at Kew. It is difficult to manage unless left alone, being a slow grower, slow to increase, and a shy seeder. It is the most striking species in cultivation, and in the south at any rate is hardy, succeeding in rich peaty soil with a northern exposure. It is called Chokli-bi by the natives of Sikkim, where the young flower-heads, sheathed in their tender green covering, make an excellent vegetable.

S. racemosa and **S. stellata** are natives of North America, both white-flowered and hardy. They may be cultivated with ease in the mixed flower border, where in May and June they are very attractive.

SMILAX (*Green Briar*).—Distinct and handsome climbing shrubs, nearly all evergreen. They are most suitable for walls, but several may be grown over large tree roots or may be trained over tree trunks, requiring in this case the most sheltered position that can be found. In some cases it is not the cold winter that kills, but rather the lack of summer heat that prevents development. All the kinds respond to good dry soil, and if the soil is not good it should be made so. Suitable cuttings will usually strike, but there is sometimes difficulty in rooting them. Some plants can be divided, or pieces may be taken off which readily make plants, and this is the surest way of increase for hardy kinds, the best of which are as follows :—

S. ASPERA.—A well-marked species, with angular and usually prickly stems, reaching a height of 5 to 10 ft. In colour the leaves are dark green, with flecks of white on the upper surface, and the flowers whitish and fragrant. It is a native of South Europe and the Canaries, and has many varieties. That called *Buchananiana* I know only by a specimen at Kew. It has a long leaf, with numerous marginal setæ. I do not find the name in books, but the plant is distinct and probably a native of India. Variety *maculata* is marked by a dense growth of slender stems, reaching about 3 ft. and bearing small leaves,

so dark as to be almost coppery in colour. Variety *mauritanica* has angular stems of a considerable length and bearing few prickles; they are also rare on the leaves. It is a handsome plant from the Mediterranean and the Canaries.

S. BONA-NOX (*Bristly Green Briar*).—The root-stocks have large tubers; the stems are slightly angled, the branches often four-angled, the leaves green and shining on both sides, and their margins fringed with needle-like prickles. N. America.

S. CANTAB.—For many years this has grown in the Cambridge Botanic Garden. It is evergreen, the strong rounded shoots reaching a height of 12 ft. or more, armed with strong, straight green prickles; the branches slender, and usually spineless. The male flowers are fragrant, in clusters of eight to twelve. This plant comes near *S. rotundifolia*, but the leaves differ in shape.

S. GLAUCA.—This plant has angular stems of about 3 ft., armed with rather stout numer-

Smilax aspera.

Smilax in fruit.

ous or scattered prickles, or may sometimes be without any. The leaves are partially persistent, glaucous beneath and sometimes above. N. America.

S. HERBACEA.—I am not sure that this is worth keeping save in a botanic garden, but it is interesting and easily grown as an herbaceous plant. The tubers are numerous, short and thick, the stems unarmed, usually branched, and bearing ovate leaves with numerous tendrils. Its herbaceous habit distinguishes it from all others in cultivation. N. America and Japan.

S. HISPIDA.—Quite a distinct plant, the stems of which are usually thickly hispid with slender straight prickles. The leaves are thin and green on both surfaces, the margins usually toothed. N. America.

S. LAURIFOLIA.—A high climbing species, the stems round, armed with strong straight prickles, the branches angled, mostly unarmed. It is evergreen, and easily recognised by its leathery, bright green, three-nerved leaves, elliptic in shape. There is a fine specimen of this in Canon Ellacombe's garden at Bitton. N. America.

S. PSEUDO-CHINA.—The lower part of the stem is armed with straight, needle-like prickles, the upper part and the branches mostly unarmed. The leaves become leathery when old. They are ovate, often narrowed about the middle or lobed at the base, seven or nine-nerved and green on both sides, sometimes toothed on the margin. N. America and the West Indies.

S. ROTUNDIFOLIA (*Green Briar*).—A high climbing species with large, thin and nearly round leaves. The stems are angular and the prickles stout, scattered, and sometimes a little curved. This is a handsome strong-growing species, which does well in the Trinity College Botanic Gardens, Dublin. N. America. *Syns.*, *S. caduca* and *S. quadrangularis*.

S. TAMNOIDES.—This grows well in the Bamboo Garden at Kew and shows well how such a plant may be used to ramble over tree stumps to make a mass of picturesque vegetation. It has the free-growing habit of *S. aspera*, and bears numerous black berries.

S. WALTERI has stems angled, prickly below, the branches usually unarmed. The berries are bright red, but perhaps not produced in this country. N. America.

R. IRWIN LYNCH.

SOLANUM.—The vast Solanum or Potato family embraces plants of great beauty from all over the world, many being remarkable for their ample foliage finely spined and cut. Others are grown for their brilliant fruits of many colours and often of great food value; while others again carry handsome flowers, and in some cases charm of foliage, fruit and flower is found in the same plant. They are equally variable as to habit, many being stout shrubs or low trees, and others climbing or creeping plants. In a general way the climbing kinds show beauty of flower and the shrubby species beauty of leaf and fruit. Coming mainly from warm climates few kinds are hardy with us, though many may be treated as tender annuals or wintered under glass and used with fine effect in the summer garden, as in the Cambridge Botanic Garden. To do well these kinds need a rich moist soil, with shelter from wind. Those kinds hardy enough to be grown against walls in the open are best in rather poor dry soil, for if grown too freely the shoots perish during winter. Seed is easily obtainable, and if raised early in heat the plants are ready for putting out by the end

of May or early in June. The following are among the best for all purposes:—

S. ACANTHIFOLIUM.—A stout shrubby kind, of erect growth, with dull green prickly leaves and stems, large purple flowers, and heavy golden fruits.

S. ALBIDUM POORTMANI reaches the size of a low tree in the mountains of Ecuador. Its stems, armed with stout spines, are a metallic blue colour, and the deeply-lobed leaves sometimes 2 ft. in length a lively green; the flowers and fruits are insignificant.

S. ARBOREUM is a shrub with handsome flowers, hardy in mild seasons and on sheltered walls near the south coast. The leaves, 8 or 9 ins. long, are set with sharp brown spines, and the large flowers in clusters of 6 to 9 together are pale blue or mauve with deep orange anthers.

S. ATROPURPUREUM.—An erect plant with purple leaves and stems, 3 to 6 ft. high. The deeply-lobed long-spined leaves are threaded with pale veins, and the small purple flowers yield small round berries. Brazil.

S. BALBISI.—A shrubby plant hardy against walls in sheltered southern gardens, with slender straggling stems and deeply-cut leaves armed with pale brown spines. The pale mauve flowers are large, succeeded by bright scarlet berries like a small cherry and sweet. *Syn. S. sisymbriifolium*. This can be treated as a tender annual, or grown from cuttings.

S. BETACEUM is a small tree from S. America of distinct appearance, with stout smooth stems and large oval leaves of fleshy texture, veined with purple in the variety *purpureum*. The flowers are small, followed by orange-red or scarlet fruits like a hen's egg for size and shape, hanging in showy clusters and so thickly that a thousand hang on a single mature plant in its own land. This is one of the best, of rapid growth, and easily handled.

S. CILIATUM, another species with showy scarlet fruits, round and like a small Tomato of dry texture and useful for winter decoration, as they will hang for months among the glossy spined leaves without spoiling. The variety *macrocarpum* is the best.

S. CITRULLIFOLIUM.—A low spiny kind from Texas, with much lobed leaves, large rosy-violet flowers and showy yellow fruit.

S. CORNUTUM.—An annual kind from Central America, 2 to 3 ft. high, with slender yellow-spined stems, much-cut leaves, and large yellow flowers followed by spiny berries. Though differing slightly, *S. Fontanesianum* comes near this.

S. CRINITUM is a stout shrubby plant of 5 or 6 ft., with leaves 2 ft. or more long, of velvet texture and tender green tint, threaded with purple veins set with spines. The deep blue flowers are 2 ins. across and hang in heavy clusters, followed by fruits an inch or more in diameter. This grows strongly in sheltered southern gardens. Increase by suckers. Guiana.

S. CRISPUM (*Potato Tree*) reaches 15 to 20

ft. as a bush in the open, and exceeds this against a wall. It is one of the hardiest kinds, resisting as far north as the Trent on warm soils, though dying to the ground in a hard winter. The leaves vary in size, being much larger towards the base than at the tips of the shoots, and waved or loosely crisped around the edges. The flowers are a pretty bluish colour, fragrant, and very abundant during early summer; the small white berries to which they give place are seldom seen in Britain. The plant is best in poor dry soil. There are two or three forms in cultivation, one with inferior dull purple flowers which should be avoided; and *ligustrinum* with smaller heart-shaped leaves. When grown against a wall this plant should be well pruned in autumn or it suffers from frost; where it thrives as a standard this is unnecessary.

S. DULCAMARA (*Bitter Sweet*).—This showy native plant so common in our hedges would not be worth naming among garden plants, but for the golden-leaved form which exists. The variegation is bold and does not burn in the sun, giving good contrast with abundant purple flowers. Berries red or yellow, and poisonous, so that when used in a garden it should be beyond the reach of children.

S. DUPLOSINUATUM is a beautiful plant of good habit for the summer garden, with fine foliage, large blue flowers, and pure white berries. Abyssinia.

S. FERRUGINEUM is a bushy shrub of 3 to 5 ft., enveloped in rust-coloured down and stout spines. The flowers are lilac-purple, followed by greenish-black berries the size of a pea. *S. America*.

S. GIGANTEUM is a tree of 25 ft. in its own land, with a trunk as thick as a man's thigh. With us it is 5 or 6 ft. high, prickly, and covered in white wool; the leaves unarmed, deep green above and whitish beneath; the flowers pale blue, not showy; the berries red and as large as peas. India.

S. GUINEENSE from West Africa, a low shrubby annual with angular stems, rounded leaves, and small violet flowers succeeded by shiny dark fruits the size of a cherry, and hanging in heavy clusters after the leaves have gone.

S. JASMINOIDES (*Jasmine Nightshade*).—A charming summer-leaving climber and the most beautiful of the family, hardy anywhere in the south of Britain where its wreaths of starry white flowers are freely produced upon a wall or house-front, even in a north aspect. The shoots are twiggy and unarmed, climbing rapidly and finding support by a curious twist of the leaf-stalk. The leaves are variable but often lance-shaped, sharply tapering, dark green and rather limp. Grown out of doors and in a strong light, the flowers are more or less shaded with greyish-blue or purple, and there is a charming pale bluish variety in which the colour seems fixed. Other good forms are *floribundum*, very free in flower and with smaller leaves; and *grandiflorum* in which the flowers and clusters are large. There

is also a variegated form. The flowers are pure white if grown in partial shade, or in a north house. The shoots should be well cut in after frost is over in spring, and water at the root and overhead is necessary in hot weather to ward off red spider and other pests. Increase from side-shoots taken with a heel.

S. KARSTENII.—A stout erect shrub of 5 or 6 ft., the stems covered with violet hairs and spines and bearing broad angular leaves 2 ft. long, heart-shaped at the base. The large pale-violet flowers are borne in crowded clusters. Venezuela. Syn. *S. callicarpum*.

V. LACINIATUM (*Kangaroo Apple*).—A stout rapid-growing plant from the antipodes, with dark fleshy stems growing 4 to 6 feet in a season; much-divided leaves, dark violet flowers, and fruits the size of a small plum, changing from green to yellow and red. One of the easiest to grow, and nearly hardy on the south coast. Syn. *S. aviculare*.

S. LANCEOLATUM bears heavy clusters of mauve flowers with orange stamens, and fluffy leaves like a willow. Mexico.

S. LASIOSTYLUM.—A low shrub of the West Australian deserts, with white woolly leaves, spiny stems, and purple flowers. The young plants need a warm place and careful watering.

S. MARGINATUM is a handsome freely-branched species, the stout woody stems coated with white wool and armed with prickles. The leaves are oval, green above with a waved white margin, and white underneath and while young. The drooping white flowers are purple at the centre with orange stamens, and give place to yellow fruits like a small Tomato. Abyssinia.

S. MORS ELEPHANTUM from Central Africa, where the fruits are said to poison elephants. The plant is 3 or 4 ft. high, with violet stems, deep green foliage, and large bright blue flowers followed by bright pale yellow fruits carried erect and in threes.

S. MACRANTHUM.—A handsome Brazilian shrub growing 7 ft. high in a good season, with grey-spotted stems, pale green deeply-cut leaves of great size, gracefully drooping, and threaded by reddish veins thickly set with spines. The large bluish-violet flowers are seldom seen in this country, and to do well the plant needs a warm place. Syn. *S. maroniense*.

S. PIERREANUM is a kind from West Africa, the beauty of which lies in the abundant fruits, first green with purple stripes, then white, passing to yellow and deep crimson, the dark stripes being more or less marked at all stages. The stems are white and woolly, and the young leaves violet, becoming green with violet veins.

S. PLATENSE.—A true creeper, which instead of rambling over the surrounding vegetation runs over the ground, rooting as it goes and seldom rising more than a foot high. It is found on the banks of the La Plata as a carpet of grey downy leaves, with white bell-shaped flowers on short erect stems, followed by sweet fruits of the same colour.

S. PYRACANTHUM.—A fine shrubby species

of low slender growth, the entire plant covered thickly with glistening orange coloured spines. Flowers an inch across, bluish-violet. Madagascar.

S. QUERCIFOLIUM.—A hardy perennial from Peru, growing 3 to 5 ft. high, with

large white flowers are violet and woolly on the outside, succeeded by yellow fruits like a small orange, at first woolly, then smooth, shining, and of agreeable flavour. It needs a warm place and a warm season to do well. Peru.

S. ROBUSTUM is a much-branched shrub of

Solanum Wendlandi.

deeply-lobed Oak-like leaves of 3 to 4 ins. and large violet flowers.

S. QUITOENSE.—A shrubby plant of three feet, with downy violet stems and broad woolly leaves, heart-shaped, green threaded with violet, and reddish-purple beneath. The

4 ft., its stems and leaf-ribs set with sharp spines and dense red hairs. The leaves are large, sharply oval, and bluntly lobed, or nearly triangular higher on the stems, green and velvety above, yellow and woolly beneath. The flowers are white with orange stamens,

and the rounded brown berries like a small cherry. Brazil.

S. TORREYI.—A free-flowering perennial, hardy in the south of Britain with root-protection. The violet or white flowers are large and handsome, followed by yellow fruits an inch in diameter. The leaves are waved like an Oak-leaf, 4 to 6 ins. long, and covered beneath with mealy down. Texas.

S. SIEGLINGII.—Attains the size of a small tree after some years of growth. The leaves are a pale green flushed with rose, and reddish-violet while young, their surface studded with scattered spines. The small white flowers only appear on plants of a certain age. Venezuela.

S. WARSCEWICZII bears a general resemblance to *S. macranthum*, but is stouter and more bushy, branching from near the base. The stems bear large curved spines and dense brown hairs—these extending to the stalks and mid-ribs of the leaves. The foliage is ample, soft green above and greyish beneath; the flowers large and white; the fruits pale yellow, smooth, and shining. This kind is one of the best for summer bedding, and easily raised from seed or cuttings. S. America.

S. WENDLANDI.—The noblest of Solanums and one of the handsomest climbing plants for a cool greenhouse, flowering profusely through a long season and at its best about August. It does better planted out than in pots, and has been tried in the open air with some success in warm gardens south of the Thames and in sheltered places along our southern coasts. The fleshy stems climb freely, bearing sparse soft spines. Leaves variable in size and shape, often cut into deep lobes. Flowers in large drooping clusters of a soft lilac-blue colour and 2 ins. or more across; those shown in the engraving form only a small part of the perfect cluster, which often measures a foot across. The leaves fall in winter when the plant should be kept fairly dry at the root and the shoots well cut back before again starting into growth. Increase by cuttings of tender side-shoots, taken with a heel from plants started early under glass. Costa Rica.

J. H. B.

SOLDANELLA (*Moon-Wort*).—Diminutive and charming alpine flowers, at one time considered difficult to grow, but not really so if grown in peaty or sandy and moist soil, with coarse vigorous plants kept at a distance. They should always be in the rock-garden, or parts of the regular garden devoted to dwarf-plants, and they do best in partial shade. While rock-gardens were made of burnt bricks and other like rubbish piled up so that the first dry wind dried up every root and plant upon it, these things could not be grown. *S. alpina* is one of the most interesting of the plants growing near the snow-line on the great mountain-chains of Europe. It is not brilliant, but has beautiful pendent pale bluish flowers, bell-

shaped, and deeply fringed. Three or four are borne on a stem 2 to 6 in. high, springing from a carpet of feathery roundish shining leaves. The plants thrive best in moist districts, and in dry ones evaporation may be prevented by covering the ground near them with Cocoa-fibre mixed with sand to give it weight. Good growers often protect them during the winter with tilted sheets of glass, the little plants seeming to miss their natural covering of snow. The most suitable position is a level spot in the rock-garden near the eye. The plant is increased by division, though being often starved and delicate from confinement in small worm-defiled pots, exposed to daily vicissitudes, it is rarely strong enough to be pulled to pieces. *S. montana* is allied to *S. alpina*, but with larger leaves and purer blue flowers. It comes from the same regions and needs the same treatment. It is readily increased by division, but like the last is often too weak for this. *S. pusilla* has kidney-shaped leaves, and a corolla less deeply fringed. The very small *S. minima*, with its minute round leaves and its single flower, fringed for a portion of its length only, is rare. These plants thrive under the same conditions as the others, but, being much smaller, require more care in planting, viz. in a mixture of peat and good loam with plenty of sharp sand, and associated with minute alpine plants. They require plenty of water in summer. *S. Clusii* and *S. Wheeleri* are similar to those mentioned above. There are white-flowered forms of several of the species, and two or three hybrids, *S. Gauderi* being a cross between *alpina* and *minima*, and *S. hybrida* between *alpina* and *pusilla*. (Primrose order.)

SOLIDAGO (*Golden Rod*).—These N. American Composites exterminate valuable plants, and give a coarse, ragged aspect to the border. They are also gross feeders and impoverish the soil. They hold their own, however, in a copse, or a rough open shrubbery among the coarsest vegetation, and the silky seeds of some kinds persist, with a pretty effect, far into the winter. There are nearly 100 kinds, of which the best are *S. Buckleyi*, a dwarf species with bluish-green foliage and orange flowers; *caesia*, another dwarf kind of slender growth with pale yellow flowers; *Gattingeri*, of good habit, with abundant plume-like sprays; *latifolia*, a dwarf early kind with broad rounded leaves; *odora*, of slender growth, with fragrant deep yellow flowers, quite one of the best; *rigida*, of dwarf erect growth, with downy leaves, fine flowers, and roots

which do not run ; *serotina lepida* (*gigantea*), often 6 ft. high, with dark stems and large heads of flower ; *Shortii*, the best of the tall kinds, with spreading, finely-arched heads, very useful for cutting ; *spectabilis*, of medium height, with fragrant, deep yellow flowers, and not too strong at the root ; and *Virgaurea nana*, the neatest of all, with compact heads only a foot high.

SOLLYA (*Blue-bell Creeper*).—Beautiful evergreen climbing shrubs from Australia, mostly grown under glass but hardy in the open air in the warmest parts of the south-west of England, Wales, and Ireland. Trained around the pillars of a sunny verandah, or against a warm wall, the dark wiry stems extend freely, bearing narrow deep green leaves and small drooping bell-flowers of a clear blue, continued through a long season. The best known kind is *S. heterophylla*, and of this there is a distinct narrow-leaved form, *angustifolia*, which is less freely twining. Swan River. Increase by seeds, and by cuttings of half-ripe shoots which root with some difficulty.

SOPHORA (*New Zealand Laburnum*).—*S. tetraptera* is a large tree in its own country, and makes a charming wall-plant here. The variety *grandiflora* has larger flowers and is more robust, while the variety *microphylla* is remarkable for finely-divided leaves and smaller flowers. In sheltered gardens against walls in the southern and the mild parts all may be grown, though they may need extra protection in severe

Sophora japonica.

winters. Another species in cultivation is *S. chilensis*, which also needs protection. *Syn.*, Edwardsia.

S. japonica (*Pagoda Tree*).—One of the finest of flowering trees, elegant in foliage, and, in September, covered with

clusters of white bloom. It is one of the largest of trees, and when old has a wide-spreading head with huge limbs. Its long pinnate leaves retain their deep-green colour until autumn. Where space is limited it may be kept in bounds by hard pruning. There are several varieties—a drooping kind, which is one of the best of all pendulous trees, and a variegated-leaved kind, which is not satisfactory, as the variegation is seldom good.

Another rare and beautiful species is *S. secundiflora* from Texas and New Mexico, a low dense tree or leafy shrub, with ornamental foliage composed of neat rounded leaflets with a glossy surface, and strongly fragrant violet-blue flowers borne in a dense spike. These are followed by soft silvery pods containing bright red seeds. The plant is not easy to obtain, but is hardy with protection in our more favoured districts.

SPARAXIS.—Charming bulbous plants from the Cape of Good Hope, the many varieties coming chiefly from *S. grandiflora* and *S. tricolor*. They are about 1 ft. high, of slender growth, and bear large showy flowers which vary from white to bright scarlet and deep crimson, usually having dark centres. Sparaxis are valuable for early-summer flowers, and should be treated like Ixias. There are a great many named varieties offered by bulb-growers, one of the most showy and popular being *Fire King*. *S. pulcherrima* (the Wand-flower) is so distinct that its claim to be a Sparaxis has often been disputed. Its tall and graceful flower-stems rise to a height of 5 or 6 ft., and wave in the wind, but, though slender, are so tough and wiry that they are never injured like the much stronger-looking stems of the Pampas Grass. For six or seven weeks *S. pulcherrima* has lovely Fox-glove-shaped bells on almost invisible wire-like lateral foot-stalks. Though the parent flowers are usually rosy-purple, there are forms which are nearly white, and others of every intermediate shade or finely striped. *S. pulcherrima* is finer and more elegant than *S. Thunbergi*, which is stiffer and dwarfer—about 2½ ft. high—with flowers on very short stalks, and not pendulous. The best position for *S. pulcherrima* is in clumps among sheltering shrubs. In such a position it might be associated with *Tritonia aurea*, as the two plants flower together and are about equally hardy, and, though more difficult to establish, it well repays a little care during the first year or two. It has a great objection to removal, and, if necessary, this should be done as soon as the

flowers begin to fade. It succeeds in dry as well as damp positions, if it has a rich

Sparaxis pulcherrima (Wand Flower).

friable soil, or if when beginning to grow it is well watered.

SPARTIUM (*Spanish Broom*).—*S. junceum* is a South European shrub, blooming in July, August, and September, when shrubberies are usually flowerless. It is thin-growing, 8 or 10 ft. high, and its Rush-like shoots have so few leaves as to appear leafless. It bears erect clusters of fragrant bright yellow flowers shaped like Pea-blossoms, is perfectly hardy, and useful for dry, poor soils, where, like the common Broom, it does well, coming freely from seed scattered broadcast where we wish it to grow.

SPECULARIA (*Venus's Looking-glass*).—These are similar to Campanulas, and often placed with them, though distinct enough for garden purposes. *S. Speculum*, with numerous open bell-like bright violet-purple flowers, is one of the showiest of our annuals. Besides the large-flowered form called *grandiflora*, sometimes purple and sometimes white, there

is a double-flowered kind which comes true from seed, also a dwarf compact form with violet-blue flowers. *S. pentagonia* is another favourite, its flowers larger, but less abundant than those just described, purple in colour, with a deep blue centre. Both these kinds are hardy and generally scatter seed, which comes up year after year, without trouble, except to keep the seedlings within bounds.

SPHENOGYNE.—*S. speciosa* is a beautiful half-hardy Mexican annual Composite of slender, much-branched growth, about 1 ft. high. The flowers, produced from July to September, are yellow with a brownish centre encircled by a conspicuous black ring, the centre being orange in the variety *aurea*. *S. speciosa* will succeed if sown in the open in spring, but it does better as a half-hardy annual, sown in early spring in heat, in any ordinary light soil. *S. anthemoides*, introduced last century, and also called sometimes *Arctotis anthemoides*, differs from *S. speciosa* in having the underside of the florets purplish instead of yellow. Though a large and varied family, these are the only kinds to our knowledge in cultivation. *Syn.*, *Ursinia pulchra*.

SPIGELIA (*Worm Grass*).—*S. Marilandica* is a beautiful native of North America, distinct from all other hardy plants. It forms a dense tuft of slender stems about 1 ft. high, each bearing long tubular flowers in July, which are deep red outside and deep yellow inside. The plant is rare in gardens, being considered difficult to grow. In its own land it grows in sheltered situations, the roots going deep down into rich vegetable mould. These natural conditions should be imitated; and if the soil be not good, take it out 2 ft. in depth and fill up with a well-sanded mixture of loam, leaf-mould, and peat. Partial shade in summer, with abundance of moisture in hot weather, is essential. The plant is suitable for cool borders, the lower parts of the rock-garden, or the margin of peat beds.

SPIRÆA.—Beautiful shrubby or perennial plants of easy culture, distinct habit, and often of fine form. They grow well in rich soil in borders, and are also excellent for the margins of water. The shrubby kinds are of the highest value, and are described in a sub-section. The best of the herbaceous or Meadow-Sweet section are as follows:—

S. Aruncus (*Goat's-beard*) is a vigorous perennial, 3 to 5 ft. high, beautiful in foliage and habit as well as in flower. Its flowers are freely produced in summer in large gracefully-drooping plumes. *S. Aruncus* is as good in

midsummer as the Pampas Grass is in autumn. It is valuable for grouping with other fine-foliaged herbaceous plants. It thrives in ordinary soil, but succeeds best in a deep moist loam. Beautiful garden forms of this are

Spiræa Aruncus.

Kneiffi, with very finely cut leaves and dense feathery heads of flower; and *plumosa*, a good dwarf variety. Division. Various parts of Europe, Asia, and America.

S. astilboides is a moisture-loving plant of unusual merit, happiest on the banks of a stream or pond. It is quite distinct, the inflorescence much branched, and the flowers or a creamy white closely packed on the stems. A supposed cross between this plant and *Astilbe japonica*, called *S. astilboides floribunda*, is exceedingly vigorous and free in flower.

S. camtschatica may be described as a gigantic Meadow Sweet, growing from 6 to 10 ft. high, with huge palmate leaves and large fleecy bunches of white flowers crowning the tall stems. Its place is in rich bottoms or by water in deep soil. The variety *elegans* carries branching heads of rosy flowers and massive leaves a foot across.

S. Filipendula (*Dropwort*).—A British species, 1 to 2 ft. high, with loose clusters of yellowish-white flowers, often tipped with red. When the flower-stems are pinched off it forms an effective edging plant, its Fern-like foliage being distinct. The double variety (*S. Filipendula fl.-pl.*) is useful in the mixed border and for cutting. Division.

S. lobata (*Queen of the Prairie*) is one of the best of the hardy Spiræas, 18 to 36 in. high, with deep rosy carmine flowers in large terminal cymes. It thrives in sandy loam in the mixed border, on the margins of shrubberies, or grouped with the finer perennials. Somewhat resembling this are the handsome *S. Humboldtii* and *S. digitata*. Syn. *S. venusta*.

S. palmata is a beautiful herbaceous species,

and among the finest of hardy plants. It has handsome palmate foliage, and in late summer broad clusters of rosy-crimson blossoms. When well-grown it is 4 ft. high, but often less, and being considered tender, is grown largely in pots; but it is hardy, succeeding in moist deep loam well enriched by decayed manure. It is a fine plant for large rock-gardens, in borders, or on the margin of shrubberies; and being strong enough to take care of itself it may be naturalised. The variety *elegans* (said to be a hybrid) with pale pink flowers, is altogether inferior to the best forms of *S. palmata*. Other forms are *alba*, with white flowers; *maxima*, in which they are tinted with rose; and *purpurea* with purple foliage. A good effect is got by planting the species by the edge of streams or ponds: a mass of lovely colour is presented to the eye, and too-often bare spots are clothed with beauty.

S. Ulmaria.—This common British Meadow Sweet is seldom cultivated, but worse things are often seen in borders. It deserves a place, if only for the sake of variety, in the mixed border, on the margins of shrubberies, or in the rougher parts of pleasure grounds, where it may be planted with other subjects which do not require much looking after. Almost any soil will suit it, but a moist one is best. The variegated-leaved form is ornamental, and there is also one with double flowers.

SHRUBBY MEADOW SWEETS.

S. arguta.—A garden hybrid of complex origin, one parent being *S. Thunbergi*, and the other *S. multiflora*—itself a hybrid. It comes nearest the first named, blooming just a little later, reaching a height of four feet, with wiry arching sprays of snowy flowers so densely clustered that the entire bush is robed in white. The flowers come before the leaves, which are a little late in unfolding; the plant is therefore best seen against a background of evergreens.

S. Blumei is a rare and pretty little shrub of about four feet, gracefully arching, with blunt deeply-notched leaves and abundant white flowers in June. Japan. This is rarely found true to name, some allied kind such as *S. trilobata* often doing duty for it. The two come very close however, *trilobata* having smaller and more rounded leaves, not infrequently three-lobed, and the flowers are a little earlier. It is also hardier in cold districts, coming from northern and central Asia.

S. bullata.—A neat shrub for the rock-garden, only 12 to 18 inches high, with erect and downy branches, rounded and wrinkled leaves, and deep pink flowers in July and August. Japan. Syn. *S. crispifolia*.

S. cana is a neat dense shrub of 1 to 2 feet, with grey down-covered leaves which give the plant a hoary appearance. The tiny white flowers are borne upon arching sprays throughout the summer, and quite freely even on small plants. Its place is the rock-garden. Central Europe.

S. canescens.—A graceful shrub from the Himalayas, reaching a height of many feet at maturity, with hairy stems, small bluntly-oval leaves, and white (or rarely pale pink) Hawthorn-scented flowers in crowded clusters upon the slender sprays. The plant needs room to spread its whip-like stems, and is best in a sheltered place beside water, though it will do fairly well in drier places and even in partial shade. It has a score or more

as *S. confusa*) resembles *S. cantoniensis*, but its variety *rotundiflora* is distinct and pretty.

S. decumbens is a charming mountain shrub from the Tyrol, seldom exceeding 6 inches in height, and excellent in the rock-garden where it spreads by means of underground stems. The clusters of white flowers about 2 inches across, come freely in June against a setting of pretty toothed leaves. Coming near this in effect are *S. Hacqueti* of the Alps, and

Spiræa ariæfolia

of names, the most familiar of its synonyms being *S. flagellaris*.

S. cantoniensis (*Canton S.*), a slender bush, about a yard high, bearing many small clusters of white flowers. There is also a beautiful double variety in which the flowers last longer. The Plum-leaved Spiræa (*S. prunifolia*) is represented in gardens by the double variety (*flore-pleno*), a charming shrub, with flowers like tiny snow-white rosettes, in early summer wreathing every twig. *S. media* (better known

pectinata and *caespitosa* from the mountains of America—tiny creeping shrubs with clusters of white flowers, and all well suited for sunny places in the alpine garden.

S. discolor (*Spray Bush*), a lovely shrub 8 to 10 ft. high, and I have seen it much higher, grown on walls. We should seek to give full expression to its singular beauty by careful planting and grouping—taking care to save it from the horrible jumble that nurserymen give us when they plant a “shrubby.” To show

off its beauty to advantage it requires an open position, and when thus isolated it forms a large bush of good form laden during summer with spray-like panicles of small whitish flowers. *Syn. S. ariæfolia.*

S. Douglasi and **S. Nobleana** are so similar in growth and flower that they may be conveniently coupled, though as they bear their

Spiræa japonica, A. Waterer.

clusters of deep red flowers at different times it is well to have both. N. America. *S. Douglasi* succeeds in every part of the British Isles; *S. Nobleana*, from California, is less hardy, and flowers earlier. An allied plant of garden origin is *S. Billardii*, raised from *S. Douglasi* crossed with *salicifolia*. It is a pretty shrub of 6 ft., with oblong leaves, and narrow crowded spikes of bright pink flowers, 5 to 8 inches long, from July into September. *S. pachystachys*, another garden hybrid (from *corymbosa* and *Douglasi*) bears broader leaves and pale pink flowers.

S. hypericifolia from Asia Minor, the type of a small group, all good in growth and flower. The tall slender stems arch gracefully, and under good conditions reach a height of 8 ft., wreathed in the flowering season with clusters of small white flowers. *S. flagelliformis* and *S. acuta* are forms superior to the type.

S. japonica (*Rosy Bush Meadow Sweet*) is easily recognised by its slender stems 3 or 4 ft. high, surmounted by broad flat clusters of deep pink flowers. It is a variable species with several other names such as *S. callosa* and *S. Fortunei*. There are also many distinct forms in cultivation, and of these the best are *alba*, a pretty compact shrub with white flowers; *Bumalda*, of the same dwarf habit but with deep rosy flowers; *Bumalda Anthony Waterer*, a good plant richer in colour and approaching the fine form *rubra* from Japan, in which the flowers are intense crimson-purple and a shade larger. The plants called *atropurpurea* and *coccinea* by some growers hardly differ from this. Other varieties are *splendens* with flowers of a pale peach colour; *glabrata*, of more rigid habit with bright pink flowers; and

Frabeli, an early-flowering form with wine-red flowers passing to deep crimson. Of this last there is a charming sub-variety in which the leaves are heavily blotched with creamy yellow, while the young shoots take a cheery shade of rose; though inconstant, this variegation is often exceedingly pretty, and is sometimes seen to a less degree in the variety of *S.*

Bumalda—*Anthony Waterer*. *S. Bumalda ruberrima* is a cross between *Bumalda* and *bullata*, dwarfier than its near parent, with larger flowers of deeper colour; *S. Margarita* is a cross between *S. japonica* and its variety *superba*, and is a handsome plant with graceful wand-like shoots and large bright pink flowers. *S. Foxii*, another hybrid of dwarf habit, is less good. *S. bella* from the Himalayas, comes near *S. japonica*, but is dwarfier and denser. All these

kinds flower freely through the summer, and often till late in autumn.

S. Lindleyana (*Plume Meadow Sweet*) is a noble shrub, sometimes 10 ft. high, its graceful foliage divided, and delicate green, the flower clusters large, white, and plume-like, being at their best in August. It thrives in warm deep soil, not too light or too heavy, and should be sheltered from cold winds, which injure its young growth in spring. It

Spiræa sorbifolia.

has in some soils peculiar ways, and in others, especially of a chalky and warm nature, it blooms well enough to deserve the epithet *superb*. In cool soils it does not do so well, seeming to spread more at the root, but in all cases is beautiful in foliage and habit. Himalaya. Division. Other pinnate-leaved Spiræas, such as *S. sorbifolia* and *S. Pallasii*, are hardier but less desirable. *S. Aitchisoni* from Afghanistan also comes very near this, differing little save in its larger flowers, ruddy bark, and darker green leaves cut into smaller leaflets.

S. salicifolia.—A plant covering an immense area in Europe, Asia, and North America, and even naturalised in parts of Britain. It reaches a height of 3 to 5 feet, with long serrate leaves and rosy flowers in July and August, their precise character differing in the many forms in cultivation. The best of these are *grandiflora*, a shrub of dwarf habit with large pale pink flowers; *lanceolata* (or *alba*) with white flowers; and *latifolia* with larger white or rose-tinted flowers.

S. tomentosa is a little shrub of about 4 feet, with down-covered branches, oblong leaves grey or woolly with down on the underside, and white, pink, or purplish flowers in dense spikes. North America. This is a pretty plant, one of the best in its autumn flowers, and with roots not much inclined to roam. It is specially good in damp ground and overhanging water.

it is perplexing to single out the choice few required for the garden.

The fact is, we have too many *Spiræas* and too great a similarity among kinds flowering about the same time. No collection need number more than a dozen kinds, and good grouping of these in a garden would produce better effect than the dotting about of many sorts. My dozen would be the following:—*S. Lindleyana*, *discolor*, *Douglasi*, *Van Houttei*, *prunifolia fl. pl.*, *japonica superba*, *arguta*, *canescens* var. *flagellaris*, *cantonensis*, *bella*, *Thunbergi*, and *japonica Bumalda* Anthony Waterer. This selection embraces all the sections, and is sufficient in a general way, but should more be required, a second dozen might include:—

Spiræa Bumalda.

S. Thunbergi (*Thunberg's Meaow Sweet*). It is a dense bush, with small bright green leaves, and in early spring a profusion of tiny white blossoms. It is hardy, and especially suitable for planting in a bold rock-garden or on a raised bank among tree-stems. Few shrubs are so fine in autumn, its small leaves changing to brilliant crimson.

S. Van Houttei.—Another garden cross—this between *media* (*confusa*) and *trilobata*. In late spring it bears masses of white flowers so thickly clustered as to hide all else and emphasise the graceful droop of the stems. Indeed, these sometimes droop too much, allowing the clusters to drag and spoil in bad weather. The flowers open about the middle of May, and the wand-like shoots are useful for cutting. Being sensitive to cold winds and late frost, a sheltered place is best for this kind.

In a genus like *Spiræa* numbering many reputed species and these encumbered with endless names and synonyms,

S. decumbens, *salicifolia grandiflora*, *Nobleana*, *Aitchisoni*, *japonica coccinea*, *Billardii*, *Blumci*, *japonica ruberrima*, *tomentosa*, *confusa*, *japonica alba*, and *bullata* (*crispifolia*).

Let me protest against the planting of such shrubs in the "mixed" shrubbery, where the delicate have to fight the strong. Such is no place for these elegant plants, which being surface-rooters cannot contend with ravenous Laurels and the like. They need an open, sunny spot, away from the roots of big trees and shrubs, and where the garden is large enough, I should have isolated groups (bold masses from 10 to 15 ft. across) of the taller kinds, such as *Lindleyana*, *discolor*, *Douglasi*, and others, and lesser groups of the dwarfer kinds—or these may form masses jutting-out from other groups.

Even if the soil is good and deep, the site for Spiræas and suchlike shrubs should be thoroughly trenched. Then Spiræas generally are lovers of moisture, and wherever there are moist spots in a garden, there they should be planted. *Spiræa Lindleyana* is a grand shrub for the water-side planted in bold groups, and masses of others might be made to fringe a lake or stream in a beautiful way.

These shrubby Spiræas may be divided into early and late flowering groups. The early kinds, such as *Thunbergi*, *arguta*, *hypericifolia*, *prunifolia*, *confusa*, *Van Houttei*, *cantonensis*, etc., open their clus-

fair success may be had with almost all the kinds. Many sorts also ripen seed with us, and may be increased in this way where absolute purity is not essential, or where it is desired to raise new forms.

For a full account of the Spiræas I refer the reader to *The Garden* (Vol. XII.), where about fifty kinds are described in detail, and to the notes on Spiræas scattered through the many volumes of *The Garden*.

SPRAGUEA.—*S. umbellata* is a singular and pretty plant allied to Claytonia, 6 to 9 in. high, with fleshy foliage, and spikes of showy pinkish blossoms. If seeds are

Spiræa Lindleyana.

ters all at one time from April to June, and then finish for the season. The late kinds continue from June to early autumn, their flowers coming as a succession of spikes so long as the plants are in active growth. To this group belong Spiræas *bella*, *canescens*, *japonica* and its forms, *salicifolia*, *Douglasi*, *Billardii*, and many others. This distinction is a good guide to pruning, anything in this way (though not much is needed) being done immediately after flowering with the early group, and in early spring with the later kinds. They are of easy increase from cuttings of the young wood rooted under glass in spring, or from layers or cuttings of the ripened wood in the open air, put in from early autumn. Some species root in this way far more freely than others, but with patience and a good sandy soil

sown in heat early in February, then potted singly, and planted out in May, the plants will bloom in August and September; if sown in May, the plants will not flower till the following summer. In light soils the plants will stand an ordinary winter, but they are safer in a frame. The difficulty is that like most tap-rooted plants, they do not bear moving well, except while small. California.

STACHYS (*Woundwort*). — Few of these perennials are worth notice. The common *S. lanata*, a woolly-leaved plant used for edging, thrives in any soil. *S. coccinea* is a rather pretty perennial with spikes of red flowers about 1 ft. high, and succeeds in a partially-shaded border anywhere in the south; coming from Mexico, it is not hardy everywhere. *S. grandiflora*, from Asia Minor and Siberia,

is a neat downy plant with showy spikes of reddish-purple or rosy flowers from May onwards, sometimes used in the rougher parts of the rock garden. A good form of this is *grandiflora-superba* with deep purple flowers. Division.

STAPHYLEA (*Bladder Nut*).—Of the older kinds only *S. colchica* is important, this being a beautiful shrub with pinnate leaves and large terminal clusters of snow-white flowers in early summer. It is hardy, grows well in any good soil, preferring partial shade, and is commonly forced into flower for the greenhouse in early spring. Increase by suckers, layers, and ripe autumn cuttings rooted under a handlight in sandy soil. A pretty variety called *colchica Hessei* has flowers flushed with rose. *S. coulombierii*, a cross between *S. colchica* and *S. pinnata*, bears long loose clusters of creamy white flowers which are larger and expand more widely than in the parents.

STATICE (*Sea Lavender*).—Plants of the Leadwort or Plumbago family, all dwarf perennials or annuals, chiefly natives of shore and mountain districts. Most of them bear large twiggy flower-stems covered with myriads of small flowers, which are for the most part dry and membranous, and retain their colour long after being cut, so that they are frequently mixed with other everlasting flowers for vase decoration or wreath-making in winter. The larger species require least care when in an open exposed bed of sandy soil, while many of them are admirable for the rock-garden, being green throughout the year. They are deep-rooting plants and dislike disturbance, taking some while to regain strength. The best of the larger kinds are *S. Limonium*, of which there are several varieties; *S. latifolia*, the finest of all, with wide-spreading flower-stems and a profusion of small purplish-blue flowers; and *S. tatarica*, a dwarfer species, with distinct red flowers. The smaller species, such as *S. minuta*, *S. minutiflora*, *S. caspia*, *S. eximia*, are good rock-plants. Among the half-hardy annuals and biennials the best are: *S. Bonduelli* (yellow), a biennial if protected in winter; *S. spicata*, with spikes of small rosy flowers; *Thouini* (violet), very free flowering; and *sinuata* (purple and white), pretty, and easy to grow. There are several varieties of *S. sinuata hybrida* of varied colour, which make pretty border flowers. All the annual and biennial Statice should be raised from seed in early spring, and planted out when large enough. The half-hardy biennials need protection during winter, and should not

be put out until the spring after they are raised.

STAUNTONIA.—*S. hexaphylla* is a fine evergreen twining pinnate-leaved shrub from China, hardy enough in the warmer parts of these islands for wall-culture. Its small flowers are whitish, fragrant, and produced in early summer. Occasionally these are succeeded by large reddish-purple oval fruits, filled with soft juicy pulp. It must have a sheltered wall, but in a place not too dry and sunny or the leaves turn a sickly yellow. During severe frosts the plant should be protected in a simple way.

STEIRONEMA.—Showy perennials of the Primrose order from North America, nearly allied to Loosetrife and thriving under the same conditions. Two kinds are useful at the waterside or in the bog-garden, *S. ciliata* with leafy stems 1 to 3 ft. high, bearing showy pale-yellow flowers; and *S. longifolium* with shorter square stems clothed with narrow shining green leaves, and crowned with heads of bright yellow flowers.

Stenactis. See ERIGERON.

STENANTHIUM.—A small group of bulbous-rooted plants of the Lily order, mostly from the pacific coast of North America. The only species certainly in cultivation is *S. robustum*, a hardy plant 2 to 3 ft. in height, with massive spikes of closely packed creamy-white and fragrant flowers in August.

STEPHANANDRA.—Graceful shrubs allied to the Spiræas. They like a good loamy soil, well drained, but still moist, and are some of the most easily propagated of shrubs. Cuttings taken towards the end of the summer before the wood is too hard root readily; they can also be increased by division. When plants of *S. flexuosa* which have been growing long in one spot are removed, quite a little thicket of young plants will spring from the roots left in the ground.

S. FLEXUOSA.—Although the earlier introduced of the two species, this has not long been in cultivation. It grows 3 ft. to 4 ft. high with us, but will probably get to be quite twice as high in more favourable climates. It forms a thick bush, suckering freely from the base like a Spiræa or a Kerria, and, like those plants, is improved by an occasional thinning. It is chiefly for its graceful habit and prettily cut foliage that it is grown, though the soft red of the young shoots in spring and the crimson-purple leaf tints in autumn, render it attractive through a long season. Its branches are thin, wiry, and crooked, coming in June, the flowers crowded on short branching panicles, small and greenish white. Japan and Corea. Syn., *Spiræa incisa*.

S. TANAKÆ.—From *S. flexuosa* this new species is readily distinguished by its coarser, more succulent growth and by its larger and less-divided leaves. The flowers are small, greenish, and scanty, but the autumn tints of well-grown plants are gorgeous, and the stems themselves take on a bright ruddiness which is retained all winter and makes a pretty feature at that season. Japan.

STERNBERGIA (*Lily-of-the-Field*).—Charming hardy bulbs with flowers of firm texture, better able to withstand bad weather than the Autumn Crocus, and thus better adapted for our climate. One source of failure with Sternbergias is moving them at the wrong time or before growth has fully developed. What they want is thorough ripening in summer and a slight protection, such as dry litter, during the winter. In sandy loams, and fully exposed to the sun, the bulbs will get the necessary ripening without being lifted, and the best plan is to leave them undisturbed until of flowering size. We have them thriving on stiff soils and blooming freely for many years in the same border.

S. colchiciflora.—This is an old garden plant, having been cultivated by Clusius and Parkinson. Its fragrant, pale yellow flowers come in autumn, perfuming, with a Jessamine-scent, the fields of the Crimea about the Bosphorus. The leaves are narrow, and come with the fruit in spring. The plants grow in dry exposed tracts of the Caucasus and Crimea, and are hardy in this country. *S. dalmatica* and *S. pulchella* are varieties.

S. Fischeriana is nearly allied, hardy, and has the habit of *S. lutea*, from which it differs chiefly in flowering in spring instead of autumn, and by its stalked ovary and capsule. Caucasus.

S. lutea.—This is the great autumn Daffodil of Parkinson, and a very pretty hardy plant, best on warm gravelly soils. The absence of seed on this bulb in a cultivated state is remarkable, seeing how plentiful it is and how freely it flowers in many parts of the country. The bulbs must be large before they flower freely, and imported bulbs being small, they take a year or two to reach flowering size. *S. lutea* has five or six leaves, each about half an inch broad, about a foot long, appearing with the flowers in autumn. It is supposed by some writers to be the Lily of Scripture, as it grows abundantly in the vales in Palestine. *S. angustifolia* appears to be a narrow-leaved form, very free-flowering, and more vigorous than *S. lutea*.

S. græca, from the mountains of

Greece, has very narrow leaves and broad perianth segments.

S. sicula is a form with narrower leaves and segments than the type, while the Cretan variety has considerably larger flowers.

S. macrantha.—This is a really handsome species, the leaves blunt and slightly glaucous, about an inch broad when fully developed about midsummer; flowers bright yellow in autumn. Asia Minor.

The rarest of these Sternbergias should have a place in our bulb borders, in gritty

Sternbergia lutea.

or open soil, associated with the rarer Narcissi and choice hardy bulbs. Their effect in masses near the shelter of walls is very fine in autumn.

STIPA (*Feather Grass*).—A large group of grasses, the prettiest of which is *S. pennata*. In bundles its beauty almost equals that of the tail of a bird of paradise. *S. pennata* is hardly to be distinguished from a strong stiff tuft of common Grass, except in May and June, when the tuft is surmounted by numerous gracefully-arching flower-stems, nearly 2 ft. high, and covered with long, twisted, feathery spikes. It loves a deep sandy loam, and may be used either in an isolated position or in groups of small plants, but its flowers are too short-lived except for borders. Division or seed. *S. calamagrostis*, *S. capillata*, and *S. elegantissima* are other good Feather Grasses.

STOKESIA.—*S. cyanea* is a handsome hardy American perennial, 18 to 24 in. high,

and of stout free growth, with, in September, large showy blue flowers somewhat similar to those of a China Aster. It grows freely in good warm soils, but from its late season it does not always bloom well. In damp localities place a hand-light over the plants at the flowering season, but so arranged as to allow free admission of air. *S. cyanea* is useful for the conservatory in autumn and winter. Division in spring. Insert the slips in a warm border or a frame, in sharp sandy soil, and as they begin to grow, transplant them. A little sand and leaf-mould should be mixed with the soil. There is a garden variety, *præcox*, which flowers earlier than its parent.

STRATIOTES (*Water Soldier*).—*S. aloides* is an interesting native water-plant with a compact vasiform tuft of leaves, from the centre of which arises in summer a spike of unattractive blossoms. In artificial lakes or ponds it will take care of itself, increasing by side-shoots from the base of the leaves.

STRUTHIOPTERIS (*Ostrich Fern*).—Tall, handsome, and vigorous hardy ferns with fronds of two kinds, fertile and sterile, the former being always grouped in the centre of the plant, and the latter forming a cordon round them. *Struthiopteris* can be increased by division of the creeping underground stems, which run for some distance round well-established plants. Good well-drained peat and loam is necessary, and group the plants in bold slightly-sheltered spots, where their noble appearance will tell. As they are deciduous, plant among and around them, for winter effect, some *Polystichums* or other robust evergreen Ferns, while, for effect at other seasons, some of our finer Lilies are good. The kinds suited for gardens are *S. germanica* and *S. pennsylvanica*. The former is one of the best hardy Ferns, with fronds nearly 3 ft. long, and well suited for shady slopes, cascades, grottoes, the rough rock-garden, and the margins of streams and pieces of water; it will thrive either in sun or shade. *S. pennsylvanica* closely resembles it, but has narrow fertile fronds. Both kinds will grace the garden, and should not be confined to the fernery.

STUARTIA.—Though these beautiful shrubs flower at a time when the shrub-garden is past its best, they are seldom planted. They are unfitted for bleak northern districts and for cold soils, but there are many gardens in the south where they would do well. The flowers, like a large single Camellia, are beautiful, and so abundant that the trees stand outlined in

white. They need no care beyond mulching in light soils and during dry seasons, and the removal at intervals of weak and exhausted wood. To do well they should stand in moist ground with roots protected from direct sunlight; this is better than shade, for they need all the sun they can get to ripen the wood. Nothing so soon spoils a *Stuartia* as fighting with hungry neighbours: they should therefore be in the open and yet sheltered, for bleak wind does more harm than frost. The most vigorous kind is the Japanese *Stuartia Pseudo-camellia*, and it is also the finest in its autumn tints. Though far less vigorous and hardy, the flowers of *S. virginica* with their contrast of white and crimson, are chastely beautiful, and *S. pentagyna* is also worth growing. Peat soil is often recommended for these, but is not necessary in gardens of good free loam or alluvial grit, and they will even flower well in some poor soils. A damp place and a moist atmosphere are favourable, as is proved by the fine growth of *Stuartias* in a wet season, and the fact that they invariably choose stream-sides and wet places in their own land. Increase is difficult and the young plants of slow growth. The lower branches may be layered, or cuttings of the nearly ripe wood, taken with a heel towards the end of summer, and plunged in sandy soil under a bell-glass, will slowly root.

There are five species of *Stuartia*, but only three are in cultivation.

S. pentagyna (*Shell Flower*).—The best of the American kinds, reaching a height of 15 to 20 ft., and freely branched from the base upwards. The flowers are fragrant, 3 to 4 ins. across, creamy-white with yellow anthers, coming in July and August for about three weeks. In all stages the flowers are beautiful, almost translucent in their purity, tinged with pink upon the outside while in bud, and finely fringed at the edges. The leaves are oval, 5 to 6 ins. long, rounded at the base, and finely toothed. The plant blooms very freely when well-established.

S. Pseudo-camellia.—A lovely flowering tree from the mountains of Japan, where it reaches a height of 50 ft. The white flowers are 2 to 3 ins. across with a tuft of yellow anthers, but they look smaller than this because they remain half-closed like an *Abutilon* and never open flat as in other *Stuartias*. The leaves are thick like those of a *Camellia*, smooth, bright green with often a reddish tinge, and finely coloured with gold and crimson in the autumn. A plant now 12 ft. high has proved perfectly hardy for years past at Coombe Wood Nursery, and flowers freely each year in July. Syn., *S. japonica*.

S. virginica.—From the warmer states of North America, where it grows in swamps, on

river banks, and in shady places. At its best it is one of the most beautiful of flowering shrubs, though more sensitive to cold and never so vigorous as the other kinds, rarely exceeding 10 ft. in height and with a looser habit of growth. In this kind the flowers are finest of all but less abundant, measuring 4 ins. across, with pure white shell-like petals, sometimes more or less streaked with crimson towards the base, and with red-stamens in the centre. Their season is variable, for while in warm places the first flowers open in May, elsewhere they wait for June or July.

STYLOPHORUM.—*S. diphyllum* is a handsome Poppywort, which somewhat resembles Celandine (*Chelidonium majus*), but is a much finer plant. Its foliage is grayish, and its large bright yellow flowers are freely produced in early summer. It is best in moist places and in partial shade, where its roots can ramble in good loose soil. Its height varies from 6 in. in a dry place to nearly 2 ft. in moist and shady places. N. America.

STYRAX.—Ornamental trees and shrubs belonging mostly to warm countries, but a few of the hardier kinds succeed fairly well with us, especially against warm walls and in light moist soils. They are summer-leaving, of neat habit, and with abundant flowers like little white bells depending from the under-side of the branches, after the manner of the Snowdrop Tree, to which they are related. The commonest and best kind is *S. japonicum*, but there are others worth growing though seldom planted. Increase by layers, seed, and cuttings of the soft wood in heat, or of partly-ripened shoots under a handlight in the open air, later in summer. Peat is not necessary for these plants where the natural soil is good and free, but heavy soils are against them and they dislike chalk and much lime. The following kinds are in cultivation:—

S. AMERICANUM.—Though long known among us, the American species have not been a great success in Britain, however good where they do well. Even in America the Japanese species are now preferred, as being more easily grown. *S. americanum*, a shrub of 6 to 8 ft., grows in wet places in South Carolina and Virginia, with nodding white flowers from April into June. *S. californicum*, a shrub of 5 to 8 ft. from the mountains of California, bears larger flowers, but is tender with us. *S. pulverulentum* from the southern states, is a little shrub coming very near *americanum*, but with downy leaves and only about half its height.

S. GRANDIFOLIUM.—A pretty shrub of 8 to 10 ft. high and the best of the American kinds for this country. To do well it needs a warm and rather dry place even in our southern gardens, to ripen the shoots in autumn, without which the flowers are scanty and the plant

liable to injury. The leaves are 3 to 6 ins. long, tapering to a point and hairy on the underside, and when freely borne during early summer the fragrant white flowers render this a truly beautiful plant. Mountains of Georgia and Carolina.

S. JAPONICUM.—The most useful and handsome of the group, hardy almost anywhere in the south, but tender in the midlands unless grown upon a sheltered wall and protected in sharp weather. The habit of the plant is characteristic, the branches spreading flatly into slender much-branched shoots, covered with ovate glossy leaves and myriads of little white bells dangling clear of the leaves upon their long stems, which spring from the under-side of the branches. These are followed so freely by little green seed-pods as to give a quaint appearance far into the autumn. The plant grows slowly at first and does not like moving, but is otherwise of easy culture, and begins to flower when small. In Japan it is a tree 40 ft. high, but so far we have none approaching this height. Another Japanese kind, *S. serrulatum*, comes very near this, but is less hardy. There is a pretty form of *S. japonicum* in which the buds are flushed with rose-colour.

S. OBASSIA is another Japanese plant, with large broadly-oval leaves sometimes 8 ins. across, and racemes of fragrant white flowers like a Snowdrop and opening a little earlier than in *S. japonicum*. Being of difficult increase it has remained scarce, although hardy in sheltered places, two fine plants having grown for years without injury at Coombe Wood. In Japan it is 30 ft. high, with bold leaf effect even when out of flower.

S. OFFICINALE.—A pretty shrub from the region of the Mediterranean, measuring 12 to 15 ft. high, with sweet flowers like the Orange, opening as little clusters of 5 or 6 in May or June. It needs the same care as *S. japonicum*, flowering and fruiting freely against a sheltered wall, but it is not so showy.

SWERTIA (*Marsh Swertia*).—*S. perennis* has slender erect stems, 1 to 3 ft. high, terminated by erect spikes of flowers, which are grayish-purple spotted with black, and produced in summer. It is not showy, but interesting for the bog-garden, or may be naturalised in damp peaty soil. Seed or division.

SYMPHORICARPUS (*Snowberry*).—The common Snowberry (*S. racemosus*) is a familiar shrub, but we would exclude it from a choice selection; also the Wolf Berry (*S. occidentalis*); and *S. vulgaris*, the Coral Berry, or Indian Currant, which has small purplish berries in clusters. The flowers of these kinds are not showy, their growth is coarse, and they smother choicer things. Their chief value is for undergrowth in woods, or for ornamental covert (as birds eat the berries), and they will flourish anywhere. If admitted to

the garden the clumps should be cut to the ground every spring to encourage young free-flowering shoots, and the roots trimmed deeply with a spade to prevent their spreading unduly. A pretty variety of *S. vulgaris* has its foliage variegated with green and yellow. It is now common, and, being hardy and vigorous, is one of the best of evergreen variegated shrubs.

SYMPHYANDRA.—Campanula-like plants, *S. pendula* being a showy perennial from the rocky parts of the Caucasus, with branched pendulous stems and large cream-coloured bell flowers, almost hidden in the leaves. It is hardy, and rarely more than 1 ft. in height. It does well with other Bell-flowers, but is best seen at the level of the eye in the rock-garden; it is also a good border plant in ordinary garden soil. Seed. The Austrian *S. Wanneri* rarely exceeds 6 in. in height, with deep mauve flowers borne freely on branching racemes. Like *S. pendula*, it prefers a light, warm, rich soil and a partially-shady situation. *S. Hofmanni* from Bosnia is considerably taller than the others, with large white flowers and hairy leaves. All these plants are short-lived, and duplicates should be kept at hand.

SYMPHYTUM (*Comfrey*).—These Borage-worts are bold, but somewhat coarse plants, suited for naturalising in open sunny places, since, when well grown in masses their foliage has a fine effect. The largest and best kinds for the wild garden are *S. asperrimum* and *S. caucasicum*, particularly *aureum*, a golden-leaved form of the first-named. The Bohemian Comfrey (*S. bohemicum*) is a handsome perennial, about 1 ft. high, with in early summer erect twin racemes of brilliant reddish-purple flowers. The variegated-leaved form of the common Comfrey (*S. officinale*) has striking variegation, effective in a garden of hardy flowers, and thriving in any soil.

SYRINGA (*Lilac*).—Where these lovely shrubs are well done they afford beautiful effects in the home landscape as well as charm in the hand and fragrance. To no family has the harm done by grafting been more injurious than to the Lilac. Everywhere grafted on Privet for the sake of cheapness and ease of increase, it has proved an alliance that they resent by dying. I lost ten years through a grafted collection; instead of growing up the plants grew down and slowly perished. And so it has been in many gardens where Lilacs have been put in the shrubberies but rarely show their fine value, though so many superb varieties have been raised of

recent years. In our country the best results from Lilacs are often seen about farm-houses and in small gardens where the Persian Lilac on its own roots, and perhaps a few common kinds also, are grown.

What we have to secure is the full value of the varieties that we now have, with their long racemes beautiful in colour if only well grown. To effect this the first thing is to insist that none shall be grafted on the Privet. As to arrangement, the best way is to group our Lilacs in the sunlight: they are too often put away among mixed shrubs where they deteriorate owing to crowding and other causes. No plants more deserve a clear space in the open sun, where they can ripen their wood and be free from the encroachments of coarser neighbours.

PRUNING.—Lilacs are too often neglected, though few shrubs are better worth pruning, without which they become a tangled mass of shoots and we do not get the fine full thyrses of bloom that are seen in French gardens. On fading, the flowers should be removed, and the small and weak shoots also if the plants are too "stalky," the aim being to secure healthy and open growth during summer. Cutting back in winter is wrong, because the flowers are produced on the wood of the previous year, and cutting back to a stiff ugly outline does not deserve the name of pruning. To prune is to help the natural shape of the bush and let the light into it, so that it can concentrate its energy on a number of strong flowering-shoots.

SOIL.—We read sometimes that the Lilac will do in any soil, and so it may in districts where the soil is warm and good, as in much of Ireland where the Rouen Lilac (commonly called the Persian) makes such lovely trees. In certain heavy soils Lilacs are slow in growth and do not ripen their wood well or flower so freely as in soils of an open nature. If we are not so fortunate as to possess this open soil we must make it so if the Lilacs are to do well. Cold places in valleys are not so good for them, especially where heavy soil occurs, because being early, the bloom is often caught by late frosts. Therefore, in addition to warm soil we should try and secure positions not too low down and somewhat sheltered. Coming from a warmer and sunnier land than our own—Transylvania and the regions near—very cold soils and situations are against success.

INCREASE.—Lilacs grow freely from seed, if sown as soon as ripe. Cuttings are best made from the young wood in

early summer, struck in sand on a hotbed where they root in six to eight weeks. Layering should be done in early autumn, or suckers may be taken in spring and root readily. When once we have the Lilac on its own roots, increase from suckers is easier than the common nursery way, though some kinds sucker less freely than others. Layers are the best for high-class work. As to grafting, though the common Lilac is far better than the fatal and ugly Privet, it is not so good as "own roots," for there is always the chance of finding flowers of a choice variety mixed up with those of the common kind. Beside this, the gardener has no time for the labour of watching and removing suckers, which in a rational system of propagation do not trouble him.

THE BEST KINDS.—Though some of the old varieties were beautiful—even the common Lilac when well-grown—to have a good Lilac-time it is essential to have the newer varieties raised in France and remarkable for their size, and range of colour. The best are :—

SINGLES. White—*Marie Legraye*, *Princess Alexandra*, *Frau Dammann*, *Madame Moser*, *alba pyramidalis*. Pink—*Dr. Regel*, *Eckenhalm*, *Fürst Lichtenstein*, *Schermerhornii*, *Jacques Callot*, and *Lovanensis*. Dark flowers—*Dr. Lindley*, *Ludwig Späth*, *Aline Mocqueris*, *Tous-saint L'Ouverture*, *Volcan*, *Philémon*, *Président Massart*.

DOUBLES. White—*Madame Lemoine*, *Madame Casimir Périer*, *Obélisque*, *Madame Abel Châtenay*. Lavender and blue—*Alphonse Lavallée*, *Président Grévy*, *Lamarck*, *Léon Simon*, *Monument Carnot*, *Condorcet*, *Doyen Keteleer*, *Guizot*, *Marc Micheli*. Dark shades—*Charles Joly*, *Colbert*, *Georges Bellair*, *La Tour d'Auvergne*, *Souvenir de Louis Thibaut*, *Maréchal de Bassompierre*. Rosy-lilac—*Madame Jules Finger*, *Rosea grandiflora*, and *Emile Lemoine*.

These double kinds have denser flower-clusters, and usually last longer than the single varieties. An indispensable Lilac is the small Persian (*S. persica*) which is distinct from the others, and, being dwarf and erect, is well suited for the outskirts of a group of Lilacs or a shrubbery. Its small flower-clusters are of a pale lilac, or nearly white. The pretty variety, with deeply-cut leaves (*laciniata*), must not be overlooked. The Rouen or Chinese Lilac (*S. chinensis*), also known as *S. dubia* and *S. rothomagensis*, is intermediate between the common Lilac and the Persian Lilac, and well worth grow-

ing. The large *S. Emodi*, from the Himalayas, is coarse in growth, and not remarkable for its pale purple flowers, coming later than the common Lilac. There is a variegated form. The Hungarian Lilac (*S. josikæa*) is a pretty shrub, different from other Lilacs. It reaches a height of nearly 6 ft., and bears erect spikes of small pale mauve flowers. *S. japonica*, known also as *S. amurensis* and *Ligustrina amurensis*, bears in summer large dense clusters of creamy-white flowers, which somewhat resemble those of the Japanese Privet. Though a native of Japan, it is suitable for English gardens, growing as large as a small tree and blooming after all the others in July. Other kinds that have come to us recently from the Far East are *S. villosa* from Japan, which also attains a large size with abundant purple flowers about the middle of June. *S. oblata* from China is the first of all Lilacs to bloom, with loose clusters of purple or white flowers, and large heart-shaped leaves of glossy green which turn a wine-red colour in autumn. *S. pekinensis*, from the mountains of North China, belongs to the Privet-like group represented by *S. japonica*, and is of graceful form though not quite so large a tree. It is very hardy and keeps its handsome foliage till late in autumn, but does not flower freely in a young state. There is a pretty variety of this, with pendulous slender branches. Interesting as these species are from a botanical point of view, little is yet known of their beauty in our country, and such of them as have been tried have less beauty than the finer hybrid Lilacs.

The species of syringa are *amurensis*, Manchoo; *chinensis*, China; *Emodi*, N. India; *josikæa*, Transylvania; *oblata*, China; *persica*, Persia, Caucasus; *rotundifolia*, Manchoo; *villosa*, China; *vulgaris*, Transsylvania; *pekinensis* and *pubescens*, N. China; *velutina*, China; *yunnanensis*, W. China.

TAGETES.—The beautiful half-hardy French and African Marigolds have long been favourite garden flowers. There are also perennial kinds, but they are too tender for out of doors, though one or two, such as *T. lucida* and *T. Parryi* are desirable. The annual kinds are from Mexico, and the best are :—

T. erecta (*African Marigold*) easily known by its stiff, erect habit, and massive double yellow blooms. A peculiarity of the African Marigold is that one-third of the seeds saved from the finest double flowers always produce single ones, while the rest are invariably double. The deep orange and pale yellow forms are pretty planted together. Sow seed under glass in April, for then, even without

bottom-heat, they will start freely. When the young plants are 3 in. in height, dibble them out again either into a frame or under hand-lights to keep away slugs. Where large flowers are desired, the soil must be rich, and the buds thinned out.

T. patula (*French Marigold*) is a charming summer annual of more varied colour, there being many varieties striped, mottled, and coloured with yellow, orange, chestnut, and other hues. The older forms are coarse, and in good soil make huge plants, with scores of flowers of medium size, and if good, are double, rounded, sometimes partly reflexed, and invariably pretty. The striped forms can be kept true only by growing them apart, but even in the best strains the flowers vary. Sometimes one plant has striped blooms, and at other times self-yellow or maroon flowers. The unpleasant odour unfits them for cutting. There are now compact named forms of the French Marigold, not exceeding 9 in. in height, and remarkably free in their brilliant single or double flowers. These make effective masses and pretty edgings for groups of the taller kinds. Any good seed list will give the names of the good strains. Well harden the seedlings before planting, and plant them singly, not in clumps.

T. signata is allied to the French Marigold, but has much smaller flowers, either double or single. It was formerly largely used for summer bedding, its elegantly-cut leaves being perhaps its most pleasing feature. As it needs a little starving to induce it to bloom freely in beds and masses, the soil must be rather poor. Like all other Marigolds, it stands drought well. *T. s. pumila* is a dwarf form.

TAMARIX (*Tamarisk*).—Graceful hardy shrubs, remarkably distinct in their feathery growth and pale pink flowers, produced in succession by the various kinds from May to October. No other woody plants we can grow in the open air give the same fine effect, yet they are often neglected owing to our way of mixing things together without regard to soil, exposure, and position. Lost in the jumble of the shrubbery they never give good effect, and often perish outright from the encroachments of hungry neighbours, whereas grouped apart with free air and space, they are among the most charming of shrubs. For the seashore they have no equal, thriving in pure sand and shingle, their fine branches splitting up the wind and the heath-like foliage indifferent to the salt spray. But they are fully as beautiful inland, used with effect beside water,

where their roots serve to hold the soil, or on dry exposed banks where their feathery plumes toss in the wind. They are readily increased from soft cuttings rooted under glass, ripened cuttings which root in the open air, and even thick branches which often root like a willow if planted deeply while quite fresh. Seed is seldom used for increase, though it germinates readily in a cold frame and is freely produced by some kinds—at least in the south of Europe. We are richer in names than in distinct kinds, for the same shrubs in slightly differing forms have been named over and over again in nurseries, and some of the species run so closely together that even botanists are puzzled. The following kinds are distinct:—

T. chinensis is a recent introduction, and has been distributed from some nurseries as *T. japonica plumosa*. It is not quite so hardy as our native kind, though like it in many respects. It has very plumose branches, and is a most graceful shrub with pink flowers.

T. gallica (*French Tamarisk*).—Is found wild on the south-west coast of England, in France, and North Africa. It is a shrub 5 ft. to 10 ft. high, or in North Africa a tree 30 ft. high or more. The flowers are pale pink, and borne on short cylindrical spikes in summer. *T. anglica* is one of the forms of this species, which varies much in different parts of its area. *T. africana* and *T. algeriensis* are names that have been given to the African forms of this species.

T. hispida (*Kashgar T.*).—This species is from Central Asia, and is distinct, the foliage being of a bluish-green colour. “The leaves are very small and imbricated on the stem, and its inflorescences are of a rosy carmine, brighter than in other species in cultivation” (Lemoine). It flowers in autumn. *Syn.*, *T. kaschgarica*. A seedling form of this, *estivalis*, differs widely again from the parent, being taller and more vigorous in growth, with flowers from July, or a full two months earlier. It is also of easier increase and very desirable because of its season of flower.

T. Odessana is another new kind, with soft grey-green foliage and handsome spikes of large rosy-white flowers. South-east of Europe and Asia Minor. *Syn.*, *T. Pallassii*.

T. tetrandra is very like *T. gallica* in general appearance, but, as the name implies, it is distinguished by having four instead of five anthers. It is quite hardy, growing and flowering freely near London. The flowers are pinkish-white. Caucasus.

Myricaria germanica is very nearly allied to Tamarix, and often figures in nursery catalogues under the latter name. It differs in having ten stamens to each flower. The branches are erect, rather sturdier than in the true Tamarisks, and the leaves are of a pale glaucous hue, the flowers white or rosy in June. It is a native of various parts of Europe and Asia. W. J. B.

TANACETUM (*Tansy*).—An elegant variety of the common Tansy, *T. vulgare*, and much dwarfer in stature than it, is

in spring to give them room to suspend their graceful leaves, the plant looks much better than if the stems are crowded.

Group of Tamarisk. From a photograph by G. Champion.

the var. *crispum*. Its emerald-green leaves are smaller, and have a crisped appearance. It is quite hardy, will grow anywhere, and, if the shoots are thinned

The flowers should be pinched off before they open.

T. Herderi is a pretty plant for the rock-garden with silvery leaves on thick

forked stems, which rise a few inches from the surface. The bright yellow flowers have a good effect on the silvery foil. Similar in height and effect is *T. argenteum*, which makes a shrubby mass of silver rosettes and golden flowers. Division.

TAXODIUM (*Summer-leafing Cypress*).

—*T. distichum* is a beautiful and stately tree, attaining in its own country, Eastern America, Delaware to Florida, a maximum height of 150 ft. In our country it is of proved hardiness and excellence, though neglected since the advent of Californian and other half hardy conifers.

Taxodium distichum.

A native of swampy places, it is best planted in like situations in our country. From the roots of old trees in such situations curious excrescences arise in the shape of great growing knobs sometimes 3 or 4 ft. high and a foot through. A tree of such beauty and distinction should be grouped and massed wherever water enters into the home landscape, the fresh green of the leaves being a welcome gain. There is a pendulous form, but any other so-called varieties are better left alone. When planting, care should be taken to secure healthy young plants from seed only.

TAXUS (*Common Yew*).—This, one of the most beautiful of evergreen trees, has long been used in our flower-gardens, clipped and distorted in what is called “topiary” work. Evelyn is said to have introduced the practice with the Yew, but probably it originated with very old gardens, in which the Yew tree stood by the door or gate and had to be clipped if it was not to overshadow the house or garden. In such a case clipping was necessary, but in modern gardens clipping of a less profitable kind is often resorted to, so that the Yew is seldom seen in its stately grace. As a hedge its use in gardens is frequent and often good, but its misuse is evident in many of the great

gardens of the world, such as Versailles, where nothing is more ugly than the Yews cut hard against the sky-line, many of them distorted, diseased, and ugly from constant clipping for years. Their effect at Versailles is bad, either against the palace, the landscape, or the trees around. Although intimately connected with the garden, the Yew, being a gross feeder, should be kept as far as possible from the flower borders; indeed, in many cases hedges are used where walls would be better, for at least these do not rob the good soil near. It is more as shelter, and as a fine evergreen tree for distant groups, that the Yew is precious. As a shelter-belt there is perhaps no other tree so good in all stages of its life, being seldom injured, even when old, by wind and snow—as many evergreens are. A precious shelter from the north and east may be created round the choice garden in this way, but such lines should never be formed without good reason, and the trees should be allowed to grow naturally and not planted too thick. Delightful shaded bowers may be formed under old Yew trees, and alcoves and arches for seats under clipped Yews.

The Golden and variegated Yews form striking groups of colour, but are better held together in bold picturesque groups than dotted at regular intervals—a practice fatal to artistic effect. The Irish Yew, a plant of striking form, has been over-used by those who do not consider the effect of things on the landscape. I have seen houses with Irish Yews in all directions, destroying the good effect of other and far more beautiful trees, and the variety that should exist in every English garden. The variegated and other forms often come true from seed, but of these not one is half so precious as the wild or common Yew. The following is from a classification by the late Mr. William Paul:—

VARIETIES OF SPREADING HABIT.—*T. baccata*, common Yew. *T. b. fructuluteo* (yellow-berried Yew) is one of the most elegant; the fruit yellow instead of red; growth vigorous. *T. b. nigra* is a striking plant of bold upright growth; leaves bluish-green. It is effective in the landscape, forming a somewhat sombre, but massive tree. *T. b. procumbens* forms a spreading bush with bright green leaves, the plant having a reddish tint.

VARIETIES OF ERECT HABIT.—*T. b. fastigiata* (Irish Yew) is a plant of rigid growth, columnar in form; leaves dark green. Seeds of this variety produce for the most part the common Yew, but some

vary in form and tint. *T. b. cheshuntensis* is a graceful variety, of pyramidal growth, the leaves a glossy green. It is midway between the common and Irish Yew, but less formal than the latter and grows twice as fast. *T. b. pyramidalis* resembles *cheshuntensis* in form; but the leaves are broader, and the bark of the young shoots is reddish. *T. b. nidpath-*

a single tree on the lawn, for planting in masses, or for a dwarf hedge. *T. b. erecta* is similar, but of larger growth, with smaller leaves. *T. b. erecta Crowderii* is of compact pyramidal habit and more regular growth, but has smaller branches, and will probably not grow so large. *T. b. ericoides (empetrifolia)* is a neat plant of dwarf growth, closely set with

The Irish Yew. One of the forms of the common Yew.

ensis (Nidpath Yew) resembles *cheshuntensis*, but is of stiffer growth, being columnar rather than pyramidal, with a disposition to spread at the top. *T. b. stricta* is similar, but has smaller and paler green leaves, is almost as erect as the Irish Yew, and forms a dense tree. *T. b. nana* is a neat dwarf plant of compact upright growth, with leaves of a dark and more glossy green than the common Yew. It is equally suitable for

branches; the leaves small and the bark reddish.

VARIETIES OF WEEPING HABIT.—

T. b. Dovastonii is a picturesque weeping variety, the branches shooting horizontally and drooping at their points; the foliage is ample and of a dull dark green. *T. b. Jacksonii* is a distinct weeping variety, with small light green curled leaves. *T. b. recurvata* is a handsome variety, with pale green leaves curled in the way of

Picea nobilis, and a diffusely drooping habit.

VARIETIES WITH VARIEGATED FOLIAGE.—*T. b. variegata* (Golden Yew) is a plant of great beauty for planting in masses for the lighting up of a landscape. It is said, on good authority, that the Golden Yew is a male plant, but there are at least two forms of it, too close to be easily distinguished; moreover, the seedlings retain their variegation, though differing slightly among themselves. *T. b. elegantissima* is paler and of more erect and uniform growth. Both these, if grown in the shade, quickly become green, but regain their golden appearance with exposure. *T. b. fastigiata variegata* (variegated Irish Yew) is a sport from the Irish Yew, with occasional silver leaves; of slow growth, and hardly striking enough to become a general favourite. *T. b. astigiata variegata* (Handsworth variety) is one of the best variegated Yews, growing freely and standing the sun well.

TCHIHATCHEWIA.—This beautiful alpine plant, *T. isatidea*, is a native of

Tchihatchewia isatidea.

Asia Minor, hardy, and not particular as to soil or place, and thrives on the rock-garden. From a tuft of spatulate oblong leaves which is formed in the first year, appear the flowers in the second season; the leaves are dark green, thickly beset with shining silky hairs, from

amongst which rise the thumb-thick flower-stalks showing a combined thyrus of Syringa-like bright rosy lilac flowers, fragrant like vanilla. The bunch is over a foot across, and in great beauty throughout the month of May.

TECOMA (*Trumpet Creeper*).—Handsome and distinct climbing shrubs of much beauty of habit as well as of flower. They are not so often seen in our country as abroad, although well fitted for the southern and warmer parts, and, in the case of one species and its varieties, hardy, flowering well against walls far north of London. *Syn.*, *Bignonia*.

T. RADICANS.—A native of North America, and an old garden favourite. Its long, wiry stems send out roots like Ivy, which cling to walls or any support. There is a variety named *major*, with larger flowers of a paler

Tecoma radicans.

tint and more robust foliage. A strong plant will run up a wall 40 ft. high. It is useful also for covering arbours and pergolas. It is distinguished at the first glance from *T. grandiflora* by its more slender branches, smaller and hairy leaf, and its smaller flowers arranged in terminal corymbs. It is also hardier and has several varieties:—*Flava speciosa*, flowers long, orange-red; leaves distinct by their small, much indented folioles, with long narrow points. This form is dwarfer than the type and can be grown as a shrub. *Grandiflora atropurpurea*, flowers deep red-purple and large. A vigorous shrub, requiring space to flower well. *Princei coccinea* comes between these and is perhaps a hybrid. The flowers are large, of a fine cochineal-red, and in large panicles. *T. hybrida*, this form, a cross between *T. grandiflora* and *T. radicans*, has small, hairy leaves and handsome orange flowers in panicles.

T. GRANDIFLORA.—This is a Chinese plant, not so hardy as the American Trumpet Creeper, but more showy, with drooping orange-scarlet flowers in large clusters. Its foliage, too, is larger, but to show its vigour and beauty the plant must have light soil and a warm wall.

The following are varieties :—*Aurantia*, which forms a rounded bush if let alone, has fine foliage of a deep, shining green, with ribs covered with down. The flowers are orange-yellow and small for *T. grandiflora*, the lobes narrower and less open. In *Mme. Galen*, the handsomest of the race, the flowers are large, of a fine salmon-red, orange-red outside.

Tecoma grandiflora.

Rubra, flowers a fine deep red, leaves hairy on the lower side, a distinct and pretty variety. *Sanguinea Thunbergi* is probably only a wild form of its parent, from which it is distinguished by its highly coloured flowers with tubes shorter and lobes much reflexed. The branches and leaves are quite smooth. It is a vigorous, free-flowering shrub.

TECOPHYLÆA.—*T. cyanocrocus* is a beautiful spring-flowering bulbous plant from Chili, of dwarf growth, and bearing large open deep blue flowers. The variety *Leichtlini* has a white centre and a sweet perfume. This variety is not thoroughly hardy, except in very mild localities, but it succeeds well under frame-culture. About August, bulbs of flowering size should be planted 3 in. deep, in rich soil in a frame. If potted, a depth of 2 in. is sufficient, and plunge the pots. They should be kept cool, and have as much air as possible. The lights must be taken off in February and March, when the weather becomes warm, and the pots should remain exposed until the flowers begin to expand, when they may be transferred to the greenhouse.

Telekia. See BUPTHALMUM.

TELLIMA.—Perennials of the Saxifrage order, from N. America, resembling *Heucheras*. *T. grandiflora* has leaves prettily coloured and veined like *Heuchera Richardsoni*, and spikes of small yellowish bell-like flowers, thriving in any soil. Division.

TEUCRIUM (*Germander*).—A group of low shrubs or perennial herbs of variable habit, with neat dwarf growth and lipped flowers of varied colour. Not many are of any garden value. *T. Chamædrys* (Wall Germander) is 6 to

10 in. high, with shining leaves and reddish-purple flowers in summer. It is found throughout Europe on walls and rocks, and is suitable for borders and naturalisation on ruins, stony banks, etc., in any light soil, whilst as an edging plant it is useful.

T. fruticans is a pretty shrub from the south of Europe, with white stems clothed with green leaves silvery with down upon the under side, and pale blue flowers with long protruding stamens. Though mostly grown under glass, this is hardy in the milder parts of Britain, thriving in light dry soils, with a sunny exposure and shelter from cold winds. As a dwarf shrub for the rock-garden it is distinct and pleasing: planted against a wall or in good soil near the sea, it grows several feet high and needs occasional trimming into shape. Increases readily from cuttings.

T. Marum (*Cat Thyme*) has somewhat the habit of the common Thyme, with bright red flowers in summer. Coming from Spain, it is likely to prove hardy only in the southern parts of these islands; then only on ruins, old walls, or in dry chinks in chalk or gravel pits. If planted out the soil should be brick rubbish, with sand and a little poor dry loam, and it should be placed where cats cannot destroy it. Cuttings.

T. montanum.—A pretty free-flowering rock-plant, with numerous pale yellow blossoms on dwarf dense carpets of leaves that cling closely to the stones. This little shrub grows without trouble in a dry place, in rather poor soil.

T. Polium (*Poly Germander*) is a curious dwarf whitish herb, 3 to 5 in. high, with small pale yellow flowers densely covered with short yellow down in June and July. It is suited for sunny spots in the rock-garden, and for light free soil, but is only hardy in southern gardens and in sheltered nooks of the rock-garden. Seed, cuttings, and division.

T. pyrenaicum (*Pyrenean Germander*) is a dwarf hardy perennial, with trailing stems 3 to 7 in. high, and purplish and white flowers in dense terminal clusters. The leaves, branches, and stem are thickly covered with soft silvery down. It is suitable for the rock-garden and for borders.

T. purpureum is a quaint, rigid, evergreen dwarf bush, 6 to 9 in. high, its erect twigs, studded with bright rosy purple flowers, giving a bit of good colour late in the season. Seed, cuttings, or division. *T. hyrcanicum*, *T. lusitanicum*, *T. orientale*, and *T. multiflorum* are also noteworthy.

THALIA.—*T. dealbata* is one of the

most stately of water-side plants. Its glaucous foliage and elegant panicles of purple flowers are welcome along the margins of shallow ponds or streams, and it is hardy in sheltered places. It is best grown in pots or tubs pierced with holes, in a mixture of stiff peat and clayey soil, and river mud and sand. The plant thrives only in warm places in the southern counties, where alone it should be planted out. S. Carolina. Division.

THALICTRUM (*Meadow Rue*). — Perennial herbs with elegant foliage, but

high, with graceful foliage, and abundance of yellowish cream-coloured flowers. It is hardy in a deep peat soil. S. Europe. Beside these dwarf kinds there are about two dozen other species, ranging from 3 to 6 ft. in height. There is a great sameness among them, as all have finely-cut foliage. A good kind with fern-like foliage is *T. aquilegifolium*, which is about 4 ft. high, and grows vigorously in any soil. There are two or three varieties of it, one (*atropurpureum*) with dark purplish stems and leaves,

not showy flowers. A few of the smaller species rival in delicacy of form and colour some of the charming Maiden-hair Ferns, and may be associated with flowering plants, or those of fine foliage. *T. anemonoides* (Rue Anemone) is usually only a few inches high, its white flowers being nearly 1 in. in diameter, and open in April and May. It is best suited for the rock-garden in deep moist soil and partial shade. The double variety may be preferred to the type, and there is also a pretty form with pale rosy sepals. N. America. *T. minus* forms compact slightly glaucous symmetrical tufts, 12 to 18 in. high. May be grown in any soil, but the slender flower-stems, which appear in May and June, should be pinched off. This bushy little tuft resembles the Maidenhair Fern, and its leaves are just as pretty for mixing with cut flowers, and last much longer. The plants also look well isolated, in large tufts in borders or as an edging. Division. *T. adiantifolium* is similar. *T. tuberosum* is about 9 in.

Thalicttrum aquilegifolium.

and a second in which they are golden.

Kinds less well-known but quite worth growing are *T. Chelidonii* from the Himalayas, with charming pale lilac flowers and greyish-green foliage. *T. Delavayi* comes near this, with larger flowers of a

rosy-violet colour and a very dwarf habit. *T. Fendleri* from the Rocky Mountains of N. America, is of nearly the same character, with choice fern-like foliage and pale purple flowers. The taller sorts are in general less desirable, but two good ones are *T. glaucum* from the South of Europe, growing six feet high in moist rich soil, with grey-green finely-cut leaves and feathery heads of pale yellow flowers; and *T. polygamum* from the western United States, which grows even taller in damp places, with fine spreading clusters of white flowers in July. There is a prettily variegated garden form of the first named.

All the *Thalictrums* do well naturalised, and are readily increased from seed or careful division in early spring.

THERMOPSIS.—Perennials, 2 to 6 ft. high, slender in growth, and with long terminal spikes of attractive yellow Lupine-like flowers. *T. montana* is of graceful growth, and as it flowers at the same time it may be associated with the perennial Lupins and other border plants of the season. It grows best in good soil in an open situation, and is a native of Western North America. *T. rhombifolia* is dwarfer and with rounded leaflets, growing well even in the driest places. *T. fabacea* comes very near *T. montana* and has been confused with it, but it comes from the north of Asia; it is of fine habit and very free-blooming. A scarce but good kind is *T. caroliniana*, which grows 6 ft. high in rich moist soil and blooms in July and August when all the rest have done. For the back of the border or for massing in moist places, this is a truly handsome plant. *T. barbata* is a beautiful Himalayan species with purple flowers. Some of these plants spread freely at the root and may be increased by division, but none of them like disturbance, and the better way is from seeds, which, however, unless quite fresh are slow to germinate.

THLADIANTHA.—*T. dubia* is a handsome creeping perennial of the Gourd family, from N. China and India, with long climbing stems bearing many bright yellow bell-shaped flowers.

All the flowers on a plant are either male or female, so that unless both sexes are planted no fruit is produced. When the female flowers are hand-fertilised they set freely, and the egg-shaped fruits $2\frac{1}{2}$ ins. long are exceedingly handsome, green at first, changing to a bright scarlet. The pale green foliage is handsome and the stems run to a length of many feet from a tuberous root, which can be lifted in the

autumn after the plant has died down. It is likely to be hardy, however, over a great part of Britain, in light sandy soil, and in a sunny place such as the foot of a wall, where the roots are dry in winter and the plants find ready support when in growth. Their beauty is perhaps nowhere better seen than in the Cambridge Botanic Garden, where plants fruit freely every season on an east wall.

T. Olivieri is a new kind from N. China, hardy and vigorous, making shoots 30 ft. long in the season. The rounded leaves are about 8 ins. across, carried on long stalks. Clusters of yellow bell-shaped flowers an inch across and 30 to 35 in number appear from the leaf-axils from July to September, rendering this a truly handsome plant, especially suited to sun-scorched walls or banks.

THLASPI.—Annual or perennial herbs of slight importance. *T. latifolium* is a dwarf vigorous perennial from the Caucasus, 6 to 12 in. high, with large root-leaves, and flowers something like those of *Arabis albida*, but larger. Suitable for borders, the spring garden, beds, and naturalising with the dwarfer flowers of spring and early summer in ordinary garden soil. Division and seed. *Syn.*, *Iberidella*.

THUNBERGIA.—*T. alata* is a beautiful half-hardy annual, common in green-houses, an elegant dwarf climber of the easiest culture, and in summer valuable for draping dwarf trellises. The flowers vary in colour: *alba* is pure white with a dark eye; *aurantiaca*, bright orange; *Fryeri*, orange with a white eye; *Doddsi* has variegated foliage; and there are others with yellow and sulphur flowers. The plants grow 4 to 5 ft. high, and from July till October their slender stems are covered with bloom. Seeds should be sown in heat in early spring, and the seedlings potted separately when large enough. In May plant them out in good light soil.

THUYA (*Arbor-vitæ*).—Evergreen cone-bearing trees, some of much beauty, but the group is represented in gardens by numbers of worthless shrubs and mean trees; happily, the species are not so numerous as they seem from the many names that have been given to their mostly ugly varieties.

T. DOLOBRATA (*Japanese Arbor-vitæ*).—A distinct and beautiful evergreen tree, perhaps the most graceful of the group, fine in colour and very hardy. Fortunately this tree seems less ready than most to sport into the worthless dwarf and variegated forms so much in vogue with nurserymen. The tree is said to attain its finest stature in mountain woods in Japan, and to grow well under other

trees, and it should be worth trying in like circumstances in our country. It comes very freely from layers, in fact, the lower branches of the trees root themselves freely, and these over facile ways of increase make it all the more necessary that we should get healthy seedling trees, as suckers take bushy rather than tree form. Syn., *Thuyopsis*.

T. GIGANTEA (*Giant Arbor-vitæ*).—A tall and noble tree, fine in stature and form, hardy and healthy in our country, thriving in ordinary soils, and a free and rapid grower, even without the special attention such conifers often receive. It attains in its own country a maximum height of 150 ft., and its wood is fine-grained and very useful. N. W. America, finest on the Columbia river. Syn., *T. Lobbi*, *T. Craigiana*, *T. menziesii*.

T. JAPONICA (*Standish's Arbor-vitæ*).—A graceful evergreen tree of medium size, attaining a height of over 50 ft., with branches of a slender pendulous character, of a fresh green colour, and a native of the mountains of central Japan. It was introduced by Fortune, and sent out by the late John Standish of Ascot, but has not yet been much grown. The form usually seen is said not to be the true wild tree—a reason for getting seed from Japanese sources. Happily this has not yet, like so many others, sported into a mass of varieties. Syn., *Thuyopsis Standishi*.

T. OCCIDENTALE (*Western Arbor-vitæ*).—A rather poor hardy evergreen tree which has varied much in colour and foliage and form, ponderous Latin names having been applied to worthless varieties, of which over twenty are given in some catalogues. It is sometimes used to get shelter fences and hedges rapidly, though by no means so good for that purpose as our own native shrubs like the Yew and the Holly, and it would be no great loss to omit it from the garden altogether; all the more so, perhaps, as it is one of the cheap evergreens used in the muddle mixture of the common shrubbery.

T. ORIENTALIS (*Chinese Arbor-vitæ*).—A low tree with little of the beauty of the Pine or Cypress, and which has, unfortunately, given rise to a crowd of varieties, variegated, silvery, golden, and other dense, monstrous and pendulous shapes, "mystified" by Latin names. Not only are they poor in themselves, but they keep the mind away from the central fact of the beauty, dignity and great value of the pine race. These varieties have again synonyms and some of them get into cultivation under the wrong name of *Retinospora*.

Thuyopsis. See THUYA.

THYMUS (*Thyme*).—Creeping plants suited for arid parts of the rock-garden, where many other plants will not thrive. They spread quickly into wide dense cushions, and ought not to be placed near delicate or minute alpine plants. Nothing can be more charming than a sunny bank covered with the common wild Thyme (*T. serpyllum*) and its white variety. *T.*

lanuginosus is a very woolly variety of our common wild Thyme, pleasing at all seasons, forming wide cushions in any soil, provided it be thoroughly exposed to the sun. Another desirable plant is the variegated form of the Lemon-scented Thyme (*T. citriodorus aureus*, itself a form of the common Thyme), which is more robust than the green-leaved kind, and retains its leaves through the winter. The Golden Thyme is 9 in. high, dense and compact, and used for edging. It may be increased by cuttings, which strike readily in September, either in hand-glasses or in cold frames, and should be planted out in spring. There is also a kind, *citriodorus argenteus*, with silver variegation. Those cuttings which are best variegated should be chosen, as others may revert to the normal green type. Other varieties of the Common Thyme are *grandiflorus*, with larger flowers of the same colour, *splendens* and *coccineus* in which they are bright crimson and excellent for bright patches of colour; *micans* with rosy purple flowers, and *rotundifolius*, very dwarf and profuse in flower. Various other Thymes are worthy of the dry arid slopes of a large rock-garden, and of old ruins. The minute, creeping, and Peppermint-scented *T. corsicus*, with flowers so small as to be almost invisible, should be planted in every rock-garden, where it will soon become one of the welcome weeds. Other kinds in cultivation are *T. azoricus*, *T. azureus*, *T. bracteatus*, *T. Zygis*, *T. thuriferus*, *T. Chamædrys*, and *T. Mastichina*.

TIARELLA (*Foam Flower*).—A small group of slender perennial herbs, flourishing in almost any soil or position, but preferably in partial shade and a rich moist soil. *T. cordifolia* is a hardy plant of great beauty, bearing little starry creamy-white flowers, the buds delicately tinged with pink, a well-flowered mass seen a few yards off having a close likeness to a wreath of foam. The young leaves are tender green, spotted and veined with deep red, while the older ones at the base of the plant are of a rich red-bronze. All the care it needs is division every two years, for the plants spread fast and are at their best the second year after division.

TIGRIDIA (*Tiger Flower*).—Bulbous plants with very showy flowers, not hardy generally, requiring similar treatment to *Gladiolus* and plants of a like nature, though in some of our most southerly counties they would be tolerably safe in light soil and a warm position. The annual lifting, storing, and spring planting are not great undertakings however, and the

bulbs are better freed from the bulblets of the previous season. In warm gardens where the bulbs are left in the ground all the winter, they should be well protected with ashes. Choose the sunniest spot in the garden where there will be no cutting winds, as these spoil the great delicate flowers. A sandy loam lightened and enriched by leaf-mould is the best to

Tiarella cordifolia.

ensure a strong and rapid growth. The bed should have at least 18 in. of good soil, and when this is dug up and allowed to settle, plant the bulbs the second or third week in April, 3 in. deep and 6 in. apart, putting a little sharp sand round each one. If a dry time sets in when the foliage is half grown, the bed should be well watered. From about midsummer onwards till September, or even later, the plants will be in bloom, and the stronger the plants the more numerous will be the flowers, and though the individual flowers are soon over they afford a good succession. In October the foliage turns yellow as the bulbs ripen; lift by November, bunch them, and hang in an airy shed till dry.

The best known species is *T. Pavonia* from Mexico, a plant of many forms and garden varieties differing in shape or colour from the parent, with its large

flowers 5 in. across, glowing in scarlet and orange. Among the most distinct varieties are :—

T. PAVONIA VAR. *GRANDIFLORA*.—Flowers larger and brighter in colour, with fuller and more rounded petals. Under this name I would also include the names *speciosa*, *splendens*, *coccinea*, and *Wheeleri*.

T. P. CONCHIFLORA.—Flowers with outer segments yellow, heavily blotched with red at the bases, and with inner segments similarly variegated. The names *canariensis* or *conchiflora grandiflora* probably represent a form differing slightly as regards brilliancy of colour, but it is undoubtedly a seedling form of the original *T. conchiflora*. Though the small flowers of this kind are refined and beautiful, the plant is rather weakly, increases slowly, and is apt to perish.

T. P. ALBA.—Flowers nearly 6 in. across, with sepals and petals of ivory whiteness, heavily blotched at the bases with carmine-red.

T. P. A. IMMACULATA.—This is a sport from *alba*, its name having reference to the uniform snowy whiteness of the flowers, which are without the conspicuous spots of other varieties. Though normally pure white, the flowers are sometimes tinted with pale green or creamy-yellow.

T. P. LILACEA.—Flowers with rosy carmine sepals and petals, the bases variegated with white, a cross between *T. Pavonia* and *T. Pavonia alba*.

T. P. ROSEA.—Flowers with rose-coloured sepals and petals, the bases variegated with yellow, a cross between *T. Pavonia* and *conchiflora*.

T. P. AUREA.—A hybrid raised many years ago between *T. Pavonia* and *T. conchiflora*, and uniting the robust vigour of the first with the refinement and fine colour of the second parent. The shade of yellow inclines to orange, and the small central basin of the flower is mottled with red, reddish-purple, or chocolate. The flowers are freely produced, and the plant is easy to grow and increases rapidly. It is better known on the continent than with us, and often under the name *T. Watkinsoni*. Other varieties are *flava*, with pale yellow flowers and a red-spotted centre; *canariensis*, a pale yellow form; *lutea immaculata*, soft yellow without spots; and *carminea*, a new and pretty shade.

T. Pringlei comes so near *T. Pavonia* that some authorities regard it as only another form of that variable kind rather than a distinct species. The flowers differ little save in the shape and size of the sepals and petals, and the way in which the various shades of scarlet, crimson, orange, and brown that occur in the flower, are blended. It is a plant of strong growth, reaching 18 inches in height. North Mexico.

These comprise the varieties and synonyms of the true *Tigridias*. The *Beatonias*, as the small-flowered *Tigridias* were once named, comprise a few species of botanical interest, but not of importance. Those in cultivation are

B. lutea from Peru and Chili, *B. violacea*, *B. Van Houttei*, *B. atrata*, *B. curvata*, *B. buccifera*, and *B. Patscuaro*(?), all from Mexico.

Tigridia pavonia alba immaculata.

TILIA (*Lime*; *Linden*).—Mostly summer leafing trees of northern and temperate regions. The common Lime is cut into ugly shapes in continental gardens. It was, no doubt, the readiest tree to hand in the old times when this fashion was more common; but if we sought such effects now we have many trees that would be better for this purpose than the Lime, which, from its vigorous growth, takes much mutilation to keep it in the desired shape. By far the best effect of the tree is when it is allowed to take its natural shape, and its fragrance is often welcome on the lawn. The “pleached” alleys of old English gardens were often made of this tree, but it is much easier to get them now from various trees better in colour and leaf, such as the fine leaved *Acacias* or graceful fruit trees like the Japanese and other crabs, which, while giving us the shade we seek, also give beautiful flowers in season. Some of the Limes are very handsome trees, hardy, fine in form and leaf, and good on the lawn or in grove.

T. AMERICANA (*Basswood*) is a vigorous round-headed tree covered with ruddy bark, the leaves larger, more pointed, and of darker green than in the Common Lime, while the flower bracts are also larger and come about ten days later, giving place to yellow pea-like fruits. The tree needs space, being apt to spread, and it bears drought better than the Limes of Europe. Some of its varieties, such as *macrophylla* and *Moltkei* bear large leaves, upwards of 12 ins. long and wide. *T. pubescens* comes near this—a smaller tree with much smaller leaves, and not nearly so valuable.

T. ARGENTEA (*White Lime*).—A stately tree sometimes 80 ft. high, but mostly about half that height, with heart-shaped leaves of a fine silvery colour underneath, and lasting fresh much longer than in the Common Lime. This is a precious tree for grouping where its fine colour can tell in open park-land or upon the fringes of woodland, but it is out of place in any confined space. Grafted trees of this kind are always unsatisfactory, ugly swellings coming at the point of union. There is a variety with variegated foliage. Syn., *T. tomentosa*.

T. CORDATA.—A neat native tree of 15 to 20 ft., well suited to small gardens and forming a dense round head while the lower branches sweep the turf. The leaves are like those of the Common Lime, but thin and much smaller, and they shrivel early. The flowers are abundant, late in coming, and conspicuous with ample leafy bracts. A good tree for low shelter belts, growing well on poor soils. Syns., *T. parvifolia* and *T. ulmifolia*.

T. DASYSTYLA (*Crimean Lime*).—A handsome tree from S. Russia, with lustrous dark-green leaves on bright green twigs, lasting fresh longer than in the Common Lime. The young growths give pretty tints of red and yellow, and the pale flowers come early in August, after all the others have done flowering. A good and uncommon kind for streets and avenues, as hardy and as easily increased as any.

T. PETIOLARIS (*Weeping White Lime*).—Though the silvery effect of this tree is fully as beautiful as that of the White Lime, it is very different in habit, every shoot drooping gracefully while the leaf-stalks are fully twice as long as in *T. argentea*. It is a strong grower even on poor soils, reaching a height of 60 feet or more, and resisting drought fairly well. The flowers are large, produced in July, and followed by small warty fruits. The leaves are large, rounded, and so twisted as to show the hoary underside even in repose. To enjoy its full effect the tree needs space and a commanding position, and is then one of the most scarce and beautiful of weeping trees. Crimea. Syn. *T. argentea pendula*.

T. PLATYPHYLLUS (*Broad-leaved Lime*).—A variable tree, attaining at maturity a height of 90 feet, with dense ample leaves, sometimes downy on both sides and always underneath. It is the first of the Limes to bloom, the flowers coming in June and followed by hairy thick-celled capsules. The effect of this stately

tree is marred by its early loss of leaf, especially in a dry season. There are many varieties, including *pyramidalis*, of erect habit; *rubra* and *aurea* with red or yellow bark; *asplenifolia* and *laciniata*, dwarf trees with cut leaves; and *vitifolia* in which they are lobed like a Vine.

T. VULGARIS (*Common Lime*), not a true native of Britain though freely naturalised. It is too well-known to need description, growing to a noble stature and great age, and often planted in beautiful avenues about our old country houses. It bears pruning better than almost any other large tree, and when necessary this work should be done during summer, while in full growth. The Lime seldom sows itself in this country, but no tree is more easily increased by layers. The smell of the flowers is agreeable, and spite of its size the tree is less to be feared than many about the country house, for the roots do little harm to other things and the leaves all fall within a few days.

Two or three new species have come to light in eastern Asia and are coming into cultivation. These are *T. mandschurica*, which, in its own land, makes a spreading tree of 50 to 60 feet, of pendulous habit, with large sparsely-toothed leaves. From nearly the same region comes *T. mongolica*, a slender low-growing tree of graceful appearance, with very small rounded or three-lobed leaves. Perhaps the finest of the entire genus is *T. miqueliana* from the forests of Japan, where it reaches a height of 100 feet. There are also an increasing number of hybrid Limes, some of which promise to be of value. *T. orbicularis* is a cross between *petiolaris* and *dasystyla*; *T. Blechiana* perhaps from *alba* and *americana*; and *spectabilis* perhaps from *alba* and *pubescens*.

TOWNSENDIA (*Rocky Mountain Daisy*).—A group of low-stemmed annual or perennial herbs with large aster-like flowers, from the mountains of N.W. America. In some kinds the flowers are large and handsome, but only three are as yet in cultivation. *T. grandiflora* is a dwarf plant with grey foliage and large white flowers; *T. sericea* makes stemless rosettes of silvery leaves with a stemless flower 1 to 2 ins. across in the centre of each, the rays of which are pure white or tipped with purple. This plant flowers so early as to have earned the name of Easter Daisy with the colonists. *T. Wilcoxiana* is a pretty little alpine plant of creeping habit, with rosy aster-like flowers in May and June. All the kinds need a sheltered sunny place in light dry soil, and their degree of hardiness is not fully known.

TRACHELIUM (*Blue Throatwort*).—*T. cœruleum* is a much-branched perennial, 1 to 2 ft. high, bearing in summer broad clusters of small blossoms, blue in the type and white and lilac in the varieties. It can be grown only in the warmest situations in dry borders, rocky

banks, and old ruins or walls. It is an elegant plant for vases, etc. Mediterranean. Seed or cuttings. *T. rumelianum* is a much dwarfer plant from Greece, requiring similar treatment and bearing pale violet flowers.

TRACHELOSPERMUM (*Chinese Jasmine*).—Climbing shrubs with evergreen leaves and fragrant white flowers, hardy upon warm walls in favoured places. *T. jasminoides* (once known as *Rhynchospermum*) was formerly much grown under glass, but has done well in the open air in the south and south-west of England and Ireland. Even in the north of Wales there is a sheltered house-front near the sea completely covered with it. *T. crocostemon* is even hardier, growing and flowering on a wall at Kew, with protection in severe weather. Until lately this plant passed as a narrow-leaved variety (*angustifolia*) of the older one, but when it bloomed freely in 1903 the flowers proved to be distinct—creamy-white with an orange centre. These shrubs are neatly attractive, of rather slow growth, and the flowers useful for cutting. A light or peaty soil and a sheltered wall are the best conditions, with protection at the root during frost. They will grow well in partial shade. Increase by half-ripe cuttings of the young shoots, rooted in heat. China and Japan. Syn. *Rhynchospermum*.

TRACHYSTEMON.—Two species of hardy perennials belonging to the Borage family. *T. orientalis* is a dwarf border plant blooming in early spring. Its broad hairy leaves are a pretty bronze or purple colour while young, and the hairy stems of 9 to 12 inches carry long-stemmed rosy-purple buds opening as blue and white flowers. The plant thrives in any soil, and is readily increased by seeds or division. Asia Minor.

TRADESCANTIA (*Virginian Spiderwort*).—Beautiful herbs, some quite hardy, of which *T. virginica* is by far the best, and with its varieties represents all the beauty of the family. It is 12 to 30 in. high, and has showy purple flowers in summer. There are varieties with white, mauve, rosy blue, and deep red flowers, and there are also double-flowered forms of most of these, as well as of the parent plant. They grow in any soil and are suitable for the mixed border, margins of shrubberies, the rougher parts of extensive rock-gardens, and for the wild garden. Division.

TRAPA (*Water Chestnut*).—Water-plants with nut-like seeds used as food in the countries where they grow. *T. natans* is an annual kind from the south of

Europe, which makes floating tufts of triangular bronzed leaves buoyed up in the water by their inflated stems. The submerged leaves are of a different shape, finely divided, and serving partly as roots. The pretty white and purple flowers float about among the leaves, and are followed by peculiar fruits, with a hard shell and sweet white kernels, which have the flavour of a Spanish chestnut, and are good to eat either raw or cooked. Though it will grow out of doors in summer, the plant seldom comes to perfection with us, unless in water artificially warmed by overflow from a hothouse tank or other means. A depth of about 2 ft. is sufficient, and as they ripen in October the fruits reserved for seed sink to the bottom, whence they rise of themselves on starting into growth in spring. The seed is difficult to preserve in any other way, and unless quite fresh is seldom good.

Trichonema. See ROMULEA.

TRICUSPIDARIA.—*T. lanceolata* is a lovely flowering shrub from Chili, which has flowered in the open air at Castlewellan and in other sheltered sea-

Tricuspidaria lanceolata. From a photograph sent by Lord Annesley.

side gardens for several years past. At Castlewellan it is planted in a shady border near a large Yew hedge, in peat, leaf soil, and loam in equal proportions. It flowers twice a year, in the spring and in autumn, the colour of the flowers being a rich crimson. Being near the sea there

is very little frost in ordinary winters, and the plant requires no protection, but in a less favoured place it would be well to pot it and winter it in a cool greenhouse. Syn. *Crinodendron Hookerianum*.

There has recently come into cultivation a second species named *T. dependens*, and the fact that this name has for many years been used for the older plant has given rise to much confusion. *T. dependens* bears white bell-shaped flowers fringed around the mouth, drooping gracefully from the under side of the branches of an elegant evergreen shrub, which thrives in the open air in our warmest coast gardens. Like the older kind it comes from Chili, and has already reached a height of 7 or 8 ft. at Carclew in Cornwall.

TRICYRTIS.—*T. hirta* is an interesting Japanese perennial, about 3 ft. high, with slender erect stems terminated by a few curiously-shaped pinkish blossoms, spotted with purplish-black. It is perfectly hardy, but flowers so late that it is invariably damaged by frosts. The variety *nigra* flowers three weeks earlier, and is therefore better, whilst the flowers are more attractive. Other garden forms of this species are *grandiflora*, its white flowers spotted with purple; and *variegata* with finely marked foliage of charming effect in a moist shady spot. *T. pilosa* is dwarfer and rarer than *T. hirta*, but is otherwise a similar plant. *T. macropodium* bears yellow and black flowers, and blooms much earlier than the other species. They all thrive in a moist peat border, partially shaded, and if somewhat protected, so much the better.

TRIENTALIS (*Star-flower*).—*T. europaea* is a delicate and graceful plant found over Europe, Asia, and America, in shady, woody, and mossy places. It has erect, slender stems, rarely more than 6 in. high, bearing one to four flower-stems, each with a white or pink-tipped star-shaped flower. Healthy well-rooted plants are not difficult to establish among bog-shrubs in some half-shady part of the rock-garden, in the shade of Rhododendrons, in peat soil, or with Linnæa, Pyrolas, and Pinguiculas, among mossy rocks. Flowers in early summer. Division.

TRIFOLIUM (*Trefoil*).—Among the few garden varieties are some dwarf and desirable creeping alpine, the best being *T. uniflorum* from Syria, a neat trailing plant with pink and white flowers, larger than those of any other Trefoil, borne singly, and studded profusely over the plant. It delights in an exposed position on the rock-garden, with an open space on which to creep. *T. alpinum* is a stout

spreading kind, 3 to 6 in. high, bearing large, but not brilliant flowers in summer, the upper petal flesh-coloured and streaked with purple. It is suitable for the rock-garden and margins of borders. *T. rubens* is a stout perennial, about 1 ft. high, with large dense heads of carmine flowers in early summer. It grows almost anywhere, but prefers dry, calcareous, marly or gravelly soil, therefore is specially suited for naturalisation on arid slopes with a southern aspect. *T. pan-nonicum*, with creamy-white flowers, is ornamental. "Calvary Clover" is the common name of a pretty variety of the white Dutch Clover, in which the leaves are almost entirely of a deep bronze-purple colour; it quickly spreads into a

twice the usual height, while the flowers are 4 to 6 in. across; and *palustris*, a form specially adapted for wet ground and nearly equal in vigour to that just described. *T. atro-purpureum*, *T. erythrocarpum*, *T. sessile*, and *T. pendulum* are not equal to *T. grandiflorum*, but some of them are pretty, whilst all are interesting. A full description of these and their varieties will be found in *Flora and Sylva*, Vol. II, p. 170.

TRITELEIA (*Spring Star-flower*).—

T. uniflora is a delicately-coloured, free-flowering, hardy, bulbous plant, 4 to 6 in. high; the flowers white, with bluish reflections, and marked on the outside through the middle of the divisions with a violet streak, which is continued down the

Trillium grandiflorum (White Wood Lily).

dark carpet of singular effect. Division or seed.

TRILLIUM (*Wood Lily*).—Perennials of low growth, which inhabit the woods of N. America. The finest is *T. grandiflorum* (White Wood Lily), one of the most beautiful hardy plants, 6 to 12 in. high, with on each stem a lovely white three-petalled flower, fairer than the white Lily, and almost as large. It is a free-growing plant of goodly size in a shady peaty border in open air; but in a sunny or exposed position its large soft green leaves do not develop. Depressed shady nooks in the rock-garden or the hardy fernery suit it admirably. In the rosy variety the rosy hue is most pronounced in the young stage, and the leaf-stalks and the foliage are of a more bronzy shade of green. Other distinct varieties are *maximum*, with stems very stout and

tube. They open at sunrise, and are conspicuously beautiful on bright days, but close in dull and sunless weather. The plant comes into flower with or before *Scilla sibirica*, and during April remains in effective bloom. It does well in pots, and even in an unfavourable position in clay. There are several forms, which differ in the shade of their flowers. Associated with the best Scillas, *Leucojum vernum*, *Iris reticulata*, dwarf Daffodils, and the like, *T. uniflora* is delightful, and is equally useful for the rock-garden, borders, or edgings. S. America. *T.* (Leucocoryne) *alliacea* is nearly allied, less pretty, and thrives under similar circumstances. For other species see BRODIAEA.

Tritoma. See KNIPHOFIA.

TRITONIA.—Graceful and showy plants from the Cape, better than most S. African plants in their hardiness and

vitality, even in the poorest conditions of soil and exposure, growing indeed like weeds, and so close that I have used them between shrubs to keep the ground free from weeds; and well they do it, giving very graceful bloom in masses towards the summer and autumn. In rich light soils they give little trouble; in clay soils where the drainage is less under control they are apt to fail, but we have seen them thrive in poor clayey soil if not wet. In badly drained soils it is best to grow them in raised beds of good soil. All danger can be avoided by lifting, though some hold that this is injurious. The success which attends the planting of dry bulbs during the early spring months—frequently as late as April—is the best proof that the harm from drying such things is of small moment. Where both systems can be pursued in one garden a long succession of bloom will be the result. The spring-planted stock of this year may remain undisturbed through the coming winter, to yield early bloom next year, while the batch that remained in the ground the winter previous is the one to be lifted this coming autumn. In this way there is little loss in a single year by deterioration, and the corms if harvested at the right time and well kept, *i.e.*, cool and dry, will more than repay the labour and trouble involved. Even in those gardens where there is no real need to lift the roots, the plan is of value for the longer time of blooming it ensures.

By reason of the many hybrids, chiefly of *T. Pottsi*, the numbers of beautiful things in this group are greatly increased, a few of the most worthy being *Etoile de Feu*, blood-red and yellow; *Gerbe d'Or*, golden; *Soleil Couchant*, a very free variety, golden yellow; *Transcendant*, orange-vermilion shade, one of the most showy; *Aurore*, orange-yellow, very large and effective; *Phare*, reddish crimson; *Figaro*, orange and maroon; *Germania*, brilliant scarlet; *George Davidson*, with flower stems 3 to 4 ft. high, and pale orange-yellow flowers 3 in. across; and *Vulcan*, also a tall grower, the flowers bright red with a yellow centre. These, together with *crocsmiaeflora*, *Pottsi* and its variety *grandiflora*, make up a very beautiful set of equal hardiness and usefulness in the open garden. Syn., *Montbretia*.

CULTURE IN THE WEST COUNTRY.—We have seen the *Tritonias* (of the *Montbretia* section) bloom every year freely on poor clay; the better soils and more copious rainfall of the west make a difference, and this note as to their culture

in a Cheshire garden may be useful to any who work under like conditions. "To make them do well, the chief point is to keep them thin, and so they must be divided every year. This may be done any time in autumn before the ground is frozen up. My practice at Edge after digging them up—suppose there are twelve stalks, that is, twelve bulbs in each clump, with three or four young points to each bulb—is to have fifty or one hundred pots ready and to put three bulbs into each pot, filling up with any waste soil, drainage being superfluous. The less they grow before March the better. They must not be cut down till spring. When all the pots are full they are placed together in some sheltered spot out of doors and well watered—for if kept dry they die—then they are covered with a foot or two, according to weather, of dry leaves or other litter, enough to ensure their safety from frosts. By the end of March they are safe, and may then be planted out anywhere, letting the bulbs be at least 6 in. deep, either amongst herbaceous plants, which they like, or amongst low shrubs. I have some in beds of dwarf Roses, where they do and look very well. As they increase at least four-fold every year, the gardener must harden his heart and not be tempted to let them grow more densely, but, as he will find that most of his friends have as many as they want, throw the surplus on to the rubbish heap. I find one morning in each year enough for this work, which may be done in the roughest and most hasty way without detriment to the bulbs. Indeed, I have sometimes buried the clumps in a soil heap for winter, littering them over as described, and planting the bulbs out by threes in spring. The main objects are not to let them get frozen, and not to let them get dry or grow during winter. I generally also replant three bulbs where I dig up each clump. If the winter is mild, these survive and the pots are not wanted; if they are killed, the pots take their place. They flower better if a spadeful of rich stuff is put in where each pot is planted. I recommend especially *Etoile de Feu*, scarlet, A 1 both in colour and habit; *Aurore*, bright orange and very robust, growing more than a yard high; *Drap d'Or*, bright yellow; *Solfatare*, pale yellow; *Feu d'Artifice* and *Bouquet Parfait*, mixed orange and yellow; *Pottsi grandiflora*, scarlet outside, yellow inside, distinct and free flowering, with ornamental seed-heads."—C. WOLLEY-DOD, *Edge Hall*.

T. aurea. — This beautiful South

African bulb often seen in a greenhouse is a useful plant for the open air. It grows about 2 ft. high, and has branched spikes of rich yellow flowers 2 in. across. Two fine forms of it are—*maculata*, with flowers deep orange colour stained with brown, 3 in. across, borne on spikes 4 ft. in height; and *imperialis*, equally tall, with large flowers, narrower in the petal and of a brighter orange shade. In the garden *T. aurea* succeeds in any soil except clay, but prefers the moist peaty beds given to choice peat-loving shrubs, where it spreads fast and at times becomes almost a weed. In the warmer parts of England and Ireland it may be left in the border all winter, protected with a layer of leaves or a south wall. Though tolerably hardy, however, the lateness of flowering is an objection to leaving the bulbs out, and they are liable to be killed in severe winters unless well protected. It is better, therefore, to lift them about the middle of November. Anything like drying off in a dry place is fatal; they should not be uncovered for a single day.

TROCHODENDRON.—The only species is *T. aralioides*, a rare evergreen shrub from moist mountain woods of Japan, hardy in our southern gardens. It is of somewhat straggling habit, with loosely-clustered pale green leathery leaves and handsome greenish flowers $\frac{3}{4}$ of an inch across, clustered together at the tips of the shoots as in ivy and aralia. In Japan the flowers are followed by fleshy fruits. The numerous stamens radiating like the spokes of a wheel, suggested the name of the plant. Culture as for Magnolia. Apart from its beauty and rarity, the botanical characteristics of the plant give it unusual interest.

TROLLIUS (*Globe-flower*). — Handsome stout perennials of erect habit, needing no support. They may be grown in beds or borders, or by ponds, streams, and wet places, where they are quite at home, and give delightful effects. They are of dense growth, foliage and flowers rising from an underground crown with deep-searching roots, especially in a border where drainage removes the water-level to a considerable depth. The flowers vary from a pale yellow to a deep gold, bordering on vermilion. The Globe-flowers are at their best in April, May, and June, though old-established plants may develop a few flowers in September and October; but these flowers depend alike on the season and the strength of the plant itself. Division in September or March; but if divided in March, a few bright dry days will injure the foliage,

and the blossoms are certain to be puny and short-lived. Another way to propagate is by seeds, but Globe-flowers rarely vegetate in the year they are sown, coming up vigorously in the following spring, and, if carefully attended to, making fine flowering plants the second season; not, however, attaining their full development until the fourth year or even later. They grow freely in any soil, and thrive in a good stiff loam overlying a moist subsoil; if in a dry situation, they should have plenty of manure partly to retain moisture.

T. acaulis.—A native of the higher Himalayan Mountains, and one of the most charming dwarf bog-plants, rarely exceeding 4 to 6 in. in height, its bright yellow flowers, 2 in. across, suffused with purple-brown on the outside. It is hardy, has been many years in cultivation, and will be found most useful for the low or moist spots in the rock-garden, growing best in a fine peaty soil.

T. asiaticus (*Orange Globe-flower*), which also includes *chinensis*, *Fortunei*, and other forms, has rich orange-yellow flowers and bright orange red anthers, is hardy even in the most exposed positions, and differs from the European Globe-flowers chiefly in its less globular flowers, small finely-divided foliage and taller growth. China and Japan.

T. europæus (*Mountain Globe-flower*) grows about 15 in. high, has lemon-yellow flowers and is an extremely variable plant, so widely spread that almost every locality has its particular form. Raised from seed it also gives much variety, in habit, flowers, and foliage, two of the choicest forms being *albus* with creamy-white flowers, and *superbus* with large flowers of soft pale yellow. *T. europæus* has various names in gardens, such as *pumilus*, *giganteus*, *dauricus*, *pallidus*, *americanus*, *albus*, *aurantiacus*, and *napellifolius*. A few of these are distinct, *dauricus* being noted for its large bloom and large much-divided leaves on long olive-green footstalks. There is also *T. albiflorus*, with white flowers, found on the mountain tops in Colorado, and flowering early under cultivation.

HYBRIDS AND SEEDLINGS.—More distinct and valuable than the many wild forms running one into the other, are the hybrids and garden seedlings, of which there is an increasing number. Even in these the differences are mainly in habit and form of flower, there being little variation in colour. Orange Globe and Prince of Orange give rich well-formed flowers of intense colour; Gibsoni and T. S. Ware are also good in this shade. Golden Globe

and Newry Giant are fine yellow varieties, the latter especially tall and vigorous ; while Yellow Globe and Lemon Queen bear soft pale yellow flowers, the last being considerably the taller of the two.

TROPÆOLUM (*Nasturtium*).—These are plants of the mountain region from New Granada to Chili, seldom descending into the plains, and, therefore, not requiring great heat. This indeed is against them, but, on the other hand, the first frost cuts most of them to the ground. They love a half-shaded situation in the open air during summer. There are annual and perennial species, and the perennials may be divided into groups, with fibrous and with tuberous roots. The rapid growth of the annuals *T. majus* and *T. minus* is proverbial, and their hardiness in a temperature above freezing-point, as well as their indifference to soil, makes them useful where anything unsightly is to be hidden. The following are the most fitted for the open air :—

T. Aduncum (*Canary Creeper*).—The favourite among Tropæolums, and almost unrivalled for elegance among yellow flowers. Its precise home is uncertain. It occurs all over the west of S. America, from Mexico to Chili, but it has doubtless spread from the Andes. It thrives in sun or shade, but is best in a north aspect, festooning trellises, arbours, shrubs, etc., and rarely fails even in town gardens. Seeds should be sown in April in the open ground in sandy loam. Syns., *T. peregrinum* and *T. canariense*.

T. Heyneanum.—A beautiful perennial climber with flowers akin to those of the common Canary Creeper but rather smaller and of an orange colour ; they are distinct also in shape, the lower petals being nearly as large as the upper, with a straight spur instead of a hooked claw. Peru. Easily raised from imported seed.

T. Leichtlini.—A fine hardy cross between *Ts. edule* and *polyphyllum*—two of the most robust kinds—of which it has inherited all the hardiness and vigour. It grows from rounded tubers like small potatoes, with trailing stems covered with deeply-cut greyish-green leaves. The flowers are of a deep orange-yellow, finely marked with reddish spots and streaks, appearing with fine effect from the end of May. The plant is of free growth in warm, well-drained soil, where it increases rapidly. It is best seen trailing over a bank or low wall, where it can grow undisturbed and not be missed while at rest from July onwards. It is hardy in most gardens with a light covering of leaves or ashes.

T. Lobbianum.—This fine annual climber is easily known from the old *T. majus* by its hairy foliage, though the flowers are in similar shades of yellow, scarlet, and crimson. The plant will clothe unsightly spots, or provide temporary shelter during summer, seeds being

sown about the middle of April. The only care needed is guiding the leading shoots in the desired direction. The plant has a pleasing effect sown here and there amongst shrubs in the back of a border. As the plants grow, they attach themselves to the bushes, and climbing over or through them, throw out wreaths of lovely blossoms which retain their beauty until frost. Temporary floral fences may also be made with this plant, using a row of Pea stakes as a support. It will also assume a pyramidal form if allowed to overrun the dead tops of young Fir trees. In short, there is no end to the uses to which it may be put.

T. majus (*Large Indian Cress* or *Nasturtium*) differs from *T. minus* in being larger, and from *T. Lobbianum* in the absence of hairiness. There are many beautiful varieties

Tropæolum polyphyllum.

of it, mostly hybrids. The climbing sorts are put to such uses as those just described, though perhaps the most important form of the *Nasturtium* is the dwarf or Tom Thumb strain. Few annuals come into flower more quickly and few bloom longer or more constantly. In poor soil the *compactum* forms bloom best. Their rich colours are superb in masses, and they are never without flowers from first to last. Seeds or cuttings put in about the middle of September. A few dozen plants in store pots will yield a large number of cuttings in spring, and these make the best plants. The other Tom Thumb kinds may be sown in the open ground in spring, but the *compactum* race grows so freely, if raised in this manner, that it is best to sow under glass and plant out later ; so treated, the plants bloom earlier, and are more compact. All who love rich masses of colour will find these dwarf *Nasturtiums* worth cultivating in some of the many fine sorts now obtainable.

T. pentaphyllum.—A rapid growing climber,

6 to 10 ft. high, with greenish-red flowers. It will cover pillars, walls, chains, bowers, and revels in sunshine, succeeding well on the south wall of a greenhouse or in any warm aspect. It does best in light and warm loams or calcareous soils. Division or seed. Chili.

T. polyphyllum.—One of the most valuable hardy plants ever introduced. While its foliage may form a dense carpet on a bank, its wreaths of yellow flowers usually throw themselves into irregular windings and groupings. Its leaves are glaucous and cut into fine leaflets. In a warm rock-garden the stems creep about, snake-like, through the neighbouring vegetation, sometimes extending 3 or 4 ft. The plant is tuberous-rooted, and quite hardy in dry situations, but should not be disturbed. It springs up early, and dies down at the end of summer. Chilian Cordilleras.

T. Smithi.—A beautiful plant from a great elevation in the Andes of north-western South America. It is a twiner of free, robust habit, bearing smooth glossy leaves deeply cut into five broad lobes. The flowers are large and funnel-shaped, ending in a long green-tipped spur; the calyx is rich ruby red with finely fringed and lobed petals of orange veined with bright red. A very handsome plant flowering in June and July, which may be raised from seed and treated as a hardy annual during summer.

T. speciosum (*Flame Nasturtium*).—A splendid creeper, with long and elegant annual shoots, gracefully clothed with leaves from the axils of which spring such brilliant vermilion flowers, that a long shoot is startlingly effective, especially if seen against verdure of any kind. It has been long introduced from S. America, but spite of its beauty and hardiness, is little known, especially in the south of England. No plant is more worthy of a position where its shoots may fall over or climb up the face of some high rock or bank in the rock-garden; while it is suited for an open spot in the hardy fernery, or for any other position where its peculiar beauty may be well seen. It makes its way through evergreen shrubs, and enjoys a deep, rich, and rather moist soil, in cool places, or near the sea, where no pains should be spared to establish it.

A correspondent writes to *The Garden*: This beautiful climber dislikes hot sun and a dry atmosphere, and this accounts for many failures in growing it. Several years ago a friend who knew nothing of the plant received some roots from the fine old specimens at Lismore Castle. By my advice some were planted against a west wall, in front of which grew some good-sized Nut-bushes and Apple trees, so that in the hot summer weather the sun could only reach the plants for a couple of hours daily. The remaining roots were planted against a north wall with scarcely any sun, and at the west end of the dwelling-house, where the full force of the afternoon sun was felt. In all these cases the soil was alike. The plants behind the Nut-bushes and Apple trees grew remarkably well and bloomed as freely as

could be expected in the first year of planting. On the north wall the growth was good, but the flowers were not so numerous; but in the sunny position, although the roots made a little growth, this withered away as soon as the sun made itself felt. There could be no better proof that success with the Flame-flower is a matter of position, and that, even in the southern counties, there are probably few gardens where its requirements cannot be met.

When a position is selected, the soil should be made light, deep, and free by leaf-mould,

Tropæolum speciosum in Scotland.

peat, fibry loam, and sand, according to the nature of the ground. Mulch in summer with an inch or two of leaf-mould or manure to prevent excessive evaporation; and whatever manure is used, it must be well decayed. The young plants should be planted in spring, the roots being inserted 6 or 8 in. in the soil and well watered. The Flame Nasturtium is best where the shoots may ramble among the spray of shrubs, Ferns, or trailers, but as it must be placed on a cleared spot, it is well to put a few branchlets over the roots for the young shoots to crawl over. It is much better to let them

have their own way than to resort to staking. Division or seed. Seeds should be sown as soon as ripe, in a pan or box, in light loam, leaf-mould, and sand. Place in a pit or a frame, and keep the soil moist, but not wet, until the plants appear. The careful division of the old roots is, however, an easier means of increase and the best way to propagate.

T. tuberosum.—A distinct and beautiful tuberous-rooted climber from Peru, with slender stems 10 to 12 ft. high, and a profusion of showy scarlet and yellow flowers on slender stalks. Unfortunately it flowers so late as to be often spoiled by frost, but in sheltered places and a mild autumn will bloom into November. It should be grown in open spots in the poorest of soils, with its branches supported or allowed to trail along the ground. As it is not hardy in all soils, lift the tubers in autumn, and store in a dry place till spring.

TSUGA (*Hemlock Spruce*).—A distinct and graceful group of evergreen cone-bearing trees, remarkable for their fine form of leaf and graceful toss of branchlet, and also, in their own country at least, for picturesque and stately form.

The one best known in Britain, so far, is the Canadian Hemlock Spruce, a tree of proved hardiness in our country, but rarely showing the dignity of form it

Hemlock Spruce.

does in its own, probably from the use of cutting plants. No tree of the pine race should be planted in any form but that of healthy seedlings. The splendid forms of these trees so promising for our country, coming as they do from moist cool regions, will be best secured from healthy seedling trees, never large ones.

The Japanese and Indian species of this family, *T. Sieboldi*, *Brunoniana*, and *diversifolia* are not proved to be of such distinct value as the American kinds. Syn., *Abies*.

T. CANADENSIS (*Hemlock Spruce*).—A forest tree sometimes over 100 ft. high with a diameter of 4 ft. in the trunk, inhabiting very cold northern regions from Nova Scotia to Minnesota and southwards along the mountains. This tree has been much planted in England, but it has not so far seemed to attain the stature and form that it shows in Canada. Its rather numerous varieties are of slight value. In my own planting of the Hemlock Spruce near water, while the growth is free, constant and unharmed by any winter, I am vexed to see every tree breaking from the bottom into half a dozen or more stems, splitting up the energies of the tree. I saw a very pretty hedge of the Hemlock near Philadelphia: it would prove, I think, a good evergreen hedge plant where the dangerous poison of our own Yew makes its use impossible in any place to which horses or cattle have access.

T. CAROLINIANA (*Caroline Hemlock*).—A forest tree attaining a height of 70 to 80 ft., 4 ft. in diameter, graceful and beautiful in a mature state. As yet it is little planted in our country, and in my experience not hardy. Alleghany Mountains. Syn., *Abies Caroliniana*.

T. MERTENSIANA (*Western Hemlock Spruce*).—A noble tree of fine and picturesque habit, allied to the Eastern Hemlock but larger—sometimes 200 ft. high, with a trunk diameter of 10 to 12 ft. Coming from such fog-moistened regions as Puget Sound, British Columbia, and the coast region of Northern California, we look for a tree hardy enough for our island climate, and in this noble Hemlock we have it. The foliage, as graceful as a fern, is of a deep, lustrous green, and silvery white beneath. Though hardy in this country, it is best in sheltered places in deep moist soil. Syns., *Abies mertensiana*, and *Albertiana*.

T. PATTONIANA (*Alpine Hemlock*).—A beautiful and stately tree 100 to 150 ft. high, and from 6 to 10 ft. in diameter of trunk, with dark green foliage on slender branches that sway in the slightest wind. Alpine and sub-alpine forests in the Sierras of Northern California, the Cascades and Northern Rocky Mountains, often at great elevations. Hardy and at home in Britain. *T. Hookeriana* is a northern variety, smaller and sharply pyramidal in form.

T. TSUGA (*Japanese Hemlock Spruce*).—This tree, known also as *T. Sieboldi*, is as graceful in growth as the Canadian Hemlock Spruce and fully as hardy. It takes more of the character of a large and dense spreading bush than of a tree, and is useful for grouping with other conifers.

TULIPA (*Tulip*).—Among the most beautiful of hardy bulbous flowers, the finest self Tulips being unsurpassed for

brilliant colour. We need to plant the best kinds in quantity, for exquisite as the striped or flaked Tulip may be, it is the self-colours that give the best effect. Tulips have been so long grown and are so variable in character that considerable confusion exists among them. The popular garden forms may, broadly speaking, be separated into two classes, early and late flowering. *T. suaveolens* from Southern Russia is now regarded as the type of the numerous early-

have been grown by florists, who have raised numerous varieties, which form an enormous class divided into four sections—viz. breeders or self-flowers, bizarres, bybloemens, and roses. When a seedling flowers for the first time, it is usually a self, and in a few years (but occasionally not until thirty years) it will break into the flamed or feathered state. A feathered Tulip has the colour finely pencilled round the margin of the petals, the base of the flower being pure,

Old garden Tulips.

flowering varieties, of which Duc van Thol is a familiar example; but these, though commonly planted, are of less value for the garden than the later forms which open in May. These have all come from *T. Gesneriana*, and whilst possessing infinite variety of colour, all have the fine form and stately character of the parent. These late Tulips following the Daffodils are precious garden flowers of easy culture, still less grown than they should be. For about three centuries they

and in a flamed flower stripes of colour descend from the top of the petals towards the base. In the bizarres the colours are red, brownish-red, chestnut, and maroon, the base being clear yellow; in the bybloemens the colours are black and various shades of purple, the base being white; and in the roses, rose of various shades and also deep red or scarlet, the base being white again. Of these classes the late-flowering self-coloured "breeders" are the best of all

for effect. The Parrot Tulips, with curiously cut and fringed petals, are often strangely splashed and veined in various colours and are valuable for their bright display.

Tulips are easily grown in the rich soil of old gardens, but where the land is cold and stiff or not well worked, they have a tendency to die out. They may be planted from October to the middle of November, and the old Tulip growers used to put a little sand at the base of each bulb, but this is not essential. It is well to lift the bulbs every two or three years, or they become crowded and give small flowers. When the old flower stems are turning yellow, the bulbs may be taken up, dried, and stored till planting time or replanted at once if convenient, as nothing is gained by keeping them out of the ground. Most kinds increase by offsets, but some species rarely or never increase in this way, and recourse must be had to seed, sown when ripe to germinate the following spring, but the bulbs do not attain their full size for six or seven years. Beds of Tulips may be carpeted with small tufted or creeping plants, of which there are many suited for the purpose. The White Rock Cress (*Arabis albida*) and its variegated form, Aubretias, Hepaticas, Primroses, Cowslips, *Silene pendula*, Pansies and Violets, Saxifrages, *Iberis corifolia*, *Ajuga reptans rubra*, and many others make excellent carpets.

Among the wild Tulips there are beautiful kinds distinct from the garden varieties; the larger kinds, noble flowers for free planting, and the smaller sorts gems of beauty for the rock-garden or in beds and borders of choice bulbs.

T. ACUMINATA is curious, but its petals too long and thin to create a display.

T. ALBERTI, from Turkestan, is rather low-growing, with undulated leaves of a glaucous green colour trailing on the ground; the flowers red, somewhat resembling those of *T. Greigi* in shape, but the petals are marked at the base with a blotch of yellow margined with black.

T. AUSTRALIS is variable in colour, but always pleasing, allied to *T. sylvestris* but less robust, whilst the flower is more funnel-shaped and flushed on the outside with red. *Syn.*, T. Celsiana.

T. BATALINI is a small kind seldom exceeding 4 in. in height, with trailing leaves, and rather large flowers (nearly 3 in. in length) of a pale yellow colour.

T. BIFLORA, Caucasus. A species known long ago, and not very striking with its small pale yellow flowers, which, however, are borne in a cluster of three or four at the top of the flower-stem instead of being solitary, as in most other Tulips.

T. CLUSIANA, the dainty Lady Tulip, came from the Mediterranean region as long ago as 1636, has small flowers, and is not more than 1 ft. or so in height. The flowers are white, with a flush of rose on the outer surface, and purplish-black at the base. *T. stellata* is a near ally. It requires a deep vegetable soil and warm sheltered position.

T. CONCINNA.—A dainty late-flowering species from Cilicia, with rich red flowers 2 ins. across, marked with bold black spots outlined in yellow, at the base of each segment.

T. DASYTEMON.—A fine new species, very distinct in habit and flower. In height it grows about 6 in., with from four to seven flowers on a stem; in colour, these are yellow edged white.

T. DIDIERI, a May flowering kind from the Alps, grows tall, and has large bright red flowers with black blotches inside at the base. A yellow variety named *Billetiana* is equally handsome.

T. EICHLERI, a native of Georgia, is another fine species with large leaves and broad flowers of an intense scarlet-red colour the petals roundish in shape, having at the base a black blotch margined with yellow.

T. ELEGANS, a graceful bright-coloured kind, opens late in April; the flowers bright red with yellow eye, the petals long, tapering to a point.

T. FLAVA, with bright yellow petals, rather spoiled by a bar of green down the centre; its flowers however continue quite a fortnight after those of all other Tulips are past.

T. FRAGRANS is a doubtful species, and given in some books as a synonym of *T. sylvestris*, our wild tulip, from which it differs in its fragrance. In habit and size of its pretty yellow flowers it is the same. It needs a warm place, perishing during the winter unless well cared for.

T. FULGENS, a form of *T. Gesneriana*, sharing the graceful character of the race, the flowers rich crimson, borne on tall stems.

T. GALATICA is a dwarf Tulip, rarely reaching 9 ins. high, and quite unlike other kinds in its very broad leaves and large cone-shaped flowers of pale yellow, flaked with green at the base on the inside, and touched with olive-green on the outside of each petal.

T. GESNERIANA.—This the noblest of all Tulips, the parent of the large late-flowering race, should be in every garden, planted in bold groups or broad masses. In Sussex I have seen charming effects secured by planting in quantity. In one case a large oval Erica bed had been thickly planted with some few hundreds of this kind, and formed a solid shield-like mass of colour, more brilliant than a soldier's coat, and very picturesque seen through the soft grey trunks of Scotch Fir trees.

In another instance the bulbs had been planted in a solid, but irregular line, on a dry, warm hedge-bank of turfy loam, and just through and above the great crimson blooms the common Quince had thrust its soft leafy

branches, thickly set with small white or delicate rose-flushed flowers.

It has an immense bright red flower borne on a tall stem, sweetly scented, with a black zone inside at the base. The flowers last admirably when cut, and by artificial light they open as widely as by day. The finest form is that called *spathulata*. Eastern Europe and Asia. The so-called "Darwin" Tulips are self-coloured forms of this species, and very handsome they are.—F. W. B.

T. GREIGI, which was introduced about the year 1871, has not yet received all the attention it deserves. It is low-growing, the flower-stem seldom exceeding 8 in. in height, the leaves marked with purplish blotches and the large-sized flowers (from over 3 to nearly 4 in. in length), of a dazzling vermilion-red colour faintly marked at the base with a dark spot. It is hardy, comes into flower about the middle of April, and few things can equal its brilliant display.

T. HAGERI bears glowing flowers in dark red, yellow, and black. In a good new form, *nitens*, they are orange-scarlet shaded with bronze on the outside, and opening in May. This is a neat grower of about a foot in height, very free and of vivid colour if given a warm place.

T. KAUFMANNIANA, from Turkestan, is one of the finest kinds, hardy, flowering in April. It grows from 8 to 12 in. high, with broad, flat leaves, flowers very large (nearly 4 in. in length), generally white, or pale creamy-yellow tinged with pink on the outside, the petals marked with a broad orange blotch. A fine early-flowering form of this, *aurea*, bears flowers that are pure yellow or orange. Yellow inside, and shaded with red on the outside.

T. KOLPAKOWSKYANA, also from Turkestan, is a brilliant species, not exceeding 1 ft. in height; the large flowers (3 in. or more in length) are of a lively red colour, sometimes yellow with minute blotches or spots at the base. The variety *splendens* differs from this in its deep yellow flowers, suffused with scarlet on the outside.

T. LANATA, a low-growing species with red flowers, is remarkable for the little woolly point which forms the apex of each of the petals.

T. LEICHTLINI, from Cashmere, grows 1½ ft. high with a flower always erect, the three outer petals bright purple, with a broad white margin, the inner ones yellowish-white much shorter than the outer and with rounded tips.

T. LINIFOLIA has glaucous leaves deeply undulated and flowers of a dazzling red colour, with small black spots at the base. *T. Dammanniana*, from Syria, comes near this, but is more sensitive to cold.

T. LOWNEI bears delicate crocus-shaped flowers, opening in April to a star shape, on stems of about 6 ins. Their colour is a delicate rose or rosy lilac, with a yellow base.

T. MACROSPEILA, closely allied to *Gesneriana*, flowers late in May, it has large bright crimson flowers, with a distinct black yellow-

bordered blotch at the base of each petal, and stamens also black about one-third the length of the flower.

T. MACULATA, is a well-marked form with a hairy stem and bright red flowers, having a black blotch at the base, flowering towards the latter end of May.

T. MICHELIANA.—Allied to *T. Greigi*, and like it in its variegated leaves, only that here the brown colour is in streaks instead of in spots. It grows somewhat taller, and the flowers are a darker crimson shaded with purple. Turkestan.

T. MONTANA, distributed over a considerable area in Armenia, Persia, and Afghanistan. A species seldom exceeding 6 in. in height, with flowers resembling those of *T. Oculus-solis* of the south of France, usually red, but sometimes yellow.

T. NITIDA.—A slender kind from Central Asia, the home of so many Tulips. It comes near *T. Gesneriana*, and is a dwarf plant with narrow grey leaves and bright scarlet flowers spotted with black at the base on the inside, the outer petals being a paler orange-red colour. It flowers towards the end of April.

T. OCULUS-SOLIS is very distinct, its flowers brilliant scarlet, with an eye-like blotch at the base of each petal, of a shining black colour, bordered with yellow. *T. præcox* is apparently an early form of this, but more robust in growth.

T. ORPHANIDEA, from Greece, a fine species, is closely allied to *T. sylvestris*, and has large yellow flowers, tinged with red on the outside.

T. OSTROWSKYANA one of the newer species from Turkestan, is allied to *T. Oculus-solis*, and has bright red flowers with black blotches at the base.

T. PERSICA.—A charming dwarf kind, and one of the best for edgings, narrow borders, or use in the rock-garden, where its fragrant flowers unfold in twos or threes during May. They are a bright yellow, shaded with bronze on the outside. Syn., *T. Breyniana*.

T. PLANIFOLIA.—A large deep red flower, with a broad black base.

T. PRAESTANS.—A very distinct plant, in which there are sometimes only one and sometimes as many as three, six, or even ten flowers on a single stem. The orange-red buds appear early, opening to a pretty pale scarlet, and the finest flowers measuring 6 ins. across. The plant varies in height from a few inches to 18 or more, with stems and leaves thickly covered in soft white hairs.

T. PRIMULINA.—Another fragrant species, coming near *sylvestris* and blooming in April and May. The creamy-white flowers are edged and occasionally flushed with pink on the outside, and pale yellow within. Coming from N. Africa, it needs a warm place.

T. PULCHELLA, from the alpine regions of the Taurus range, has flowers of a purplish-red colour, with black and yellow markings.

T. RETROFLEXA, probably a cross between *acuminata* and *Gesneriana*, is a truly beautiful kind, growing 2 ft. in height; with recurved

flowers of a pure soft yellow, striking, distinct, and one of the easiest to grow.

T. SAXATILIS, a native of Crete, is a fine species, growing from 12 to 16 in. high, with flowers a peculiar mauve tint, passing to yellow at the base.

T. SPRENGERI.—The last of the Tulips to open, this fine new species bears large scarlet flowers 5 ins. across, which last well and are excellent in every way for cutting. When better known it will be widely planted.

T. SYLVESTRIS, a British species everybody ought to grow, is pale yellow, with casual edgings of red, and frequently the scapes carry two flowers, but the most valuable property of all is its fragrance. There is a large flowered garden form distinguished as *major*.

T. TRIPHYLLA.—A rare and choice kind from Central Asia, with tapering flowers in varying shades of grey, pale yellow, and orange. It blooms in April, and besides having a warm place, the bulbs must be lifted if they are to ripen completely.

T. TUBERGENIANA.—One of the largest Tulips in size of bulb, leaf, and flower, with tall hairy stems, very glaucous hairy leaves, and immense cup-shaped flowers in which the petals are much reflexed. Their colour is intense orange-scarlet, with a bold dark blotch at the base. Mountains of Bokhara. *T. ingens*, from the same region, comes near this, but is of dwarfer growth, and bears deeper-coloured flowers, nor is it so satisfactory under cultivation.

T. UNDULATIFOLIA, a native of Asia Minor, 10 in. in height, has glaucous leaves deeply undulated at the margin, and flowers of a brilliant crimson-red, with black blotches margined with yellow at the base. It flowers in May and is closely allied to *T. ciliatula*.

T. VIOLACEA, a recent introduction, is also one of the first kinds to flower, and is of a deep self-red colour and welcome for its earliness.

T. VITELLINA has large finely-shaped flowers of a lovely delicate yellow tint, and open with the earliest of the Gesneriana section. It is a splendid Tulip, its dwarf sturdy habit fitting it to withstand heavy rains and winds.

T. WILSONIANA.—A Tulip allied to *T. Batalini* and *T. linifolia*, with the same narrow leaves and distinct bulb-coating. The flower is of medium size, finely rounded, and of a peculiarly brilliant red. Turkestan.

MAY TULIPS.—The following kinds are in perfection about the middle of May, and may be relied on to make a garden gay:—Bridesmaid, rose flaked white; Buenaventura, orange and gold; Cloth of Gold, yellow often flushed red; Dainty Maid, white and pale rose; Elegans, a fine scarlet, with Elegans lutea, a pale yellow; Firefly, crimson; Gala Beauty (Columbus), yellow and scarlet; Gesneriana aurantiaca, orange-crimson; Golden Goblet; Gold Flake, red and yellow; Inglescombe Scarlet, brilliant scarlet and very large; Isabella, creamy-white flaked rose; Ixioides,

yellow and dark chocolate; La Candeur, white flushed rose; La Merveille, terra-cotta and orange-red; Leghorn Bonnet, sulphur yellow, with a distinct shape; Macrospeila, a fine shade of crimson and very fragrant; Maculata grandiflora, another fine crimson; Mars, blood-red; Mrs. Moon, yellow; Nigrette, chocolate-purple; Parisian white; Parisian yellow; Picotee, white with pink edges; Sunset, gold and orange-red; The Moor, deep crimson.

SELF-COLOURED DARWIN TULIPS.

—This new race of "Breeder's" selected from the older Mother Tulips, yields brilliant flowers in many fine shades of colour, their centres clear and well defined, with in many cases a ring of white, gold, or blue, dividing the petal colour from the dark base. They grow 2 to 3 ft. high, with flowers so massive and weather-resisting as to yield precious effect in the garden during May, and so hardy of constitution where the soil suits them, that the grass of meadows or woodland cannot choke them, even when left to themselves. Good kinds are Negro and Sultan, in dark shades of chocolate-black; Harry Veitch, crimson-purple and black; Dorothy, rose and white; Europe, salmon-scarlet; Flambeau, scarlet; Hecla, crimson-maroon; Loveliness, soft carmine; Queen of Roses, rose and blush; May Queen, rose and white; Mr. Farncombe Sanders, rosy crimson; Salmon King, cerise with white centre; Glow, vermilion touched with white; Clara Butt, salmon-pink; and Zephyr, soft rosy-lilac and white.

PARROT TULIPS.—Good kinds are Admiral Constantinople, in shades of orange and scarlet; Cramoisi brilliant, in deep crimson with blue-black markings; Lutea Major, pure yellow; Markgraaf, gold, orange, and scarlet; and Perfecta, golden with a scarlet stripe.

Tulipa Species:—*Alberti*, Turkestan; *altaica*, Siberian Alps; *aristata*, China; *australis*, Portugal, France; *Beccariana*, Italy; *Behmiana*, Turkestan; *Biebersteiniana*, Caucasus; *biflora*, do.; *bithynica*, Asia Minor; *baotica*, Greece; *Boroczwizi*, Turkestan; *brachystemon*, do.; *campanulata*, (?); *caucasica*, Caucasus; *chrysantha*, Persia, India; *clusiana*, Europe; *conivens*, Italy; *cretica*, Crete; *crispatula*, Persia; *cuspidata*, Algeria, Persia; *dasyystemon*, Turkestan; *Dideiri*, Europe; *edulis*, China, Japan; *Eichleri*, Turkestan; *elegans*, (?); *erythronioides*, China; *etrusca*, Italy; *foliosa*, Armenia; *fragrans*, Algeria; *fulgens*, (?); *gallica*, France; *gesneriana*, E. Europe, East; *greigi*, Turkestan; *Hageri*, Greece; *heterophylla*, Alps; *humilis*, Persia; *hungarica*, Hungary; *iliensis*, Turkestan; *Kaufmanniana* do.; *Kesselringi*, do.; *Kolpakowskiana*, do.; *Korolkowi*, do.; *Kranseana*, do.; *lanata*, Bokhara; *linifolia*, do.; *Lownei*, Syria; *lurida*, Europe; *maculata*, (?); *maleolens*, Italy; *Martelliana*, Europe; *Montana*, East; *oculus-solis*, S. Europe, East; *orientalis*, S. Europe, Caucasus; *Orphanidea*, Greece; *Ostrowskiana*, Turkestan; *oxy-petala*, Tauria; *Passeriniana*, Europe; *patens*, Siberia; *platystigma*, France; *polychroma*, Persia; *præcox*, S. Europe, Syria; *primulina*, Algeria; *pubescens*, (?); *pulchella*, Cilicia; *Regeli*, (?); *retroflexa*, (?); *saxatilis*, Crete; *scabriscapa*, Italy; *serotina*, Italy; *sogdiana*, Turkestan; *sommierii*, Europe; *stellata*, Persia; *strangulata*, Etruria; *suaveolens*, S. Russia; *systola*, Persia; *tetraphylla*, Turkestan; *thianschanica*, Cent. Asia; *triphylla*, Turkestan; *turkestanica*, do.; *undulatifolia*, Asia Minor; *uniflora*, Siberia; *violacea*, Persia.

TUNICA (Coat-flower).—*T. Saxifraga*

is a small plant with a profusion of wiry stems that bear numerous elegant little rosy flowers. It forms tufts a few inches high, does best on poor soils, but thrives without particular care anywhere. It is a native of arid stony places on the

Tunica Saxifraga.

Pyrenees and the Alps; but it often descends into the lowlands, and is found on the tops of walls. It will doubtless grow in such positions in this country. It is a neat plant for the rock-garden and fringes of borders, and thrives like a weed between the stones in a rough stone wall. Seed.

TUSSILAGO (*Coltsfoot*).—*T. Farfara variegata*, the variegated Coltsfoot, is perfectly hardy, increases itself by running underground, and, being of spreading habit, is not easily got rid of when established. It may be used with good effect in shady positions where other plants will not thrive, and does well as an edging to a clump of Ferns, or as a groundwork to plants with graceful foliage.

TYPHA (*Reed Mace*).—Graceful water-plants, hardy, easily grown, and very ornamental whether at the waterside or cut for decoration. *T. latifolia* is a native plant, growing in tufts of two-rowed flat leaves, 18 to 24 in. long and 1 or 1½ in. wide. From the centre of each tuft springs a stem 6 or 7 ft. high, terminated in the flowering season by a close cylindrical spike 9 in. long, which is of dark olive, but changes to brownish-black as it ripens. *T. angustifolia* is like it except in the size of the narrower leaves and spike, and of the two is perhaps the more graceful. *T. minor* is a smaller form of it. *T. minima*

is the smallest of the hardy kinds, 12 in. to 18 in. in height, with slender rush-like leaves and dense or globose heads, those of the other kinds being much longer than they are broad. Other kinds to be found in Water Gardens are *T. stenophylla* with narrow leaves turned in a spiral and short thick spikes; and *T. Shuttleworthii*, like *latifolia* as to general appearance, but with leaves of a showy golden-green.

ULEX (*Furze*).—The native Furze is so beautiful and is so well suited for clothing dry banks and the like, that it should be included among flowering shrubs. Where the common Furze grows wild, the double variety is well worth planting, as it is more effective and lasts longer than the single kind. There is also a dwarf sort, *nanus*, which deserves a place, as it flowers at midsummer when its commoner relative has done. This is also a native, and where it flourishes it makes a dense prickly bush 2 ft. high.

U. strictus (*Irish Furze*) is an uncommon variety of *europæus*, sometimes met with in botanical collections. As all the kinds of Furze are difficult to transplant when large, the best plan is to get small plants of the double and of the dwarf kinds, and to sow seed of the common single kind. In most nurseries the double Furze is kept in pots, and can be planted at any time. There are few finer sights than a bank of double Furze in full bloom, and this can be enjoyed in every garden. Vigorous pruning when the plants become straggling is all the attention needed. In severe winters all these plants are liable to be cut to the ground, but they start again little the worse.

ULMUS (*Elm*).—Summer-leaving forest trees of northern and temperate regions and of importance in planting, though the dangerous habit of the common Elm of suddenly dropping heavy branches should make us cautious about planting it near houses. Some of the kinds that may be of interest in botanical collections are not worth a place in private grounds, where those planted should be the most distinct and stately kinds only, as weedy-looking Elms, common in some districts, never give fine effect. The common habit in many districts of forming avenues of Elm only, might well be modified in favour of other trees of proved value, as the loss caused by storms in Elm-planted villages and roadsides is deplorable.

U. AMERICANA (*Water Elm*).—A large and handsome tree inhabiting moist soil and banks of streams in North America; quite hardy,

and useful in Britain. There is a weeping variety.

U. CAMPESTRIS (*Common Elm*).—This tree is naturalised in our river valleys, and often blown down by storms in numbers. If we wish to shade our road or walks with trees we certainly should take the trouble to find those which anchor themselves securely, and this does not. There are many varieties, the Cornish, a pendulous one, and the usual variegated ones always more attractive in the nursery state than they are when they get older.

U. MONTANA (*Mountain or Wych Elm*).—A fine tree, distinct and handsome as a shade and lawn tree, and not so dangerous as the common Elm. There are numerous varieties,

when they are bruised. This is due to a volatile oil present in such quantity that the fresh-cut brushwood burns readily, while from the leaves "Bay water" is distilled. The fragrance becomes oppressive and even dangerous in a confined space, causing sneezing, headache, and a kind of temporary paralysis in extreme cases. In its own land it makes a noble evergreen tree 90 to 100 ft. high with a trunk diameter of 4, 6, or even 8 ft. in rare instances where the trees have endured for centuries. It flourishes upon the foothills and along the banks of water-courses, growing in dense groves which some-

Tussilago Farfara variegata (Variegated Coltsfoot).

pyramidal upright growers, and, best of all, a weeping variety, a beautiful hardy and distinct tree thriving almost anywhere. There are many specimens in London gardens, and the trees being grafted on their own wild form, the junction is a sound and enduring one and the tree improves with age.

UMBELLULARIA CALIFORNICA (*Californian Laurel*).—A handsome evergreen tree, seldom planted though hardy in our southern gardens and suited to walls where too tender for the open. It might pass as a narrow-leaved form of the Common Bay, the resemblance in the shape of leaves and their texture being emphasised by a similar fragrance emitted

times extend for miles, as beside the Eel River in Humboldt County. It is perhaps the most valuable timber-tree of the North Pacific Coast, where its wood is in great demand for furniture and house decoration. The small greenish-yellow flowers appear as dense clusters, followed by fruits at first like a green Walnut in size and appearance, turning purple when fully ripe and hanging for many months. Imported seed germinates without difficulty. There are few better seaside trees, the foliage being dense and very resistant and its colour distinct and good. It grows freely in a dry porous soil, and in default of seed may be increased by cut-

tings taken in early summer, but seed is in every way best. Syn: *Oreodaphne californica*.

UMBILICUS.—See COTYLEDON.

UNGNADIA (*Spanish Buckeye*).—*U. speciosa* is a slender summer-leafing shrub or small tree from Texas, allied to the Horse Chestnut, with glossy leaves divided like those of a Hickory, and rosy flowers an inch across appearing with the leaves in spring. The fruits ripen in October, and are like a smooth-skinned Chestnut-pod with three lobes. Though a pretty little tree, it is only suited to those with gardens in the warmest parts of Britain.

UNIOLA.—*U. latifolia* is a handsome perennial Grass from N. America, 2 to 3 ft. high, with a large loose panicle, bearing large flattened spikelets. A clump, placed in rich garden soil, gathers strength from year to year, and when well established is a beautiful object. *U. paniculata* is a taller kind which grows well upon the sand of the sea-shore, with Oat-like clusters which are very ornamental when dried.

UROSPERMUM.—*U. Dalechampii* is a rather handsome composite from S. Europe, of dwarf tufted growth, with large heads of lemon-yellow blossoms. It thrives in an open position in any light soil, growing about 18 in. high, and is hardy.

UVULARIA (*Bellwort*).—Graceful perennials allied to Solomon's Seal, bearing yellow blossoms. There are four cultivated species, *chinensis*, *grandiflora*, *perfoliata*, and *sessilifolia*. Of these *grandiflora* is the finest, and the only one worth growing generally. It attains a height of 1 to 2 ft., and its numerous slender stems form a compact tuft, with flowers long and yellow, drooping gracefully, and pretty in early summer. It is a good peat border plant, thriving best in a moist peaty soil and in shade. North America, except *chinensis*. Division.

VACCINIUM (*Whortleberry*).—A group of evergreen and summer-leafing shrubs allied to the Heath family, often beautiful in bloom, in fruit, and in autumn colour, yet neglected in gardens. The smaller kinds may be planted as edgings to beds of Rhododendrons and other peat-loving shrubs or as groups in the rock-garden. They will not grow in lime soils, and are averse to removal, but are otherwise of easy culture, and increased by suckers, cuttings, or seed. Unless from a good nursery where they have been frequently transplanted, they must be well cut in after removal. Most kinds

are best in partial shade and in moist or boggy soil, though some do well in drier and sunny places. Many kinds bear good fruit of agreeable acid flavour, known under various popular names and valued for tarts and preserves. Though now often classed apart under the name *Oxycoccus*, the true Cranberries are included here. The following are the best of the hardy kinds.

V. ARCTOSTAPHYLOS (*Bear's Grape*).—A fine summer leafing shrub of 6 to 8 ft., from the wooded mountains bordering the Black Sea. It bears bluish-white flowers tinged with purple and reddish-purple berries, and likes a damp shady place.

V. BUXIFOLIA (*Box-leaved Whortleberry*) is a pretty evergreen shrub from the hills of Virginia, 6 to 8 ins. high, and useful for edgings in a shady place.

V. CANADENSE (*Velvet-leaf*).—A low shrub of 1 to 2 ft., with white flowers tinged with green and red, coming just before the leaves, which are soft and downy. The abundant blue berries are covered with bloom and very sour, ripening late. The plants grow in well-drained but moist peaty soil, and give fine autumn colour.

V. CORYMBOSUM (*American Blueberry*).—A spreading shrub of 8 to 10 ft., charming with its small pink flowers in spring and vivid leaf-tints in autumn. The fruits are good and improving with cultivation, the less common white and pink varieties giving pretty colour effects. There are several forms—*amenum* with bright green downy leaves, and *pallidum* in which they are pale and glaucous. This species needs a swampy peat-soil, transplants well, and is easily raised from seed. *V. virgatum* is a southern form of this species.

V. ERYTHROCARPUM (*Bearberry*) is a tall slender shrub of 8 to 10 ft., with a loose habit and showy fruits changing from red to deep black and full of juice, but insipid and worthless.

V. HIRSUTUM (*Hairy Huckleberry*).—A beautiful little shrub about a foot high, with long racemes of large greenish-white flowers, and dark blue hairy fruits of refined flavour. In autumn the leaves turn a showy brick-red colour, which endures for several weeks. The plant needs sun, and a moist peaty soil.

V. MACROCARPUM (*American Cranberry*).—A dwarf evergreen trailing shrub with its long loose stems covered with oval grey-green leaves, giving reddish-purple, bronze, and crimson tints in autumn. The rosy flowers appear in June, and the ripe fruit in September or October. There are many varieties, valued for their fruit. Thrives best in wet peat-bogs. Syn. *Oxycoccus*.

V. MYRSINITES.—A cheerful evergreen shrub of 1 to 2 ft. with neat glossy-green leaves, clusters of bell-shaped white flowers touched with pink, and red berries ripening to blue or black. Firm sandy peat, well-drained. Syn. *V. Sprengeli*.

V. MYRTILLUS (*Bilberry*).—A native shrub growing on our moors and in shady woods. Its rigid stems, often only a few inches high, rise from a creeping rootstock, bearing neat leaves (red while young), small rosy flowers, and juicy blue berries of excellent flavour.

V. OVATUM.—An evergreen shrub of 3 to 8 ft., from the Pacific coast of N. America, with thick glossy leaves, bright pink flowers, and handsome red fruits, ripening black and of good flavour. This makes a choice hedge plant, and is one of the most useful kinds of the genus.

V. OXYCOCCUS (*Cranberry*) is a trailing evergreen shrub found in our peat bogs, from Sussex to Shetland. It has downy stems, scattered leaves, tiny red flowers, and dark red acid fruits. Syn. *Oxycoccus palustris*.

V. PENNSYLVANICUM (*Dwarf Blueberry*).—A low shrub of 6 to 12 ins., with oblong shining leaves, white or rosy flowers, and sweet bluish-black fruits, ripening early and much esteemed. The plant grows well in drier places than most whortleberries, and the autumn leaf-tints are rich. There are many forms of this little plant, including *angustifolium*, which is very dwarf; and *nigrum*, with smaller black fruits ripening even earlier than in the parent.

V. STAMINEUM (*Deerberry*) is a dense shrub of 2 ft., growing in dry woods of New England, with grey-green leaves, showy greenish-white or purple flowers, and pale green, round or pear-shaped fruits of no value. It is a graceful garden shrub, thriving in shady places, and easily grown. The flowers are peculiar in having no bud-stage, coming wide open from the first.

V. ULIGINOSUM (*Great Bilberry*).—A native trailing shrub, found in mountain bogs and woody places of Scotland and the north of England. The flowers are small, pale pink, and the berries dark blue. A useful rock-plant for cold wet soils.

V. VACILLANS (*Pale Blueberry*) is an erect-growing little shrub well adapted for dry and sandy places, with showy bell-shaped flowers contracted at the mouth, and borne in loose clusters; large blue berries, with a dense bloom and good flavour, ripening after the first earlies. A pretty plant, and worth growing for its fruit alone.

V. VITIS-IDÆA (*Cowberry*).—A native evergreen shrub with trailing stems, growing in the west from Devon and S. Wales, into Scotland, but absent from the S.E. of Britain. The box-like leaves are dark and shining, and the pretty pink flowers give place to crimson berries the size of red currants and equally useful, but only abundant on well-grown plants. The leaves turn a pretty bronze-tint in autumn. It is a good rock plant doing well in dry soils and even in towns.

J. H. B.

VALERIANA (*Valerian*).—Hardy perennial and mountain plants, of which the only one worth cultivating in a general way is the golden-leaved variety of *V. Phu*—an

effective plant in spring, when its foliage is young; it is of neat tufted habit, and grows freely in any soil. A few dwarf alpine Valerians are sometimes grown, but they are not attractive. The flowers, too, are unpleasantly scented. Some of the larger species are pretty in rough places in moist land.

VALLOTA (*Scarborough Lily*).—*V. purpurea* is a handsome Amaryllis-like plant, with bright crimson scarlet flowers, hardy in mild spots. It requires a warm situation in light soil, such as the foot of a south wall, and in such positions it often thrives better than in pots under glass, but the bulbs must be protected during severe frosts. The outdoor culture of this plant deserves more attention than it has hitherto had. Some flowers sent us by Mr. Kingsmill, grown in his garden, were superb. Increase by offsets. Cape of Good Hope. There is a scarce and beautiful variety in which the flowers are white.

VANCOUVERIA.—*V. hexandra* is a most graceful and distinct plant, 10 to 18 in. high, with light fern-like leaves and slender spikes of pale flowers, and is a charming plant for the fernery and rock-garden, best in peaty soil. It is distinct from any other plant, and grown in broad tufts and groups it is charming. It is apt to perish in some heavy soils, and thrives best in peaty soils. Vancouver. Division.

VENIDIUM.—*V. calendulaceum* is a beautiful half-hardy plant of dwarf spreading growth, with in summer showy yellow Marigold-like blossoms, 2 in. across and good for cutting. A good effect is gained by putting out several plants on a warm sunny border, or even on the top of a wall or a raised stone edging. Cuttings inserted in August root freely, and may be wintered in the greenhouse if kept fairly dry, otherwise they will damp off. Seeds germinate freely in a hot-bed in early spring; both should be planted out in May, in friable soil. S. Africa.

VERATRUM (*White Hellebore*).—*V. album* is a handsome erect pyramidal perennial, 3½ to 5 ft. high, with large plaited leaves and yellowish-white flowers in dense spikes on the top of the stem, forming a large panicle. The leaves are handsome, and most effective when the plant is in small groups, either in the rougher parts of the pleasure ground or by wood walks, thriving in peaty soil. The root is exceedingly poisonous. *V. nigrum* has more slender stems, narrower leaves, and blackish-purple flowers. *V. viride* resembles *V. album*, except that its flowers are green. *S. californicum* has

stout stems of 5 to 7 ft., with branched and tapering spikes of greenish-white bell-shaped flowers, followed by ornamental fruits. Division. These plants do best in moist half-shady places in the wild garden, rarely attaining their full beauty in dry sun-scorched soils. France.

VERBASCUM (*Mullein*).—These are stately plants, mostly of biennial duration, but the best are so handsome and long flowering as to be quite essential in the garden, where in many cases once introduced they come year after year like

Verbascum olympicum.

the Foxglove. The finer kinds merit good treatment and planting in bold groups.

V. Chaixi (*Nettle-leaved Mullein*) is a perennial species, 10 ft. in height and very imposing when well grown. The bright green leaves come up early; the flowers are large, yellow, with purple filaments, and last a long time. There is also a handsome variety with white flowers. It is a native of Europe. *V. Crassifolium*, a charming species, with yellowish tomentose woolly leaves and robust spikes of large yellow flowers, is a native of Portugal.

V. cupreum is a beautiful cross between *V. phæniceum* and *V. ovalifolium*, coming near the first parent in habit, hardy, a true perennial, with slender spikes 2 to 3 ft. high of copper-coloured flowers from May to August. Other hybrids related to this are *V. hybridum*, Daisy Hill, a cross between *V. phæniceum* and *V. cupreum*, with short spikes of

bright copper and orange-coloured flowers; and Lewanika, from the same cross, a taller plant with flowers of a peculiar shade of bronze-purple, produced during a long season.

V. nigrum, a native of Britain, is pretty, a true perennial with yellow flowers, but

Verbascum phlomoides.

rarely more than 3 ft. high. A handsome form of it, now grown in gardens, with pure white flowers, is a good plant. South Europe.

V. olympicum is one of the grandest of the family, strong flower-stems attaining 6 to 10 ft. in height, the flowers rich yellow, and woolly leaves forming bold rosettes. A biennial from the Orient. *V. phæniceum* (Purple-leaved Mullein), one of the best perennials for borders in small gardens, is very variable, there being white, violet, lilac, rose, and purple-flowered varieties, flowering from May to August. S. Europe.

V. phlomoides is the best of all Mulleins, 5 to 9 ft. high according to the richness of soil, its flowers yellow, continued nearly the whole season through. It will grow in almost any soil, and should

be grouped boldly among shrubs and the larger hardy plants, or naturalised in chalky or sandy banks. France and S. Europe.

V. pyramidatum (*Pyramidal Mullein*), from Siberia, with candelabrum-like branches of bright yellow flowers, is a

Verb ascumphœniceum.

good plant, perennial on warm rich soils, and effective with its towering stems and huge rosettes of crisped leaves.

Other Verbascums of interest are *macrurum*, *longifolium*, *virgatum*, *Blattaria*, *niveum*, *Boerhavi*, *sinuatum*, and *orientale*.

VERBENA.—Beautiful halfhardy trailing plants which of late have not been popular in gardens, probably on account of the disease that attacks them. Verbenas bloom profusely till late in the autumn, and if temporarily disfigured, a burst of sunshine quickly restores their beauty. There are many fine varieties, English and foreign, and a pretty bed may be gained by mixing some of these together. The Verbena should have a dry open border, and trenched ground, dressed with spent hot-bed manure and leaf-soil.

Put out the plants about the end of May, and as they grow peg the shoots securely over the bed, keeping them well thinned. The best way of ensuring good cuttings for spring propagation is to keep a few store plants in pots all the summer, and in the autumn cut them pretty close. Give them a shift then into larger pots of rich soil. Soon afterwards set these store plants in a cool house, or a pit from which frost is excluded. Of late years Verbenas have been most successfully raised from seed sown about the middle of January, in light soil in a warm frame or pit. The seedlings should be pricked out, and when established placed near the glass in a well ventilated pit, in order to induce stout hardy growth. About the end of March they may be potted singly in 2½-in. pots, and a month later potted again, planting them out about the middle of May 2 ft. apart. Verbenas raised from seed need not be cut for propagation, and run little risk of disease or of insects. Wintering the plants is a troublesome matter, but with seedlings this is avoided, and they have vigour to resist the disease. Their wonderful diversity and brilliancy of colour and their many flowers combine to make these seedling Verbenas most valuable plants. Seed is sold in colours which come remarkably true—scarlet, blue, white, carnation, flaked, and other forms. The scarlet kind is from the old *Defiance*, and its growth and freedom are marvellous. The compact purplish-red *kermesina* is pleasing and effective. The named kinds will be found in any good nursery catalogue.

V. venosa is a perennial kind, 12 to 18 in. high, with purple-violet blossoms, hardier than ordinary Verbenas, less apt to mildew, and cheerful even in drenching rains. It is easily wintered, its fleshy roots being stored thickly in boxes, and the young shoots rooted in spring. When the roots are lifted in autumn, place them at once in boxes, which should be stored in a cool place until required for propagation. In borders they will remain for years if protected through the winter. Argentine.

VERBESINA.—*V. encelioides* is a half-hardy annual, 1 to 2 ft. high, with broad clusters of golden-yellow blossoms. California, Texas, and Mexico. *V. gigantea* from Jamaica is about 6½ ft. high, and very pleasing with its round green stems covered with large, winged, glistening, green leaves. It is suitable for beds or groups, and should be planted out early in June. *V. pinnatifida* is a rough half-shrubby species, with larger leaves. Both

these require heat in winter. Cuttings root easily in spring, and grow fast when put out in a sheltered position and rich light soil.

VERNONIA (*Ironweed*). — Coarse North American Composites, of which some half dozen are in cultivation. They bloom so late as to be scarcely worth growing, but *V. præalta* is a stately plant for the wild garden. Even if its flowers are injured or escape us, it may be grown in a ditch, or open spot in a wood. Division.

VERONICA (*Speedwell*). — A large family very variable in structure and appearance. Many are trailing or carpet plants, with flowers mostly of a blue shade, but sometimes rose or dull white; others are vigorous perennials with rigid flower-spikes of similar colours; while a third group, mainly from New Zealand, are evergreen shrubs ranging in height from a few inches to many feet, and most variable in character. It happens that in all these classes plants of the same species differ so much that their correct naming is difficult. Forming two such wholly distinct groups, we shall describe the shrubby New Zealand kinds and the herbaceous perennials in classes apart.

SHRUBBY VERONICAS. With the exception of two or three kinds these are all from New Zealand, where they form a large part of the vegetation, completely covering the hillsides in many places. Few shrubs are more easily increased and grown than many of these shrubby Speedwells, and hence their wide use in our gardens, spite of the fact that few are fully hardy inland, and that with every hard winter thousands perish. But it is so easy to hold cuttings in reserve, and young plants so quickly repair these losses, that occasional destruction is less serious than it would be with many other plants. The smaller kinds, drawn from greater elevations, are less tender than the leafy shrubs of the coast region; they carry small tough leaves, often Box-like, and being hardy in all save the coldest winters, their distinct colour and neat growth are valuable in the rock-garden. They are, however, somewhat more particular as to soil and position than the larger leaved kinds, preferring ground that is open and well-drained. These kinds merge into an alpine group found at a considerable elevation, at which likeness to their fellows is largely lost, the tiny trees (for such they are) appearing like Heaths, conifers, or mosses. Though beautiful and of great interest,

these little plants seldom thrive inland, though they flourish in seaside gardens.

At the seaside few plants are more useful than the large shrubby Veronicas, which fear neither winds nor salt spray. Cuttings of the young shoots root easily at almost any season, while many kinds seed freely and sow themselves in the border. The mountain kinds mostly flower in early summer, and are then attractive. Many of the larger kinds

Shrubby Speedwell

bloom best in autumn and winter, proving of value for cutting and for greenhouse decoration at a dull season, the colours of the newer named varieties being a great advance on the mauves and purples of past days.

The following are the most distinct of the shrubby kinds:—

V. AMPLEXICAULIS.—A low, erect, or semi-trailing shrub, its stout branches densely set with grey stem-clasping leaves. The white flowers appear as short dense spikes studded with blue anthers.

V. ANDERSONI is a stout leafy shrub raised as a hybrid, and most useful near the sea,

though tender even there in hard winters. The hills round Queenstown Harbour were once covered with this shrub—plants 8 ft. high and 20 ft. in diameter—yet all perished in one cold season. There are several varieties with flowers in shades of blue, lilac, and crimson, and one with variegated leaves.

V. ANOMALA, a neat, much-branched shrub with small narrow leaves densely set on slender reddish stems, of which every twig is tipped with starry white flowers in July. There are several garden forms differing slightly.

V. BIDWILLII is a little creeping shrub, spreading carpet-like beside the mountain streams of its own land, and changing into sheets of pink, white, or pale violet flowers in July. It is best in the upper part of the rock-garden, where its neat leaves are attractive the year through, and unhurt in any ordinary winter.

V. CARNOSULA.—A little hardy shrub of erect growth, with thick leathery leaves of glaucous green, flowers pure white.

V. CATARRACTÆ is a slender, much-branched shrub of 1 to 2 ft., with long, narrow, pointed leaves, evenly serrate at the edges, and large white flowers in July.

V. CHATHAMICA makes dense trailing cushions of glossy-green glaucous leaves, with close cone-shaped flower-clusters of pale mauve or rosy-purple fading to white. There is a distinct form called *minor*. Chatham Islands.

V. COLENSOL.—A variable little shrub running into several other kinds by intermediate forms. It is one of the best for the rock-garden, hardy, with narrow stemless leaves tapering towards the base, and dense clusters of pure white flowers from every leaf axil during June and July.

V. CUPRESSOIDES is one of the strangest of the alpine kinds resembling conifers. This is like a little Cypress, with slender, bright green branches rising erect from 2 to 4 ft., bearing pale violet flowers in small clusters at the tips of the shoots. It is fully hardy and grows best on light gritty soils of fair depth, overlaid with flat stones to retain moisture. There are several varieties with grey or bronze tints, and *variabilis* (*V. salicornioides* of gardens), which is only 6 or 8 in. high and a fine golden-green. All are of slow growth and only bloom well when old. They often die off without apparent cause and are difficult to preserve in the south, though there are fine plants in parts of Scotland and Ireland.

V. DIEFFENBACHII.—A shrub with tough leathery leaves 3 in. long and an inch broad, and large crowded spikes of blue flowers in August, fading to white with exposure. Coming from the shores of New Zealand, it is tender with us in all save the most favoured places.

V. DIOSMAEFOLIA is a dainty little shrub but tender. The leaves are borne in pretty flatly-spreading sprays, and taper sharply to each end; the flowers are white with pink

anthers, opening in June. It is useful under glass in winter, and bears gentle forcing.

V. ELLIPTICA.—The only tree-like species, growing 30 ft. high in parts of S. America and New Zealand. In the mildest parts of Britain (Scilly Is. and Isle of Man) it also reaches a large size, flowering almost continuously even in winter. The leaves are narrow, closely set, and bright green; the flowers white, rather large, fragrant, appear as lax few-flowered heads at the tip of every shoot. Syn. *V. decussata*.

V. EPACRIDEA.—A pretty little shrub, tender, not easily grown, and shy in flower, yet charming where it thrives. The rigid much-branched shoots are very like those of an *Epacris*, with leaves dark, glossy, and curving upwards. Though small, the flowers last a long while, and once established on the rock-garden, few shrubs are more interesting.

V. FAIRFIELDII is a hybrid of uncertain parentage, about a foot high, with purple stems, and toothed leaves purple beneath.

V. GLAUCO-CÆRULEA.—A choice hardy plant about a foot high, with neat oblong leaves barely half-an-inch long, bluish-grey with purple edges, and borne on dark purple stems. The bright blue flowers are beautiful and it is one of the most charming of hardy shrubs for the rock-garden. *V. canterburyensis* is like this save in its lively shining green colour, and its white flowers with blue anthers.

V. HECTORI belongs to the alpine group from the mountain tops. Its stems are like green and polished whipcord, upon which the leaves appear as tiny scales. It is of slow growth, standing only a few inches high, while the white or rosy flowers are seldom seen even in its own land. It does best in gritty soil, and though hardy needs care as to soil and position. Cuttings of this kind root slowly and with difficulty. *V. Armstrongii* resembles this except in its golden tint, and its more abundant pale blue flowers.

V. HULKEANA.—One of the most charming of Veronicas, tender save in the milder parts of Britain and in warm nooks near the sea, and even then best against walls where shelter can be given from late frosts. A light soil and partial shade are the best conditions, resulting in a free growth several feet in height, with oval notched leaves and many spikes of pale lilac flowers in May. For cutting it is one of the prettiest of flowering shrubs, the spikes often 2 ft. long and gracefully curved. Where tender in the open air there is no prettier pot-plant for the conservatory, where it flowers early. Increase by cuttings rooted in a cool shaded frame during summer and early autumn, and as the plant often dies suddenly, some should be always in reserve.

V. KIRKII is a tall, handsome shrub, fairly hardy near the sea, with fresh green leaves, narrowly lance-shaped, set on dark polished stems. The graceful spikes of white or pale mauve flowers 4 to 8 in. long, appear only on large plants during early summer, and are highly useful for cutting.

V. LAVAUDIANA is a small prostrate shrub about 8 in. high, with stout trailing branches set with glossy pink-edged leaves, and bearing large white, rosy, or purple flowers in May. It is charming in the rock-garden, of rather slow growth, and perishes in a hard winter. Near this is *V. Raouli*, a dense shrub of taller and more erect growth, with narrower leaves also red at the margin, and abundant mauve coloured flowers.

V. LEWISII.—A large leafy shrub, flowering freely from the end of May, and like so many other kinds, an excellent seaside plant.

V. LINDSAYI is a pretty hybrid raised by Mr. Lindsay of Murrayfield, Edinburgh, bearing erect grey-green shoots, ringed round at regular intervals, set with tiny scale-like leaves in four equal and opposite rows, and tipped with clusters of lilac flowers.

V. LOGANIOIDES belongs to the class of alpine conifer-like Veronics, though the tiny leaves hug the stems less closely than in other kinds, and the clustered white flowers are so abundant in a good season as to hide all else.

V. LYALLII is a slender trailing shrub of dense habit, less than a foot high, and rooting where the stems touch the soil. These are closely set with firm leathery leaves, variable as to shape and size, with serrate edges and more or less pointed. The flower-stalks start from every leaf-axil, bearing lax sprays of rather large pale mauve flowers, prettily veined. It is one of the most constant in flower, and ripens seed freely.

V. LYCOPODIOIDES.—A tiny creeping shrub hardly rising above the ground, its angular stems sheathed in dark green scale-like leaves, and like a club moss. It fails in the south, but is a pretty rock-plant for North Britain, flowering freely in a good year.

V. MACRANTHA bears the largest flowers, and is one of the most beautiful of the group, covering large tracts of its native mountains at an elevation of 3,000 to 6,000 ft. It is a rigid little shrub about 2 ft. high, with bright green leaves toothed at the edges, and many pure white flowers an inch across.

V. PIMELEOIDES is a neat little shrub of about a foot, with small oval grey-green leaves with red edges, and reddish-purple spikes of flower. This is a variable kind with several distinct forms, that called *minor* being of trailing habit.

V. PINGUIFOLIA.—Of dense growth, it nestles happily amongst rock-garden plants, its intense glaucous colour effective. The white flowers with purple stamens are borne in crowded spikes and never fail to appear in early summer. This kind and its immediate allies are among the hardiest of shrubby Veronics. *V. decumbens* comes near this, and is of prostrate habit with black polished stems, bright green instead of glaucous leaves, and larger flowers with rosy anthers.

V. SALICIFOLIA is a fast-growing shrub of graceful habit, with narrow glossy leaves 2 to 6 in. long, and bluish purple or white flowers

in slender tapering spikes. It is not only most variable as a species, with many wild forms, but has been crossed freely with other kinds. *Vs. macrocarpa* and *parviflora* come so near this as to seem only extreme forms of it. The variety with pure white flowers is the best, and one of the most charming of seaside shrubs, tender inland.

V. SPECIOSA.—The best known of shrubby Veronics, of rapid growth, with leafy stems, a freely branching habit, and showy mauve or purple flowers fading to white. The early forms with their crude colours are now replaced

Veronica pinguifolia.

by named varieties due to crossing and selection, and among the most beautiful and easily grown of flowering shrubs for autumn and winter.

V. TRAVERSI.—One of the hardiest of the group, often resisting for years even in cold midland gardens. Its regular leaves and rounded outline are not graceful, but as a town shrub and one that thrives well on chalk, it has some merits and is useful for cutting in winter. In a good season old plants flower freely, and are then attractive. It is easily increased and often sows itself. A variety *robusta* is of more rigid habit and bears leaves of a paler green. *V. Balfouriana* is a smaller shrub, with smaller brown-edged leaves and longer spikes of larger flowers.

V. VERNICOSA.—A low loose-growing little shrub, with small red-edged leaves shining as though varnished, and crowded spikes of

flower at the tips of the shoots. Nearly hardy in our southern rock-gardens.

NAMED HYBRIDS.—All these have come from three or four kinds—*Salicifolia*, *elliptica*, *speciosa*—crossed, recrossed, and selected, until the precise parentage has been lost. *V. Andersoni* was one of the earliest, and other old kinds are Blue Gem, an old favourite of compact growth and nearly always in bloom; Celestial, light blue; Imperial, crimson-purple; Jardin Fleuri, deep carmine; Mdm. Chrétien Merveille, purple; Marie Antoinette, pink; Purple Queen, rich purple, the flowers slightly fragrant; Reine des Bleues, deep blue; and Ville de Hyères, a very hardy kind with crimson flowers. There are other kinds with variegated foliage, beside the yellow-leaved form of *V. Andersoni*, the best being Arc-en-ciel, with stripped foliage and deep red flowers; and Silver Star, a neat dwarf shrub in which the leaves pass from yellow to silvery-white, effective as an edging in warm soils. The newer kinds are Autumn Glory, a bushy plant with small purplish leaves and violet-blue flowers in autumn and winter; Bolide, with red flowers and a good habit; Conquête, white and mauve; Coquette, very long pale lilac spikes; Daimant, crimson-purple; Evaline, soft pink with prominent white anthers; Fleur de Roses, white; Gauntletti, with very long spikes of salmon-pink; La Seducante, dark magenta-purple with white anthers; Le Merveilleux, bright mauve; Meldensis, light purple; Mont Blanc, pure white; Mont Rosa, rosy-pink; Newryensis, rosy-grey flowers in spring; Queen of Whites, white tinged mauve; Redruth, rich red; Snowflake, long spikes of pure white; Valiere, bright violet with white anthers; and Vulcan, rich claret-red with reddish-green foliage. J. H. B.

PERENNIAL KINDS.—Among dwarfer kinds, *V. verbenacea*, *V. fruticulosa*, *V. alpina*, *V. aphylla*, *V. nummularia*, *V. Guthrieana*, *V. austriaca*, *V. incisa*, *V. bellidioides*, and *V. Dabneyi*, are of good dwarf habit, and suited for a rock-garden. The pink variety of *V. officinalis* forms dense patches of pink-blossoms, sometimes raised 3 in. above the ground. These mentioned are so hardy that they may be divided or moved at all seasons. Such kinds as *V. longifolia* need frequent division to prevent crowding. Most kinds ripen and sow their own seed, and the seedlings vary in colour and form.

V. Chamædrys (*Germander Speedwell*) is used for covering beds where late-flowering bulbs are grown. A curious variety, named *pedunculata*, is quite distinct and a neat plant with white flowers.

V. gentianoides is one of the earliest of the Speedwells, and flowers in May. Three forms are common—the type with grey flowers, a variety with white flowers and bright glossy

leaves like the *Gentianella*, and another with handsome variegated leaves. All are worth growing.

V. incana, also called *V. candida*, is a dwarf plant with silvery leaves, and dark rich purple flowers. It is used with good effect in bedding, its grey leaves being a contrast to most other foliage. A form of this named *elatio* has spikes of twice the normal length. *V. neglecta* is similar but inferior. Division.

V. longifolia is the commonest species, generally sold as *V. spicata*, and in four varieties—blue, white, rose-coloured, and purple. The variegation of the leaves is uncertain and irregular, but the habit of the plant is good. The rich colour of the flowers, the length of the flower-spike, and the sturdy and compact growth of the plant make it handsome for the border. It grows well in any soil.

V. pectinata is a pretty trailing kind, with serrated downy leaves and blue or rosy flowers. It is well suited for dry spots in the rock-garden, the margins of borders, and other places.

V. prostrata.—A very dwarf plant which is really a form of *V. Teucrium* but commonly known under this name or as *V. rupestris*. There are varieties with rose-coloured and white flowers which appear in early summer, the type being deep blue, hardy and pretty, blooming so freely that the spreading tufts 4 inches high are often quite obscured by the flowers. France, Central and Southern Europe, on stony hills and dry grassy places.

V. repens clothes the soil with a soft carpet of bright green foliage, covered, in spring, with pale bluish flowers. It thrives well on moderately dry soil, but delights in moist corners of the rock-garden. There is a variety with white flowers.

V. satureioides is one of the best of the Speedwells, though somewhat rare, with flowers about the size of those of *V. saxatilis*, of the same intense blue, and in abundant upright racemes.

V. saxatilis.—A native of alpine rocks in various parts of Europe, and also of a few places in Scotland. It forms neat trailing tufts 6 or 8 in. high, the flowers little more than $\frac{1}{2}$ in. across, of a pretty blue, striped with violet, and with a narrow but decided ring of crimson near the bottom of the cup, the base of which is pure white. There is a pretty white form.

V. spicata is a dwarf native plant, not more than 5 or 6 in. high, useful for bare corners of rock-gardens, but seldom flowering before the end of July. *V. corymbosa* is a name given to varieties of two or three species, but the best seems to be a form of *V. spicata* with deep blue flowers. This is one of the best plants for rock-gardens, being profuse and continuous in bloom. *V. hybrida* is generally classed as a variety of it, but seems quite distinct, since it is far more robust, and its flowers vary in colour from dark purple to lavender and light rose. It grows wild in profusion on mountain limestone hills near Llandudno and in other of the north-western counties.

V. spuria is 12 to 18 in. high, but rather too diffuse and should be cut down in autumn, as otherwise it trails untidily. In June it produces many terminal racemes of bluish-purple blossoms. Syn. *V. amethystina*.

V. subsessilis is botanically considered a variety of *V. longifolia*, but for garden purposes is very distinct. It is the handsomest of the hardy Veronicas, and flourishes in spite of spring frosts and cold summers. Its large dense spikes of deep purple-blue flowers are effective, and it should always have a position among the choicest hardy flowers in a good deep loamy soil and open situation. Japan. Division or seed.

V. taurica.—A dwarf, wiry, and almost woody species from Tauria, forming neat dark green tufts, under 3 in. high; its fine Gentian-blue flowers borne abundantly. It is, perhaps, the neatest kind for forming spreading tufts, in level spots of the rock-garden, or drooping from chinks, and for association with the dwarfiest alpine plants. Division or cuttings. Syn. *V. orientalis* var. *tenuifolia*.

V. Teucrium.—A Continental plant, which forms spreading masses from 8 to 12 in. high, covered in early summer with flowers of an intense blue, at first in dense racemes which lengthen progressively. It is excellent for the rock-garden or borders, and grows freely in any soil. Seeds or division.

V. virginica and other tall species are 3 to 4 ft. high, and flower in July, but are deficient in colour.

VESICARIA (*Bladder Pea*).—Hardy evergreen perennials, of which *V. græca* is the handsomest, and bears a strong resemblance to the better-known *V. utriculata*, long cultivated in gardens. The bright yellow flowers open in succession for a length of several inches on each stem. Rocky places in South Europe. Cuttings or seed. Both kinds flourish in dryish soil, on dry sunny parts of the rock-garden.

VIBURNUM (*Guelder Rose*).—Handsome and vigorous shrubs of northern regions, beautiful in berry as well as flower, and with few exceptions of the easiest cultivation. They simply need a fair soil and plenty of moisture. Increase by cuttings and layers or seed—the best way. Some kinds are not worth growing, being either too much like others or tender and delicate with us; those admitted here are distinct and of value and it is best to limit ourselves to these.

V. ACERIFOLIUM.—A shrub of 4 to 6 ft., from the mountains of New England, and distinct in its broad and glossy three-lobed leaves. The flowers are not showy, but give place to oval red berries, blackish-purple when ripe. The leaves turn a fine crimson-purple in autumn, and the plant will grow in dry rocky soils.

V. CARLESII.—A charming Japanese shrub

of rather loose habit, with roundish leaves, silvery on the under-side and greyish-green above from their coating of fine hairs. The flowers expand as rounded clusters of good size in the latter part of April, though the buds are formed early the previous autumn. The flowers are pink in bud, opening white and retaining a flush on the outside; they are finely fragrant and of so thick a texture as to last a long time. Though uninjured at Kew during recent winters, the plant is still on trial as to hardiness in this country, and might possibly lose its buds in a severe winter. Cuttings.

V. CASSINOIDES.—Of the American Viburnums, this is one of the best, growing some 6 ft. high, with thick leathery leaves, 3 in. to 4 in. long, and yellowish white flowers, during the early part of June, in flat cymes 4 in. to 5 in. across, and handsome fruit, the berries changing first to rose colour and finally to bluish black. As they do not ripen simultaneously, fruits of both these colours, as well as green ones, occur on a cluster at the same time. Northern and Arctic America.

C. COTINIFOLIUM is a spreading shrub or low tree of 20 ft., found high on the Himalayas, yet so tender as to need shelter or a place on a warm wall during our winters. Its young leaves are downy but wear smooth, remaining grey and woolly beneath, ovate in shape, and $4\frac{1}{2}$ ins. long by $2\frac{1}{2}$ wide. The flower-clusters appear in May and June upon short woolly stalks, the small white flowers flushed with pink, and succeeded by bright scarlet berries. A beautiful shrub for warm districts.

V. DAHURICUM.—A spreading shrub of 6 to 8 ft., with grey stems and small woolly leaves. It is spread from Dahuria to Western China, and is hardy, thriving in light moist humus, and covered during early summer with white funnel-shaped flowers in small clusters, followed by fragrant oval berries, at first red, but black and sweet when ripe.

V. DILATATUM.—A shapely shrub of erect growth, brought long ago from the East and fully hardy, yet almost unknown in our gardens. Its bright green leaves resemble those of the common Hazel, and its showy heads of pure white flowers, appearing in May and June, sometimes measure 6 ins. across. These give place to scarlet berries, hanging for many weeks, and making this one of the most handsome of hardy shrubs.

V. DENTATUM.—A bushy shrub of 15 ft., with ovate leaves on slender stems and abundant white flowers in June and July, when the shrub is at its best. These give place to small rounded berries of a bright dark blue, covered with a fine bloom. There are two varieties, one with finely variegated leaves, and *lavigatum*, which flowers later and is larger in leaf. These are handsome shrubs for damp ground. N. America.

V. FURCATUM.—A handsome species, a native of North Japan at low levels; and of the mountains of the more southern portions, and one of the finest of shrubs for autumn colour.

The leaves, which are large and broad, turn brilliant scarlet and reddish purple before they fall, and it grows 12 ft. to 15 ft. in height. Japan.

V. LANTANA (*Wayfaring Tree*).—One of the two kinds native of Britain, and frequent in hedgerows and copses, especially in chalk or limestone soils. At its best it is almost a small tree, 12 ft. to 15 ft. high. The flowers are white during May and June on flat clusters at the ends of the branches. The fruit is red at first, ultimately black, and the leaves often die off a rich red. There is a variegated form of no particular value.

V. LANTANOIDES (*Hobble Bush* or *Moosewood*).—A North American kind, a large shrub, the leaves are almost round, and whilst averaging 3 in. to 4 in. across, are sometimes over 6 in. The truss has its outer flowers sterile, and they are 1 in. or more in diameter; both they and the smaller ones that fill the centre are white. The fruit is at first coral-red, afterwards dark purple or almost black, and the foliage dies off a rich claret.

V. LENTAGO.—A large bush or low tree of 30 ft., common throughout N. America in moist woods. Its broadly-oval pointed leaves are of deep shining green, changing in autumn to varied tints of purple, red, and yellow. The white flowers appear in stemless clusters during May and June, followed by large black berries, bluish with a delicate bloom, pleasant to the taste, and hanging for several months. It is sometimes grown as a standard with good effect. A variety in which the flower-heads have short stems is known as *subpedunculatum*. Allied to this is *V. prunifolium*, which also attains large size in dry stony places. Its leaves are Plum-like and shining, with saw-like edges, and the flowers pure white, fragrant, with prominent yellow-tipped stamens. The berries are bluish-black with a grey bloom.

V. MACROCEPHALUM (*Great Snowball Bush*).—A Chinese species, not very hardy, with enormous flower-clusters. In some places it thrives against a wall, and in the south as a bush. Fortune mentions having seen it 20 ft. high in Chusan. The wild plant from which it has been derived is in cultivation, and is known as *V. KETELEERI*. This has the centre of the truss (which is much flatter than in *V. macrocephalum*) filled with fertile flowers, the outer ones only being sterile.

V. ODORATISSIMUM.—As a rule, when grown out of doors this is given a place on a wall, as it is not hardy in all winters. It is evergreen, its foliage being handsome. Each leaf 3 to 6 in. long, leathery, and of a lustrous dark green. The flowers are in corymbs, and although small and dull white, are charming for their fragrance. China. Syn. *V. Awafuki*.

V. OPULUS (*Guelder Rose*).—A handsome and often rather tall native bush, frequent in the underwoods of many districts. In the wild form the outer flowers only of the cyme are sterile, and these are about three-quarters

of an inch across; the centre is filled with small perfect flowers. In autumn this plant is valued for its clusters of fine red fruits and for the colour of its leaves. Of its best known varieties is the VAR. STERILE (*the common Guelder Rose*). This has few or no perfect flowers, the whole truss consisting of the more showy barren ones. This causes it to lose its flatness and makes it much more rounded, which, together with the pure whiteness of the flowers, has led to its being popularly known as the Snowball Tree. A yellow fruited kind differs from the type in the fruits being yellow instead of red when ripe.

V. PLICATUM (*Japanese Guelder Rose*).—A very sturdy, robust, flowering shrub. I have seen young, newly-rooted plants injured the first year after being put out, but when once established it will stand any frost up to 30°

Viburnum plicatum.

without lasting injury. It is a shrub of neat, yet graceful habit, well clothed with dark green, rather plaited leaves. It bears its fine trusses, 3 in. or more across, on short branches springing from the whole length of the previous year's growth, thus forming fine sprays of pure white blossom. Syn. *V. Tomentosum* Var.

V. SIEBOLDI.—A handsome and distinct evergreen bush, with large glossy leaves and large heads of white flowers, in May and June in southern England. A promising kind, at least for districts where our evergreens usually escape the effects of hard winters.

V. TINUS (*Laurustinus*).—A beautiful and fragrant evergreen, thriving over a large area of Great Britain and Ireland, especially near the sea and on warm and gravelly soil, though now and then injured by severe winters even in the country south of London. In sunny positions it usually flowers freely, but not in shade, commencing to bloom in December, it will continue till the end of March. Although all its flowers are perfect, it does not ripen fruit regularly, but fruits occasionally occur, the colour being a dark blue. There are several varieties of the *Laurustinus*, one of which, the VAR. LUCIDUM, has fine large leaves, shining and almost smooth on both sides, and the

flowers and flower-trusses also are larger. It is possibly not quite so hardy as some forms of *Laurustinus*, and should have a sheltered, sunny spot. Another variety is *Var. hirtum*, the distinguishing character of which is the hairiness of the leaves and branches, and *Var. purpureum* has the leaves suffused with a dull purple tinge. *Laurustinus* can be struck from cuttings.

V. WRIGHTII is an erect shrub from the mountains of N. Japan, and hardy in Britain, though as yet hardly known. It is of spreading habit, and fine in fruit. The leaves are large, thick, and rounded, coarsely toothed, and finely tinted with scarlet and ruddy-purple on fading, and its large fruits are brilliant in their early stages. This kind promises to be one of the best for autumn effect.

VICIA (*Vetch*).—Perennial and annual herbs, several of which are native, and worthy of more care than they often get. They grow freely in almost any soil, and are raised from seed and increased by careful division. The following are the most useful species:—

V. ARGENTEA (*Silvery Vetch*) has silvery leaves and prostrate habit, is without tendrils, about 8 ins. high, spreading freely in light soil; the rather large whitish flowers are veined with violet in the upper, and spotted with purple in the lower, part. It is not a brilliant plant in flower, but the elegant foliage makes it worthy of a place in the rock-garden. Pyrenees, division or seed.

V. CRACCA (*Purple Vetch*).—A pretty native plant common in many districts, wreathing hedgerows and bushy tufts with its graceful shoots and numerous fine bluish-purple flowers. In many districts it plants itself so prettily and frequently that there is no need to cultivate it. Where this does not occur, it is worth growing as a dwarf climber, growing 2 to 3 ft. high, and trailing gracefully among dwarf shrubs. It is perennial, and should be kept in the rougher parts of the garden, where it is unlikely ever to cause trouble.

V. ONOBRYCHUS is a lovely Vetch bearing long and handsome racemes of flower during summer, when it brightens the Alps of France and Italy, giving an effect like that of some of the purple Australian Pea-flowers. It is best grouped or scattered in a colony in the rock-garden or on a grassy bank.

V. PYRENAICA is a graceful perennial of dwarf habit with abundant rich purple flowers of large size from April to June. It is one of the prettiest of Pea-flowered rock-plants, its soft green, finely-cut leaves making a cheerful groundwork, drooping from rocky shelves or draping old walls. It spreads freely by underground runners, but is easily kept in bounds and not at all troublesome. Pyrenees.

V. SYLVATICA (*Wood Vetch*).—This pretty native plant, with trailing stems of 5 or 6 ft., threads its way through shrubs and hedges, displaying abundant creamy-white flowers

streaked with blue or purple, and bright pea-green leaves cut into many leaflets. Like *V. Cracca* this is plentiful in some localities, but where unknown as a wild plant, it is well worth cultivation in the rock- or woodland garden, and is easily raised from seed. Other species of some merit are *V. Orobus* (Bitter Vetch) with large purplish-white flowers in clusters; *V. Sepium*; and *V. unijuga*, with violet-purple flowers in dense racemes.

Vieusseuxia.—See *MORÆA*.

VILLARSIA (*Yellow Buckbean*).—*V. nymphæoides* is a pretty British water plant, with leaves like a Water-Lily, but smaller, and floating. Its yellow flowers are borne singly, but are numerous and last through the summer. It is one of the best of water plants. Division.

Other and scarcer kinds are *ovata* and *trachysperma* with white flowers, and *parnassifolia* in which they are yellow. In *V. lacunorum* they are white and semi-double like a tiny water-lily; while in *V. indica*, a pretty tender kind sometimes put out in summer, they are beautifully fringed.

VINCA (*Periwinkle*).—Perennial trailers, hardy and vigorous anywhere. The well-known *V. major* (common Periwinkle) is useful for banks or masses of

Vinca major.

rootwork, and also for rocky places or by wood walks, and there are variegated varieties, and one with golden leaves. The lesser Periwinkle (*V. minor*) is much smaller and useful for the same positions; it also has several varieties worth growing; a white-flowered one (*V. m. alba*),

a reddish one, and one or two double and variegated forms. *V. herbacea* is less frequently seen than our common Periwinkles, but is more worthy of culture on rocks, as it is not rampant in habit. It is a native of Hungary, flowers in spring and early summer, and its stems die down every year. *V. acutiloba* is a distinct and elegant kind bearing its delicate mauve blossoms in autumn and winter. It is suitable for sunny banks and slopes and for warm borders.

VIOLA (Violet).—A beautiful and well-known family, some of which are among the most beautiful ornaments which bedeck the alpine turf. Even the common Violet may almost be claimed as an alpine plant, for it wanders along hedgerow and hillside, along copses and thin woods, all the way to Sweden. From the Violet our world of wild flowers derives wondrous beauty and delicate fragrance; no family has given us anything more precious than the garden Pansies and the various kinds of large, showy, sweet-scented Violets. Far above the faint blue carpets of the various scentless wild Violets in our woods and heaths, our thickets and bogs—above the miniature Pansies that find their home among our lowland field-weeds; far above the larger Pansy-like Violas (varieties of *V. lutea*) which flower so richly in the mountain pastures of northern England and even on the tops of stone walls; above the large, free-growing Violets of the American heaths and thickets, we have true alpine Violets, such as the yellow two-flowered Violet (*V. biflora*), and large blue Violets such as *V. calcarata* and *V. cornuta*. It would be difficult to exaggerate the beauty of these alpine Violets. They grow in a turf of high alpine plants not more than an inch or so in height. The leaves do not show above this densely-matted turf, but the flowers start up, waving everywhere thousands of little banners. Violets are of the easiest culture; even the highest alpine kinds thrive with little care, and *V. cornuta* and *V. calcarata* of the Alps and Pyrenees thrive even more freely than in their native uplands, the foliage and the stems being stronger. Some of the many strong varieties of the Sweet Violet might be naturalised with advantage. Slow-growing compact kinds, like the American Bird's-foot Violet, enjoy, from their stature and their comparative slowness of growth, a position in the rock-garden or in the choice border, and in such a position they are of easy culture in moist sandy soil. Violets of all kinds

are easily increased by cuttings from stout short runners. All runners that are wiry and hard should be rejected, also those from plants grown in pots or under glass. The cuttings should be taken early in April if they are to bloom next year. They should be put under hand-lights on a shady border, and kept close until they begin to grow, when the lights may be tilted a little, and ventilation increased until at last the lights may be dispensed with. By September the plants will be ready for transplanting, and may be placed in beds 4 ft. wide, three rows 1 ft. apart being in one bed. This space will afford room to hoe between the rows while they are growing. They will soon spread and fill the beds, but they cannot remain more than two or three years in the same place without deteriorating. If longer than two years in the same place, they must receive rich dressings of rotten manure, or copious applications of manure water. Another less troublesome mode of propagation is to get a few large plants as soon as they have done blooming, and divide them into as many pieces as possible, each piece having a little bit of root attached to it. Little pieces without roots may be treated like cuttings.

The following are among the most desirable kinds for general cultivation:—

V. biflora (Two-flowered Yellow Violet).—This bright little Violet is a lovely ornament on the Alps, where it carpets chinks between the moist rocks. It even crawls under great boulders and rocks, and lines shallow caves with its fresh verdure and its little golden stars, and is useful in rock-gardens where rude steps of stone give winding pathways. It will run through every chink between the steps. Europe, N. Asia and America.

V. calcarata (Spurred Violet).—This resembles the well-known *V. cornuta* in flower and spur, but, instead of forming leafy tufts, it spreads by underground runners. It is a pretty plant on the Alps, usually found in high situations, amidst dwarf flowers, and is so plentiful that its large purple flowers make sheets of colour, and it is as charming in the rock-garden as in its native wilds. There are white, pale lilac, and yellow varieties, the last (*flava*) being the same as *V. Zoysi*.

V. cornuta (Horned Pansy).—A mountain Pansy, with sweet-scented pale blue or mauve flowers of great beauty. For awhile superseded by the many charming tufted Pansies the turn of the Horned Pansy has come again, and of late years many beautiful named varieties with large and finely shaded flowers have been raised, the colours passing through blue and purple to rosy-lilac and white. These come very true from seed, and are frequently treated as annuals. One of the best of the named kinds is *Papilio*, in which the upper petals are

enlarged like the wings of a butterfly. Other good kinds are Magnifica, Purple Queen, rosea, Sensation, and White Perfection. Alps and Pyrenees. Division, cuttings, or seeds.

V. cucullata (*Large American Violet*) bears some resemblance to the common Violet, though without its delicious scent. It belongs to a section which includes *V. primulifolia*, *blanca*, *obliqua*, *sagittata*, *palmata*, *delphinifolia*, *canadensis*, *pubescens*, *striata*, and others only fitted for a place in botanical collections.

V. gracilis is a remarkably pretty dwarf species, never failing to produce in spring an abundance of deep purple blossoms in dense tufts. It is hardy in light soil. Mount Olympus. A pretty form of this, *V. gracilis valderia*, comes from the Tyrol; its violet-blue flowers are flecked with darker and with paler spots.

V. lutea (*Mountain Violet*).—The yellow form of this Violet is very neat and compact, 2 to 6 in. high. From April onwards it yields abundant flowers of a rich and handsome yellow, the three lower petals being striped with thin black lines. A large flowered garden form is named Gem.

V. Munbyana.—One of the prettiest of Violets, abundant in flower, robust in growth, and hardy. It begins to bloom about the end of February, attaining its greatest beauty in May. The deep purple-blue flowers resemble those of *V. cornuta*; and there is also a yellow variety. Spain and Algeria.

V. odorata (*Sweet Violet*).—This well-known plant is widely spread over Europe and Russian Asia, including Britain, while it is grown in almost every garden, and enormous quantities of its flowers sold in our cities. Its fragrance distinguishes it from other Violets. It may be grown as carpets for open groves or the fringes of woods, hedges, or banks. Instead of being confined to a bed, it should fringe shrubberies, rock-gardens, or ferneries. In such positions it requires little care, and fills the cold March air with unrivalled sweetness. It will grow in almost any soil, but best on free sandy loam. It is well to naturalise the plant on sunny banks, fringes of woods, and the warmer sides of bushy places to encourage early bloom.

The cultivation of the Sweet Violet is of great importance, not only for private gardens, but also to supply the vast demand for it in large cities. About Paris, this is done on a vast scale, many acres being covered with these flowers. The ground is well exposed to the mid-day sun, and is rich, free, and warm. The plantations are made in spring, those required for the winter being grown in frames. The plants may be propagated to any extent by division, but good plants are easily raised from seed, sown as soon as possible after it is gathered. In cold

dry parts, where Violets fail to do well, and also where they are required in mid-winter, it is better to raise a number of healthy plants every year, putting them in a light frame in a sunny position in autumn. With little trouble we may have Violets long before they bloom in the open ground. Plants obtained by setting out runners in spring in rich soil may also be set in a cold frame early in autumn. Allow them to grow until the approach of winter, when fill the frames with leaves, put on the sashes with a shutter over these. The plants must have abundance of air on mild days, and water as needed. A frame of three sashes, separated into three parts by boards, may be uncovered, one sash at a time, at intervals of two or three weeks, and thus a succession of flowers will be kept up. Violets do not like forcing, neither do they need it if their crowns are ripened early, and they are easily tempted into flower by this protection.

In the open border Sweet Violets thrive on moderately heavy rich soil; should the soil be light and gravelly, some stiff material and plenty of manure must be added to it; poor and hard clay will gain by adding sharp gritty matter and abundance of rotten manure. Violets require shelter, but not that of a wall, and in enclosed gardens they are seldom healthy. Their natural shelter is a hedgerow, allowing such currents of pure air as are essential for keeping down red-spider and for healthy foliage. They grow well on the shady side of a Hornbeam hedge, if somewhat naked at bottom, so as to allow the sun to shine on their leaves early in spring, and afford a partial shade in summer. When the soil is deep and rich, however, Violets will bear sunshine, and it is well to have a few plants in different positions to ensure a long season of bloom. On south borders Violets dwindle, but a few roots on sunny banks will give some early pickings.

The insects that trouble the Violet most are green-fly and red-spider. The first is generally the result of a close unhealthy atmosphere, and is easily got rid of by gentle smokings. Red-spider is induced by strong sun and by dry soil; hand-dusting with sulphur is the best remedy, but it is easy to prevent its occurrence by free sprinkling.

The varieties of the Violet are very numerous. We have the single white and the single rose, the double white, the Czar, (a very large and sweet variety), the Queen of Violets, Admiral Avellan, La Grosse Bleue, La France, California, Princess of

Wales, Luxonne, Belle de Chatenay, White Czar, Lady Hume Campbell, Marie Louise, Victoria Regina, Wellsiana, and the perpetual blooming Violet—well known in France as La Violette des Quatre Saisons. This differs slightly from the Sweet Violet, but is valuable for its long season; it is the variety used by the cultivators round Paris. The double white, or, as it becomes in the open air, the rosy-white Belle de Chatenay, has a robust

open, where the thick growth keeps the flowers off the soil. Blandyana, another double, is a free bloomer with dark flowers.

V. pedata (*Bird's-foot Violet*).—The most beautiful of the American Violets, with handsome flowers 1 in. across, pale or deep lilac, purple or blue, the two upper petals being sometimes velvety and deep violet like the petals of a Pansy. The variety *bicolor* is a pretty form; its flowers larger, and the petals arranged like those of a Pansy, the two upper

Viola pedata (Bird's-foot Violet).

habit. Though not so pure as the old double white kind, it blooms more freely, and is neater. The Neapolitan kind, *V. o. pallida plena*, is still a favourite, spite of other and newer kinds, but it needs a frame in winter. Marie Louise is a fine kind, and a great advance upon the Neapolitan; its flowers are larger, deeper, and more abundant. The old double blue kind has neat full flowers, but its stems are short. It is, however, very beautiful when grown in frames, or in beds in the

ones rich velvety purple, and the three lower delicate blush. The parent plant grows freely in a light rich soil in partial shade, but the variety *bicolor* succeeds only in certain localities, and is rare in its own land. It is best adapted for the choice rock-garden, but may also be grown in borders where the soil is peaty, sandy, and moist.

V. reniformis (*New Holland Violet*).—This mantles the ground with a mass of small leaves and slender creeping stems, and bears throughout the summer blue and white flowers of exquisite beauty, about 2 inches high. It is

pretty for a bed of peat or very light earth, where taller plants are put out in a scattered way for a time, but being small and delicate, it should not be used with coarse plants. It must be treated like a tender bedding plant—

Viola reniformis (New Holland Violet).

taken up or propagated in autumn, and put out in May or June. Australia. Division *V. r. grandiflora* is a larger plant in all its parts. Syn., Erpetion.

V. rothomagensis (*Rouen Violet*).—A handsome plant, dwarf, and with low creeping stems which bear in spring numerous purple and white blossoms. It is a free grower, but, being a native of Sicily, is not so hardy as some Violets, and should be grown in a light soil and a warm border.

V. tricolor (*Heart's-ease*).—The Pansy is usually classed under the head of *V. tricolor*, though it is probably descended from *V. altaica*—to which many Pansies seem nearly allied. But our Pansies are so numerous, so varied, and, withal, so distinct from any wild Violet, that little can be traced of their origin. Of one thing we may be certain: the parents of this precious race were mountaineers. Only alpenes could give birth to such rich and brilliant colour and such wealth of bloom. Its season never ends; it often blooms cheerfully enough at Christmas, and is sheeted with gold and purple when the Hawthorn is white with blossoms. Such a flower must not be ignored on our rock-gardens, though it thrives in almost any soil and position. It may be treated as an annual, a biennial, or a perennial, according to climate, position, and soil. One of the commonest of weeds in Scotland, the wild *V. lutea*, may be grown in the south of England, if sheltered from

the midday sun. It thrives capitally with a north or, better still, a north-east exposure, if sheltered by tall trees or buildings, so that it may get the cool sun of the early morning only.

For borders one way is to grow the plants from seed. The Belgian or fancy Pansies are remarkable for the strange variety of their colours and the unusual size of the blooms. They are more hardy as seedlings, and more robust as plants, than the other kinds, and yield a greater variety of colours. The seed should be sown in July or August, in pans of light leafy soil, such as sand, leaf-mould, and mould from rotted turf, and placed in a cool shady place. When mixed seeds are sown, sow each separately at a distance of $1\frac{1}{2}$ in. or so. As soon as the first seeds have germinated and the seedlings have three pairs of leaves, they should be removed without disturbing the weaker ones, for amongst the backward ones will be found the greatest proportion of finely-coloured flowers. It is important to sow fresh seed.

It is rarely convenient to plant the seedlings at once where they are to bloom, therefore they should be placed in pots plunged in a cool place in the open ground, and put out in time to get established before winter. They stand the winter well, and the only danger lies in heavy rain or sleet succeeded by sharp frosts. A pot inverted over each plant to protect the soil from too much wet would be sufficient protection. It is unwise to move Pansies in spring unless they have been kept in pots during winter; they should then be planted with as little disturbance as possible.

Pansies are divided into two sections—the show or English kinds, and the fancy or Belgian kinds. The first comprises five divisions: white and yellow ground, belted Pansies, white, yellow, and purple Pansies. The selfs must be clear decided colours, and should have a black well-defined blotch under the eye. The belted kinds should have a white or yellow ground, together with centre blotch, and a broad margin of bronzy-red, chestnut, purple, crimson, or other hue; the colours must be dense, and the margins well defined. The flowers should be rounded, stout of petal, and of good size, but size is of less importance than the quality of the markings. A fancy Pansy should have a large deep-coloured blotch, covering nearly the whole of the bottom petal and portions of the side petals. The rest of the flower may be white, yellow, buff, red, maroon, purple,

crimson, and various other shades, but not so dense as the centre blotch. Some fancy Pansies are flaked or parti-coloured, but all good ones are showy and beautiful beyond the imagination of those who have only seen common strains. Named Pansies come fairly true from seed, but any particular variety must be increased by cuttings. When any plant shows good flowers, the best way is to pinch the bloom-buds off as they come, feed the plant well with dressings of leaf-mould pricked in about the roots, and peg the first shoots down so as to leave the crown of the plant exposed for fresh healthy shoots to rise from. A few shoots should be taken off when they have made three or four pairs of leaves, and be planted in light soil, sand, and leaf-mould, under a hand-glass, and kept moist and shaded. The pegged-down stems will produce shoots which may be taken off in the same way; and when well rooted treated as seedlings.

A good plant combines a profusion of fine flowers with a dwarf, stocky habit, and the plant when in bloom is a round green bush, with the flowers about $\frac{1}{2}$ in. clear of the leaves. It is useless to save seed before a stock of first-class plants is obtained. July is early enough to sow the seed in the south of England, but farther north it may be sown earlier, until in Scotland it should be sown in the spring.

TUFTED PANSIES.—These are hybrids of Pansies and alpine Violets. The term “tufted” has been very properly used to distinguish plants of a spreading habit, like Pinks, Aubrietia, and Alpine Violets, from plants with simple erect stems, like, say, the Stock, Lupine, and Aster. Sometimes the two forms of habit occur in the same family; for instance, there are *Violas* that are tufted and *Violas* that are not—the German, French, and other Pansies in our gardens do not spread at the root as the tufted Pansies do. Plants of this “tufted” habit are often a mass of delicate rootlets even above the ground, so that they are easily increased. Hence when older Pansies die after flowering, those crossed with the alpine species remain, like true perennials, and are easily increased. The term Pansies is a good one in all ways. Without an English name, we shall always have confusion with the Latin name for the name of wild species. To all of these belongs the old Latin name of the genus *Viola*. It is now agreed by botanists that all cross-bred garden plants—including tufted Pansies, of course—should have popular English, and not Latin, names. “Bedding

Violas” is a vulgar compound of bad English and Latin; whereas “tufted Pansies” is a good English name with a clear meaning.—*The Garden*, 16th Jan. 1892.

These are the flowers hitherto generally known as *Violas* and bedding Pansies, and Dr. Stuart, who has raised some of the best of them, says:—“Botanically, Violets, Pansies, and Heart’s-ease are all the same. Tufted Pansies are crosses from the garden Pansy and *Viola cornuta*, the latter being the seed-bearer. Pollen from *V. cornuta* applied to the Pansy produces a common enough form of bedding Pansy—never the tufty root-growth obtained when the cross is the other way. I have proved this by actual hand-crossing. Most strains of tufted Pansies are bred the wrong way, and lack the tufty root which makes the Violetta strain perennial.”

Having settled the name, the next thing we have to do is select some of the most beautiful of these charming flowers, which are certainly more valuable for our flower gardens than the ordinary Pansy, fine as these are. They are so because the colours are simple and generally pure and true, and because they are most effective when used in groups, and then they are perennial, and may be easily increased and kept true.

The new race of Tufted Pansies raised by Dr. Stuart, of which Violetta was the first, is a precious addition to this large family, because the flowers are pure in colour and so sweetly scented. The older tufted Pansies were welcome, but all of them had wiry streaks about the eye, not a serious detraction, but it is a gain to have kinds that are quite rayless, as are all of Dr. Stuart’s. Violetta the first has small flowers, but all the later varieties have large flowers, and in other respects are fully equal to the older sorts, more tufted in habit, and better garden-plants in every way. Among the best kinds are Blue Gown, Duncan, Favourite, Lucy Franklin, Rolph, Seagull, Skipjack, Swan, Sylvia, The Czar, White Beauty, and William Tell. These are some of the most beautiful flowers ever seen. The best kinds with white flowers are Blanche, Countess of Hopetoun, Dr. Sculthorpe (in which the top petals are prettily flushed), Marchioness of Tweeddale (with a delicate bluish shade), Masterpiece, and Mrs. Gray. Near these creamy-whites come a group of creamy or pale yellow-coloured kinds, such as Ardwell Gem, Devonshire Cream, Golden Queen, and Lemon Queen. Among yellows there

is nothing better than Bullion, Kitty Hay, Mrs. Greenwood, Molly Pope, Pembroke, and Stephen. Perhaps the most precious of all are the lavenders and delicate blues, such as Charm, Duchess of Sutherland, Florizel, Formidable, J. B. Riding and John Quarton. Of the blues and rich dark purples we have Archie Grant, Blue King, Cliveden Purple, Holyrood, and Max Kolb, and in rich crimson-purple Councillor Waters and Crimson King.

Although we like the colours simple and pure, there are other pretty ones of a different kind, such as Accushla, Blue Cloud, Columbine, Countess of Kintore, Duchess of Fife, Hector Macdonald, and Skylark. In the south, however, they are uncertain, liable to vary in colour, and not so good as the selfs. Some kinds, like

A Tufted Pansy.

Violetta, are white, running off to delicate bluish or lilac hues. These delightful things are so easily raised and crossed, that each garden might raise its own kinds, so as to have as much variety as possible. These plants love a light and cool soil. In northern districts they are more at home than in the south, where special treatment is necessary to bring them to perfection.

For early spring-flowering the cuttings should be rooted in July or August, and planted out in October. They commence blooming early in April. In heavy soils liable to crack with drought, use abundance of leaf-soil, burnt ashes from the rubbish fires, and the like, to bring them into order. Also select a dry time for digging, working in the above with plenty of short manure from an old Mushroom bed, and scattering

an inch or so on the surface for the roots at planting time. Cuttings are better than divisions; particularly if they are made of the young shoots stripped from the old stool with a heel attached. To yield a supply of these cuttings a reserve batch of plants is necessary. About the second week in June, cut them back to within 2 in. of the soil. A month afterwards they will be bristling with young shoots. As soon as 3 in. long, scatter some fine soil and leaf-mould among the young growths, and keep well watered for a fortnight, by which time the majority will be making roots freely. A fortnight later they will be ready for planting in nursery-beds in a shady spot and in good soil. As growth is renewed, pinch out the top of each to encourage the quicker formation of shoots at the base. By October there will be some grand plants for putting into their permanent quarters, full of youth and vigour that will produce masses of flowers by-and-by.

VIOLETTAS OR MINIATURE TUFTED PANSIES.

—These originated in the garden of the late Dr. Chas. Stuart, who in 1887 found what he had long sought—a pure-white rayless self. This chance seedling he named *Violetta*, and for this reason plants of the miniature flowered type are often called “*Violettas*.” From this plant has arisen a series of rayless flowers, several of which share the dainty form of the parent.

Interest in these *Violettas* is less general than their beauty deserves, perhaps because their growth is slow as compared with the ordinary Tufted Pansies. It should therefore be understood that the plants are specially adapted for rock or alpine gardens, and that instead of getting leggy as even many of the Tufted Pansies do if left alone, these are best left to themselves for two or three years. At the end of the first year the single shoot planted in the spring will be represented by a little tuft some six inches across, and after a second season's growth the tuft is large and at its best. When in full beauty such tufts are charming and never fail to please. Light and porous soil, well enriched with old manure, is essential to success; it should also be of good depth, for the Tufted Pansies are deep-rooting, and during hot weather—especially in the south of England—the value of deep culture is soon felt. In addition to their beauty in the rock-garden, the cut blooms make up prettily for all sorts of uses, these small flowers carrying well where the larger kinds flop about.

As yet there are not many *Violettas*

catalogued, but the following are good sorts:—*Violetta*, white with yellowish centre; *Gold Crest*, rich deep golden yellow; *Picotee*, white with picotee edging; *Blanche*, clear silvery white; *Queen of the Year*, china blue, spotted white; *Pigmy*, rosy-purple, very free; *White Dot*, pure white; *Quail*, white, broadly margined bluish-lavender; *Minnie Warren*, pale lilac, very dainty; *Commodore Hutt*, good rayless yellow; *Rock Yellow*, dense yellow; *Rock Blue*, a charming little deep-blue flower with a yellow eye.

Virgilia. See CLADRASTIS.

VISCARIA.—*V. oculata*, a showy and beautiful hardy annual from South Europe,

Mistletoe in various parts.

a, Male blossom. b, Female ditto. c, Berry cut through. d, Seed, showing embryos. e, Embryo magnified. f, Two embryos, with radicles germinating. g, Single radicle. h, Side view of two radicles. i, Section of the single radicle.

well suited for a border. Seed should be sown in spring or autumn, and the seedlings thinned out when large enough. The plant is 6 or 8 in. high, and bears a profusion of rose-coloured blossoms with a dark centre. The varieties *cardinalis* (bright crimson-purple), *cærulea* (bluish), *alba* (white), *Dunnetti* (rose), *splendens* (scarlet), *picta elegans* (crimson purple, edged with white), and a dwarf variety, *nana*, about 9 in. high, are desirable.

VISCUM ALBUM (*Mistletoe*).—This half-shrubby parasite on trees is often welcome in the pleasure ground or orchard, and is not without beauty of colour, but where abundant it is injurious, being a true parasite which thrives at the

expense of its victim. It grows on many trees, both evergreen and summer-leaving—orchard trees, limes, poplars, elms, willows, hornbeam, beech, acacia, horse-chestnut, firs—rarely on the oak in Britain. Where the plant is wild, the thrushes spread it about by wiping the seeds off their bills on the bark, and where plentiful it is very injurious to fruit trees and timber. As to the best way of increasing this plant, Mr. F. W. Burbidge writes:—

“I find growth of the seeds certain if they are placed on clean, fresh, smooth bark in April or May, and then covered with one thickness of black muslin or lawn, so that birds do not peck them away, as they do if unprotected. Many make the mistake of putting on the seeds at or about Christmas-time before they have ripened enough to grow. Do not cut slits in the bark; the best way is simply to apply it to the clean bark only.

“Apart from its botanical interest or its antiquarian lore, the mistletoe, when well grown in dense masses on either apple or pear, really becomes an effective plant in the winter landscape. The warm yellowish olive-green leaf masses dangling from bare and leafless trunks or branches are distinct and effective, thickly set with the clustered berries that glisten in the sunshine.”

VITEX (*Chaste Tree*).—*V. Agnus-castus* is a very old S. European shrub, with divided leaves, and in late summer, clusters of small pale lilac flowers. It grows 6 to 10 ft. high against a wall, but even thus protected is liable to be killed during a severe winter.

VITIS (*Vine*).—Woody climbing shrubs of much interest and garden value, owing to their luxuriant habit, grace, and handsome foliage, which in several instances affords the richest of colours—yellows, purples, and crimsons.

Whilst some are valuable for the walls of houses, others may be used for covering arbours, pergolas, the pillars of verandahs, old tree stumps or sloping banks. In the case of the stronger, taller-growing species they may be made to clamber over living trees. They are moisture-loving plants, and require liberal treatment. Where space is limited they can be kept small by pruning, but the best effects are obtained where they can ramble without hindrance. Where they are intended to spread over living trees, they should always be planted sufficiently far away from

the trunk to allow rain and light to reach them, and with good rich soil to start in. Most kinds can be increased by cuttings or by single "eyes" treated as in the Grape Vine, though some can only be raised by seeds. Those that refuse to root from cuttings can sometimes be layered. Graftings should be a last resource.

In the following list Ampelopsis and Cissus are merged in Vitis.

V. æstivalis (*Summer Grape*). — The leaves are 4 to 6 ins. across, of a deep green

turning dark purple with crimson veins and suffusion in autumn.

V. californica (*Californian Vine*). — This is the best of the American Grape Vines (excluding the *Ampelopsis* section) for colour in autumn, and it is one of the strongest growers, climbing over lofty trees. Its leaves, which turn a deep crimson in autumn, are rounded and covered with down.

V. Coignetiae (*Crimson Glory Vine*). — This is a noble hardy-Vine from the mountain forests of the Island of Yezzo, North Japan, where it covers the trees from base to summit with a

Vine growing on a gazebo. From a photograph by Miss Willmott.

colour when old, but in a young state covered on the lower surface with a reddish down. The berries are small—about the size of Black Currants—acid but edible. New England to Florida and westwards.

V. armata, a noble Vine from Central China, with large heart-shaped or nearly triangular bronze-green leaves set upon spiny stems, by means of which the plant climbs. In autumn the foliage assumes fine tints of crimson-purple and yellow, and it reaches a height of 10 or more feet in three years from the seed. A form of this, *Veitchii*, has even larger leaves, measuring 10 ins. by 8, of a bronze-green

gorgeous mantle in autumn. It comes near *V. Labrusca* in general appearance, but is more vigorous, growing at a great pace when fairly established, and displaying a profusion of leathery dark-green leaves with several lobe-like points, and coated beneath with a thick felt-like down which varies in colour from rusty-brown to yellow or nearly white. Their autumn tinting is beautiful, especially in a dry season and when the plant is not overfed. Increase by seed or layers.

V. cordifolia (*Frost Grape*). — A vigorous Vine with thin, three-lobed leaves, measuring 3 to 6 ins. in diameter, the lobes ending in a

long, fine point. The berries are black and only eatable, after frost. A moisture-loving Vine, affecting in a wild state the banks of streams. New England to Nebraska and southwards.

V. flexuosa.—A variable species from China and Japan, with small rounded leaves, toothed at the edges, with a velvet surface, and remaining fresh till late in November. Among its many forms is *major*, with much larger dark green leaves, either simple or three-lobed. The early leaves and shoots are a pretty pale crimson, and before falling in autumn the foliage turns purple and blood-red. *V. flexuosa Wilsoni* is a neat kind well suited by

vigorous than most wild Vines, this is a handsome foliage plant, one of the most graceful and distinct of the group, and its stems cling to the wall without nailing.

V. heterophylla (*Hop-leaved Vine*).—A variety of this, known as *humulifolia*, is the most beautiful of the forms of this species, and in autumn bears pretty turquoise-blue berries. It requires in most places a position on a wall in order to induce it to fruit with freedom, and succeeds better in dry, poor soil. A variegated form is pretty, the foliage being mottled with white or faint pink. A sheltered sunny position is necessary to bring it to perfection. China, Japan, and Corea.

Vitis heterophylla variegata.

its compact habit to small gardens; the rounded heart-shaped leaves 2 inches across are a rich glossy green, shining with almost metallic lustre. The young leaves are bright purple, and this tint lingers on their under-surface and reappears with a ruddy suffusion before they fall in autumn. Variety *chinensis* differs from that just described in its larger and less glossy leaves.

V. Henryana.—Discovered in China by Dr. Henry, and one of the most beautiful of Vines. The deep green leaves are cut into 5 leaflets, threaded by silvery ribs and veins, the effect being particularly rich in autumn when they turn a deep crimson-purple. Though less

V. inconstans.—As is the case with so many of the Vines, this shows great variety in the shape of the leaves, and this tendency to variation shows itself also in the colours put on in autumn. In the best forms the leaves assume rich tints of purplish-red and crimson. There is also a form whose foliage has a bronzy hue more or less throughout the season, but especially when young. Cuttings. Japan. Syns. *Ampelopsis Veitchi* and *A. tricuspidata*.

V. Labrusca (*Northern Fox Grape*).—Its leaves are amongst the largest, both they and the young branchlets being covered on the under surface with a rusty-coloured or sometimes whitish down. In a wild state the fruit

has a musky flavour, but by cultivation it has been much improved, and numerous varieties are grown in the United States. It often ascends high trees in its own country and may be planted in ours with this end in view. New England to Minnesota and southwards.

V. megaphylla.—A remarkable Chinese vine with large cleft leaves, more like a shrubby *Aralia* than a Vine. They are cut into many widely-spread leaflets, measure 18 ins. by 12 at the base, their upper surface a dark green changing to grey-green on the under side. This handsome plant is of very strong growth, quite young plants making shoots of 10 feet or more in a season.

V. muralis (*Wall Vine*).—A name current in this country and on the Continent, whilst the same plant is known in America as *Vitis Englemanni*. It is a distinct form of the Virginian Creeper, possessing leaves of the same shape, only smaller and developing equally, or even more, brilliant autumnal colours. This is self-supporting, and will attach itself firmly to, and climb to the tops of high walls—a useful quality.

V. quinquefolia (*Virginian Creeper*).—This is better known as *Ampelopsis quinquefolia*, its foliage changing in the fall of the year to various shades of crimson, scarlet, and purple. For covering arbours, walls, verandahs, or old tree stumps there is no climber which produces so luxuriant an effect in so short a time. Several varieties are in cultivation, viz., *Major*, *incisa*, *hirsuta*.

V. Romaneti.—It has large leaves, differing from all the Vines in cultivation (except *Spinovitis Davidi*) in having the branches and petioles covered with bristles or stout hairs.

V. sinensis is allied to *V. armata* but differs from it in its variable leaves, which, at first simple, pass gradually to the compound form as the shoots lengthen. It is a tall vigorous climber of massive effect, with foliage thickly clustered.

Spinovitis Davidi is nearly allied to *V. Romaneti*, having the same bristly or even prickly character. Both this and *V. Romaneti* assume purplish-red autumn tints.

V. Thomsoni.—A pretty and neat-growing species climbing by its tendrils, and of graceful effect upon pillars and pergolas. The leaves are deeply cleft into five lobes and are of a reddish-green, rich purple on the under side. This turns to a uniform crimson-purple in the autumn, but a tendency to curl up rather spoils their effect at this season.

V. Thunbergi, though near *V. Coignetiae*, is a little less exuberant in its growth; it may be used near the house, whereas *Coignetiae*, in its almost unruly luxuriance, is best among trees at a greater distance. The dark green leaves often measure a foot or more in each sense, and in autumn they take the richest shades of yellow, brown, crimson, and scarlet. Their greater brilliance at this season, as well as their greater size, helps to distinguish the plant from Coignet's Vine. It is fully hardy and thrives

in any good soil, but should not be overfed with rich manure.

V. vinifera (*Common Grape Vine*).—Of the numerous varieties of the common Grape Vine the following may be alluded to: *Purpurea*.—This is one of the deepest purple-foliaged plants we possess. Although the colour becomes most intense in autumn the leaves have a bronzy-purple tinge from the first. Var. *apiifolia* is the Parsley-leaved Vine. Its leaves are very deeply cut, frequently into several leaflets, which are again

Claret-coloured Vine.

deeply lobed. Besides these there are the Miller's Grape, with smallish leaves covered with white down, and the "Teinturier" Grape, the leaves of which assume a beautiful claret colour before they fall, and among the large number of Vines grown in wine-making countries there are many worth growing for the beauty of their leaves.

Brief mention may be made of the following Asiatic species: *V. ficifolia*, a distinct plant with small round-lobed leaves like those of the Fig; *V. aconitifolius* with leaves like the Aconite; *V. Leeoides* with leaves like a Leea; *V. amurensis* with foliage of an intense crimson in autumn; *V. Delavayi* with trifoliate leaves and purple stems; and *V. serianafolia*, an interesting species of the *Ampelopsis* group,

with tuberous roots like a Dahlia, and palmate or bipinnate foliage. All these are natives of China and Japan. *V. himalayana* is a North Indian species with striking trifoliate leaves.

V. vulpina (*Southern Fox Grape*).—A distinct Vine, the leaves are small (2 to 3 ins. across) and rounded, smooth and shining on both surfaces, bright green. The sweet Mignonne-like perfume of the flowers of many American Vines is in this species especially apparent. The variety *palmata* has the branchlets and frequently the petioles of a red colour. Nova Scotia to Manitoba and southwards. Syn. *V. riparia*. Other American Grape Vines worth growing, but possessing no particular value beyond those already described, are *V. rupestris* (the Sand Grape), *arizonica*, and *cinerea* (the Downy Grape).

W. J. B.

Vittadenia. See ERIGERON.

WAHLENBERGIA (*Tufted Hairbell*).

—A charming group of alpine plants allied to the Hairbells, and mostly inhabiting the mountains of Dalmatia and Asia Minor. They are useful, free-flowering, and hardy, forming tufts with large heads of pretty, bell-shaped, upright flowers, of various shades of purple. The chief points in their culture are full exposure, plenty of sunshine, a free gritty soil, and a raised position free from stagnant moisture. All the species are true perennials, easily cultivated, vigorous, and free-flowering. They are difficult to increase by division on account of the long roots they make, but they ripen seed freely, which if sown at once rarely fails. Syn. *Edraianthus*.

W. DALMATICA, a native of the mountains of Dalmatia, is a tufted species with narrow Grass-like leaves, 2 to 4 in. in length, and flower-stems at first drooping, afterwards erect, 4 to 6 in. high, with large flowers of a violet-blue colour, in clusters which appear in July and August.

W. GRACILIS.—This is a variable species from New Zealand, with square, hairy, much-branched stems, the leaves opposite, narrow toothed, and hairy, the flowers terminal, erect, but nodding while in bud, blue, large, and attractive, flowering all through the summer. *W. stricta*, *littoralis*, *capillaris*, and *polymorpha* are varieties of this kind.

W. GRAMINIFOLIA is the commonest and easiest to manage, forming tufts of long Grass-like leaves, and bunches of large purple flowers. It ripens seed freely, and that scattered about in the rock-garden usually germinates readily.

W. HEDERACEA (*Ivy-leaved Hairbell*).—A native plant closely allied to Campanula. It has creeping thread-like branches, which bear small leaves and

light blue flowers. There is about it an interest and grace not found in other more robust members of the family, especially when seen interlaced with the pink Bog Pimpernel on British bogs. Worthy of a place for a moist spot in the rock or bog-garden, and easily increased by division. It is abundant in Ireland and the south and west of England.

W. KITAIBELI is a sturdy tufted species, with large purplish blue flowers and narrow toothed leaves.

W. PUMILIO forms a dwarf tuft of narrow, needle-like leaves of a bluish tint, half an inch or more in length, and has large flowers of a reddish-lilac or bluish colour, bell-shaped, numerous, and borne erect on short stems, coming in succession on the tuft for more than two months in May and June.

W. PUMILIORUM is the rarest, and although little different from *W. Pumilio*, it gives us another shade of colour, smaller and narrower leaves, a more straggling habit, and longer-tubed flowers. We find it an excellent hardy plant for the rock-garden, where on raised mounds of free gritty soil it grows and flowers vigorously. Syn. *W. serpyllifolia dinarica*.

W. SAXICOLA.—A beautiful species from the mountains of New Zealand, with leaves in close tufts and pretty flowers which first appear in June and keep coming in succession till November. It is easily raised from seed and varies greatly from white to deep blue. The best forms can be increased by division. It makes a handsome rock plant, and, when left undisturbed and allowed to shed its seeds freely, gives the cultivator no trouble, but makes a highly attractive picture.

W. SERPYLLIFOLIA, with its small and Thyme-like leaves and abundance of purple-blue flowers, is effective on ledges in the rock-garden.

W. TENUIFOLIA is a dwarf compact growing species, with hairy stems, short slender leaves and small flowers, six to ten in a head, violet-blue or whitish-purple.

WAITZIA.—Half-hardy annual Composites from Australia. Of the four kinds in cultivation all are valuable for their pretty flowers grown for winter bouquets. *W. acuminata* has a variety with purple flowers, and another with yellow flowers. *W. aurea* has bright yellow flowers. *W. corymbosa* has white and purple flowers, and the flowers of *W. grandiflora* are like those of *W. aurea*, but finer. All grow about 1 ft. high, and require to be treated like other tender annuals, such as Rho-

danthe. They succeed best in an open position in sandy peat. Seeds. The seedlings should be potted before planting out in May. Waitzias flower in August and September.

WALDSTEINIA (*Barren Strawberry*).—Dwarf Rosaceous plants, three of which, *W. geoides*, *W. fragarioides*, and *W. trifolia* are in cultivation. The last is the best, but not one is ornamental enough for border culture, but only for dry banks and such places. Their yellow flowers appear in spring.

WATSONIA (*Bugle Lily*).—Beautiful bulbous plants of the Iris family, long cultivated in gardens. In the southern counties some of them succeed perfectly in open borders, but elsewhere they are tender. There are about a dozen species, and about as many varieties, half of which are variations from *W. Meriana*. All are from S. Africa, their headquarters being the Cape. There is much variety of colour, and "mixed" selections are offered by the growers. The commonest species seem to be *W. Meriana*, *W. coccinea*, *W. iridifolia*, *W. rosea alba*, *W. humilis*, *W. angusta* (also known as *W. fulgida*), and *W. aletroides*. Choice kinds with pure white flowers are *W. Ardernei*, where they are borne on long branched stems, and *W. iridifolia O'Brieni*, which is like *W. rosea* except in colour. These are true Watsonias and have finer flowers than the other sections of the genus. The white Watsonia (*W. alba*) is a lovely plant, flowering in early summer. Treatment similar to that recommended for the early Gladioli will suit them. Where they are grown in frames much trouble is saved, and they give finer flowers as the young growths are protected when they most need it. Generally, however, it will be found best to grow the plants in warm situations in open borders of light rich soil. Of the varieties offered in trade lists, the following may be taken as representative: *W. coccinea*, *fulgens*, *Meriana*, *alba*, *humilis*, *marginata*, *rosea*, *speciosa*, *fulgida*, *brevifolia*, *angustifolia*, Grootvorst, Louis XVI., Wreede, Du-chess, George IV., Chilea, Duc de Berri, and Blucher.

WEIGELA (*Bush Honeysuckle*).—Graceful and hardy flowering shrubs, summer-leaving, with showy clusters of bloom ranging from pure white to dark crimson. They have long been deservedly popular, being elegant, rapid in growth, and beautiful in bloom. A multitude of varieties have sprung from *W. floribunda*, *W. grandiflora* (known also as *W. amabilis*), *W. rosea*, and *W. hor-*

tensis. These are natives of China and Japan, have been introduced within the last forty years, and so much hybridised that they are rarely found pure. The most valuable sorts have come from *W. grandiflora*, which has the largest flowers, while the smaller, but more numerous-flowered kinds, have originated from *W. rosea* and *W. floribunda*. The varieties have been raised chiefly on the Continent, as may be inferred from their names. The best of the older kinds are: Abel Carrière, numerous large flowers of soft pink; Isolinë, large flowers of white or pale rose with yellow markings; Van Houttei, large and showy white and red

Weigela grandiflora.

flowers; Lemoinei, numerous small deep crimson-red flowers; Groënewegenei, one of the best, the flowers being large, of pink or pale rose, with a yellow blotch; striata, a pretty sort, having flowers striped with red and white; Stelzneri, with numerous deep red flowers; Lavalléi with numerous crimson-red flowers; hortensis nivea, more spreading than that of others, with larger and paler foliage, and large pure white flowers; and candida. Good new kinds are Conquête, deep rose, with the largest flowers yet seen in these plants; Dame Blanche, large creamy-white flowers with a yellow throat; Descartes, crimson-purple; Diderot, deep bright red; Emile Gallé, deep red; Eva Rathkie, one of the best, deep rich crimson; floreal, pink,

and very early; Gloire des Bosquets, very free in its deep rosy flowers; Héroïne, rosy-white, with fine foliage; hortensis nivea, pure white; Perle, creamy-white edged with rose; Montesquieu, wine-purple; Mt. Blanc, the best white; Othello, bright rose; Pascal, blood-red; Pavillon blanc, blush-white; and Saturne, rosy-carmine. The new Japanese species, *D. præcox*, bears large pink flowers with a yellow throat, opening nearly a month earlier than other kinds. Its influence as a parent is already seen in a race of early-flowering hybrids. The golden-leaved *W. Looymansii aurea* is a fine ornamental shrub, usually retaining its bright golden foliage through the season. Its variegated-leaved form is also excellent. All sorts are of free habit if planted in good soil in an open position. They should never be crowded, but grown as isolated groups on lawns, or placed on the margins of shrubberies. Weigelas make large bushes, 6 to 10 ft. high and as much in diameter, and their graceful drooping branches are ornamental, even when leafless in winter. They should be top-dressed annually with good rich soil, and pruned, leaving the vigorous stems and the branches that yield the finest bloom. Weigelas are now classed botanically in the genus *Diervilla*, which also includes other species, such as *D. sessiliflora* and *D. trifida* from N. America. Neither of these can be recommended save for the bright tints of their autumn foliage.

WHITLAVIA.—*W. grandiflora* is a beautiful herb about a foot high allied to the *Nemophila*, with an abundance of showy bell-shaped blossoms of a rich deep blue. There is a white variety, and also one called *gloxinioides* with white and blue flowers. These are hardy annuals, and may be sown either in autumn or in spring in the open border, in good friable soil. California. *Hydrophyllaceæ*.

WIGANDIA.—Fine-leaved plants of the Tropics, which succeed in the open air in summer in a few warm southern gardens. The best is *W. caracasana*, from the mountainous regions of New Granada; but even this will only succeed in the warmest and best sheltered spots. It may be used with effect either in a mass or isolated. It is propagated by cuttings of the roots, shoots, or from seeds, the young plants grown in a moist and genial temperature through the spring months, and kept near the light to keep them dwarf and carefully hardened off previous to being planted out at the end of May. The stems of *W. macrophylla*, from

Mexico, are covered with short stinging hairs, bearing brownish viscid drops, which adhere to the hand like oil. *W. imperialis* is said to excel the others in its growth, and *W. Vigieri* is another fine kind, of quick growth and of remarkable habit. Its leaves are 3 ft. 9 in. long (including the leaf-stalk); and 22 in. across, and its stem, nearly 7 ft. high, bears a column of these leaves. This plant is distinguished by its leaves and stem being covered in a greater degree with glossy, slender, stinging bodies, so thick as to give the stems a glistening appearance. *W. urens* is often planted, but is inferior except in its power of stinging, in which it is not likely to be surpassed. All *Wigandias* have clusters of blue or violet blossoms, which are not often borne in the open air with us. In their own land they range from 3 to 12 ft. high, *W. caracasana* being the tallest.

WISTARIA (*Glycine*).—The noblest of all woody climbers introduced to Europe. Besides giving a beautiful covering for houses, pergolas, etc., the *Wistaria* is of great value used in other ways and can be grown on trees. In Mr. Waterer's nursery at Knap Hill it has been trained up *Laburnum* trees. In the end, no doubt, the *Laburnums* will get the worst of it, but meanwhile the two flower together, and the pale blue-purple racemes of the *Wistaria* and the golden ones of the *Laburnum* make a fine contrast. An old Oak that has seen its best days would be a suitable support for it. In getting this or any other climber to grow on living trees, the difficulty is at the start, chiefly because of the living roots of the tree on which it is to grow, and then the *Wistaria* should be planted well away from the trunk where sun and rain can reach it. A good plan is to sink a large tub with the bottom knocked out, and fill this with good rich loam and leaf mould, and by the time the *Wistaria* has filled this with roots it will be able to hold its own.

It now and then makes very graceful standards at least in the good situations in the south, and bowers and the most beautiful lacework of summer-houses may be formed with this climber alone. For example, a strong framework of tent shape might easily be covered with it. The timbers or irons of the roof might be close enough for the foliage of the *Wistaria* to cast a slight shade over the interior, and the motive for such a thing would be the grace and beauty of the shrub when in flower, garlanding it, and forming a temple of graceful bloom.

W. CHINENSIS.—The oldest kind intro-

Wistaria multijuga on a tree at Haslemere.

duced and so far the most beautiful. Its single and double white forms are beautiful, although neither of them have the freedom of the true plant. The double blue form is a poor thing, liable to damage in wet weather.

In the VAR. *MACROBOTRYS* the flowers are of a paler shade of blue-purple, and the racemes are longer, the flowers being farther apart. A variegated form is not worth a place.

W. *BRACHYBOTRYS*.—Although nearly seventy years since a *Wistaria* under this name

The White Wistaria, Tresserve.

was brought to Europe from Japan by Siebold, but little can be said of it. Judging by published figures, it appears to be a dwarf variety of *W. chinensis*, with racemes of the same blue-purple flowers, only shorter, as the specific name suggests. Var. *alba* has been spoken highly of in the United States, but I have never seen it.

W. *MULTIJUGA* (*Japanese Glycine*).—A very beautiful plant with racemes often between 2 ft. and 3 ft. long, flowering a

fortnight later than the Chinese *Glycine*, the blossoms much less closely packed on the spikes. The colour varies in different plants, but it is always a variation of delicate lilac and white. The variety *alba* has flowers wholly white, and there are two forms of the plant in cultivation, one with shorter racemes. The newest form is one called *rosea*, with flowers of a delicate shade of rosy-lilac. Variety *Russelliana* has dark flowers with a pale central blotch.

W. *JAPONICA*.—The rare climber, sometimes met with under this name really belongs to the closely allied genus *Millettia*. The flowers appear in small racemose clusters in June and July, and are white.

W. *FRUTESCENS*.—This is the only species found wild in the New World. It is a climber, but not a strong grower, the flowers pale blue-purple, arranged densely in racemes 3 ins. to 8 ins. long in June. There are two varieties in cultivation, one, *magnifica*, has racemes over 1 ft. in length; the second is a white form.—W. J. B.

WOODSIA.—These pretty deciduous hardy Ferns are admirably suited for a northern position in the alpine or rock-garden. They are impatient of sunshine, and drainage should receive special attention. They should have a mixture of fibry peat and loam, which has some broken-up sandstone mixed with it. It is a good plan to place Woodsias between little blocks of sandstone which just peep out of the soil. These blocks of stone could be covered with Sedums and other flowering rock plants. The best hardy species are *W. ilvensis* and *W. alpina*; there is also a very beautiful North American kind named *W. obtusa*.

WOODWARDIA.—Noble ferns, of which a few are hardy. All are handsome, with broad beautifully arching fronds, which are especially ornamental if seen a little above the level of the eye. Woodwardias thrive under the ordinary conditions of the hardy fernery, and succeed in a shady position if they have a light peaty soil that is moist in summer. The principal hardy kinds are *W. areolata* (*angustifolia*) and *W. virginica*, both from N. America; *W. japonica* and *W. orientalis*, from Japan; and *W. radicans* from Madeira. *W. radicans* is the tenderest, and requires a sheltered position, and perhaps protection in severe cold.

WULFENIA.—*W. carinthiaca* is a remarkably dwarf, almost stemless evergreen herb, bearing in summer showy spikes, 12 to 18 in. high, of drooping purplish-blue flowers. Found only on one or two mountains in Carinthia. It is a pretty plant for rock-gardens or borders, but should have a light moist sandy loam. *W. Amherstiana* from the Himalayas, similar but

more showy, is rare, and we have seen it only in Kew Gardens. It is hardy, grows freely in any position in the rock-garden, but prefers a shady spot and light rich soil. *Scrophulariaceæ*.

XANTHOCERAS (*Chinese Chestnut*).

—*X. sorbifolia* is a beautiful dwarf hardy tree, but not a rapid grower; its leaves are elegant, and its flowers white marked with red, borne in erect clusters. To thrive it requires a climate warmer than that of Britain, though it does very well in some sheltered places.

After having been for many years a rare plant in English gardens it is becoming more widely known and cultivated, and among the gardens where it succeeds well is that at Offington, Worthing, where it has ripened its fruits, which recall in form and size the fruits of the Horse Chestnut. The seedlings raised from English ripened fruits may give us fine varieties, as seedlings vary greatly in size and colour of flower. China. At Kew it is disappointing compared with the plants in mild coast gardens, and is best against a wall, which it covers to a height of 12 ft., while as an open bush it is only half that height.

XERANTHEMUM.—*X. annuum* is a hardy annual, one of the prettiest of Everlasting flowers, growing about 2 ft. high, with abundant white, purple, and yellow double, single, and semi-double blossoms. A packet of mixed seed sown in any ordinary garden soil in March will give a variety of colours. The principal kinds are —Album, white; imperiale, dark violet-purple; plenissimum, dark purple, double; superbissimum, double, globe-flowered; and Tom Thumb, a compact dwarf variety. The flowers are excellent for cutting, and if dried are useful for winter decoration. S. Europe. *Compositæ*.

XEROPHYLLUM (*Turkey's Beard*)

—*X. asphodeloides* is a beautiful tuberous-rooted plant with the aspect of an Asphodel, forming a spreading tuft of grassy leaves, its tall flower-stem terminated by a raceme of numerous white blossoms. It grows well in a moist, sandy, peaty border, and in the drier parts of boggy ground. Pine barrens in N. America.

X. tenax.—This very beautiful species is found wild in various parts of North America, especially in Pine barrens on the west side of the continent. The flower-stems 2 to 5 ft. high, the raceme varying from 1 to 2 ft. long, the flowers crowded and attractive, the segments white with a violet centre. Division or seed. D. K.

YUCCA (*Adam's Needle*).—Very distinct evergreen plants of fine form and of the highest value where effect is sought. Yuccas seem fitted for various uses, as a single plant may stand alone on a lawn, or in the centre of a bed, or numbers may be grouped with other plants, or by themselves. They look especially well on rock-garden banks, and are not particular about soil, but do not flourish so well in sand, chalk, or peat. They are hardy save in severe winters and on cool soils, and all of the kinds mentioned are vigorous. Suckers, unless carefully taken,

Yucca.

are apt to die down to the ground when first planted; but if left alone they will renew their growth in a few months. There are several hardy species well suited for the flower-garden, and quite distinct from each other. The effect of well-developed Yuccas is equal to that of any hot-house plant that we can venture to place in the open air for the summer, while they are green and ornamental at all seasons. The free-flowering kinds, *Y. filamentosa* and *Y. flaccida*, may be associated with any of our nobler autumn-flowering plants, from *Gladiolus* to the great *Statice latifolia*. Even species that do not flower

so often, like *Y. pendula* and *Y. gloriosa*, are magnificent if grown in the full sun and in good soil. Division of the stem and the rhizome. Yuccas should be planted singly, beginning with healthy young plants, so as to secure perfect specimens.

Y. aloifolia.—A distinct species, with a stem which, fully developed, is as thick as a man's arm, and 6 to 18 ft. high. The numerous leaves of the plant are dark green, but have a slight glaucous bloom; ascend rigidly; are 18 to 21 in. long, broad at the middle, while their horny margin is rolled in for 2 or 3 in. below the point, and is finely toothed in the remaining portion. The flowers are almost white, borne in a vast pyramidal panicle. The plant is hardy, but is not generally known to be so; it should be tried on well-drained slopes in good sandy loam. The finest varieties are *quadricolor* and *versicolor* with leaves variously edged with green, yellow and red. They are hardy, but being far from common, it is best to winter them in the greenhouse with a turn in the open air during summer. They look pretty on Grass, the pots plunged to the rim. S. America and W. Indies.

Y. angustifolia.—This is the smallest of all the Yuccas. When in flower it is not more than 3 ft. high. Its long strips of leaves are nearly 1½ ft. in length, but are not more than ¼ in. in width. They are thick and rigid, of a pale sea-green colour, and fringed with white filaments. The plant bears a simple raceme of white flowers slightly tinged with yellow. Till it is more plentiful it should be grown in warm borders, in well-drained sandy loam. It is excellent for rock-gardens. N. America.

Y. canaliculata.—The leaves of this Yucca are entire—i.e. neither toothed nor filamentose at the margin, and form a dense rosette on a stem 1 or 2 ft. high. Each leaf is 20 to 24 in. long, and 2 to 2¼ in. broad at the middle, strong, rigid, and deeply concave. The flowers are creamy-white, and borne in a large panicle 4 or 5 ft. high. It is well suited for isolation or groups, but, till more plentiful, should be encouraged in favourable positions and on warm soils. Mexico.

Y. filamentosa.—A well-known species, with apple-green leaves and a much-branched panicle, 4 to 6 ft. high. It varies very much when raised from seed. One variety (*concava*) has short, strong, broad leaves, which are more concave than those of the type; another variety (*maxima*) has narrow leaves which, though nearly 2 ft. long, are only 2½ in. broad. It has a panicle 7 to 8 ft. high and flowers with much vigour and beauty. It has a fine variegated variety. This plant and its forms thrive best in peaty or fine sandy soil. N. America.

Y. flaccida.—A stemless species, somewhat resembling the last, but smaller, with a downy branching panicle, 3 or 4 ft. high, and close rosettes of leaves 18 to 24 in. long, and about

1½ in. broad at the middle. They are often fringed with filaments, the young ones nearly erect, and the old ones so abruptly reflexed in the middle as to appear almost broken. This gives such a quaint appearance that it is easily distinguished from any of the varieties of *Y. filamentosa*. It also flowers more regularly and abundantly than *Y. filamentosa*, and is well suited for groups of the finer hardy plants, for borders, or to plant in large isolated tufts. N. America.

Y. glaucescens.—A free-flowering kind, with a panicle 3 or 4 ft. high, and sea-green leaves, about 18 in. long, with a few filaments on the margins. The flowers are greenish-yellow, when in bud tinged with pink, which gives the whole inflorescence a peculiarly pleasing tone. It is a very useful and ornamental sort, fine for groups, borders, isolation, or for placing among low shrubs. There is a pretty form with a broad band of pale yellow down the middle of the leaf. N. America.

Y. gloriosa.—A large and imposing Yucca of distinct habit and somewhat rigid aspect. Its flower-stem is over 7 ft. high, much branched, and bears an immense pyramidal panicle of large almost white flowers. Its numerous leaves are stiff and pointed. It is one of the noblest plants in our gardens, suitable for almost any position. Seedlings vary much, and this is a recommendation, as the greater variety of fine form we have the better. Its chief varieties are *Y. g. longifolia*, *plicata*, *maculata*, *glaucescens*, and *minor*. The soil should be a rich deep loam. N. America.

Y. pendula.—Perhaps the best species, considering its graceful habit, vigour and hardiness. It grows about 6 ft. high; its leaves, at first erect and of a sea-green colour, afterwards become reflexed and deep green. Old established plants standing alone on the grass are pictures of grace and symmetry, from the lower leaves which sweep the ground to the central ones that point up as straight as a needle. It is amusing to think of people putting tender plants in the open air, and running with sheets to protect them from the cold and rain of autumn and early summer, while perhaps not a good specimen of this fine plant is to be seen in the place. There is no plant more suited for grouping near flower-beds or for associating with them. N. America. Syn. *Y. recurva*.

Y. Treculeana.—This species is one of the most remarkable, both from its habit and from the dimensions of its leaves. Like many Yuccas of its family, young specimens of *Y. Treculeana* differ considerably from those which have reached maturity. Thus, while the leaves of young specimens are bent, and generally inflected, those of mature specimens are erect, rigid, long, and straight. The stem of the plant is about 10 in. in diameter, and furnished on all sides with leaves about 4 ft. long, straight, thick and deeply channelled, very finely toothed on the edges, end-

ing in a stiff sharp point. The stout-branched flower-stalk is about 4 ft. long, the branches erect, 12 to 20 in. long, bearing flowers with long narrow petals of a shining yellowish-white. If placed singly it is excellent for banks and knolls, and is also suitable for the boldest groups. Texas.

Any one wishing to have a distinct collection of Yuccas would find the kinds mentioned suitable, but there are several other species more or less desirable. The dead flower-stems of Yuccas make capital supports for delicate creepers.

ZANTHOXYLUM (*Toothache Tree*).

—A large family of trees and shrubs, in the main too tender for this country, the few hardy kinds coming mostly from China and Japan, with one of minor interest from North America. In appearance they are unlike other shrubs, often with handsome leaves cut into leaflets, and small white or greenish flowers followed in some kinds by ornamental fruits. The best in this way is *Z. piperitum* or Japan Pepper, in which the glossy black berries are so abundant as to be exceedingly attractive. *Z. planispinum* is an interesting shrub of dense growth, with glossy evergreen leaves and branches covered with stout compressed spines. *Z. Bungeanum* also bears evergreen leaves of a cheerful green, and more finely divided than in *planispinum*. The finest kind, *Z. ailanthoides*, a tree of 60 feet, is said to be one of the most beautiful trees of Japan. Increase by seeds, suckers, or root-cuttings.

ZAPANIA (*Creeping Vervain*).—*Z. nodiflora* is a pretty, spreading trailer, with prostrate stems 2 or 3 ft. in length, which late in summer bear small round heads of little purplish flowers. Suitable for the rougher parts of the rock-garden, for borders or edgings in free warm soil. Asia and America. *Syn.* Lippia nodiflora.

ZAUSCHNERIA (*Californian Fuchsia*).—*Z. californica* is a distinct and bright perennial hardy in warm soils in sheltered places, but in cold localities requiring a little winter protection, such as a covering of ashes. It grows 12 to 18 in. high, and yields an abundance of gracefully drooping bright vermilion flowers during summer and autumn. It flourishes in sandy loam in the rock-garden, and grows capitally on an old wall. In its own land it grows under a variety of conditions and is variable in habit, hairiness, time of flower, size and shape of leaves and flowers, and in one form the flowers stand erect instead of drooping. The best for British gardens is an early variety with grey-green foliage and flowers of intense colour.

This often begins to bloom in July, whereas the later kinds are spoiled by autumn storms almost from the outset. California. Division or seed.

ZEÄ (*Indian Corn*).—*Z. Mays* is one of the noblest of the Grasses that thrive in our climate, almost indispensable to our gardens, and with a fine appearance either isolated or associated with other fine-leaved plants. *Cuzko* and *Caragua* are the largest of the green varieties, and *gracillima* the smallest and most graceful. The variegated or Japanese Maize is a handsome variety that comes true from seed. It is useful for mingling with bedding plants for vases; and may be grown in light, rich, warm soil in the margins of beds of sub-tropical plants, or in any position where its variegation may be well seen. It has a habit of breaking into shoots rather freely near the base of the central stem, and this should recommend it for planting on turf, singly or in groups of three or five. The seeds should be sown on a gentle hot-bed in April, although they will occasionally succeed out-of-doors. Gradually harden off the plants before they have made many leaves, keeping them in a cool frame near the glass, so as to keep them sturdy, finally exposing them by taking off the lights. This method is perhaps the more desirable in the case of the variegated Maize, which does not grow so vigorously as the green kinds. In no case should the plants be drawn up in heat, or they will not thrive so well. The first few leaves of the variegated kind are green, but soon begin to manifest the striping. The plants should be planted out about the middle of May.

ZELKOWA (*Zelkova Tree*).—Handsome summer-leaving trees, hardy, distinct in appearance, and yielding valuable timber, yet seldom planted. They grow best in moist alluvial soils and are well adapted for avenues and roadside planting. They do not appear to bear seed in this country, and for this reason are commonly increased by grafting on the Common Elm, though such means can never give the best results in growth and beauty. The fine individual trees in various parts of Britain show the Zelkova to be well suited to our climate, and we could wish that it was more used by planters, especially for wet soils, being remarkably free from insects and disease. There are four kinds, as follows:—

Z. acuminata (*Japanese Zelkova*).—A useful and handsome tree of about 100 ft., with a straight stem and a broad round top. The leaves vary much in size even on the same

twig, being 3 to 5 in. long, tapering to a point, $1\frac{1}{4}$ to $2\frac{1}{2}$ in. wide, slightly hairy on both sides, and edged with coarse sharp teeth. The longer points, sharper teeth, more numerous nerves and leathery texture, together with the fact that they hang longer, may enable anyone to tell the leaf of the Japan Zelkova from that of the better-known *Z. crenata*. The timber is hard, durable, and fine-grained, taking a high polish, and valued for its many industrial uses. Japan. The tree is fully hardy with us, and not difficult to suit as to soil.

Z. crenata (*Common Zelkova*).—A quick-growing, handsome tree of marked characteristics, the main branches rising erect from one point, and spreading so slightly as to give a peculiar and easily recognised form. Each branch is as it were a tiny tree in miniature. Mature trees are 80 to 100 ft. high, with a fine columnar stem covered at first with smooth bark like a Beech or a Hornbeam, though in old trees it becomes furrowed and falls away as in the Plane. The leaf is often like that of the Elm, only smoother, more glossy, and with more rounded teeth; but this character is so variable that leaves like an Elm, a Beech, and a Hornbeam may often be found on the same branch, to the bewilderment of the uninitiated. Asia Minor and Caucasus. Syn. *Planera Richardi*.

Of lesser importance are *Z. cretica*, a graceful small-leaved tree of 15 to 20 ft., with leathery dark-green leaves, thickly coated with short grey hairs on the under side and upon the stems and young branches; and *Z. japonica*, a small-leaved species from Japan, with roughly down-covered leaves.

ZENOBIA.—*Z. speciosa* is one of the most beautiful shrubs in the Heath family, about a yard high, with small roundish leaves of a pale green. In the variety *pulverulenta*, the leaves are almost white, covered with a mealy glaucescence; flowers, white and wax-like in form, like those of Lily of the Valley, coming in summer in beautiful loose drooping clusters. A well-flowered specimen is most charming, and lasts for some weeks in beauty, thriving in a peaty soil or a sandy loam. It comes from the Southern United States; and is therefore not absolutely hardy. In nurseries it is known as *Andromeda cassiniæfolia* and *A. speciosa*, and its variety *Z. pulverulenta* as *A. dealbata* and *A. pulverulenta*.

ZEPHYRANTHES (*Zephyr-flower*).—This beautiful flower has been termed the Crocus of America. There are about fourteen species,—low-growing bulbous plants, with grassy leaves, which appear in spring with or before the Crocus-like flowers, which are white or rosy-pink, large and handsome. Zephyranthes require rest during winter, and at that

season are best kept dry. In spring they should be planted out in the full sun in sandy soil. They do well in the greenhouse, four or six being planted in a pot. Offsets. The valuable species are:—

Z. Atamasco (*Atamasco Lily*).—This handsome plant is a native of N. America, where it is a conspicuous ornament of damp places in woods and fields. Its glossy leaves appear at the same time as the blossoms, and slightly exceed them in height. The white flowers are striped with rose, are about 3 in. long, and borne singly upon a scape 6 in. high. It flowers from May to July, and is very beautiful where it succeeds, but it is seldom really happy with us in the open air, even in light soils and in the warmest gardens.

Z. candida (*Swamp Zephyr flower*).—The hardiest and best of the group, making tufts of evergreen Rush-like leaves, and glistening white flowers with golden stamens, opening flat in the sunshine from August to October. The buds are prettily shaded with rose on the outside. In warm sandy soils the bulbs do well, planted like the Belladonna Lily in narrow borders against a greenhouse or any place—even a gravel walk—where they get a thorough baking and plenty of moisture from time to time. Cool and heavy soils do not suit the plant at all, nor does it seem to do so well in the west as in the drier climate of east and south-east Britain, often failing to flower when it does not die out. In the light soils of Surrey, and at Kew, it is charming, ripening seeds which germinate and grow readily, spreading into groups of beautiful effect as an edging to warm borders, or even as a carpet plant. *Z. citrina* is a scarcer kind allied to *candida* but distinct in form and in its golden flowers. A cross between these two species has given *Z. Ajax*, which is like *candida* in character and time of bloom, but quite new in its soft yellow flowers over 2 in. across prettily flushed with rose on the outside.

Z. carinata.—This lovely plant has narrow leaves, and its flower-stem, which is about 6 in. high, bears a delicate rosy flower, 2 or 3 in. long. It blossoms freely in the open border if kept dry in winter, and should be grown in light sandy loam. S. America.

Z. macrosiphon is a scarcer plant coming near *carinata*, the flowers a little smaller but more abundant, and sometimes renewed in autumn. The plant is easily grown and seeds freely, but unless amply protected the bulbs should be lifted in the autumn.

Z. rosea, a beautiful species, with flowers of a bright rose, is a native of the mountains of Cuba.

Z. Treatiæ from Florida resembles *Z. Atamasco*, but is found in damper places and blooms somewhat later—April to June. The leaves are weak and narrow and the bulbs so small that the large white flowers 3 ins. long, flushed with red while in bud and delicately fragrant, come as something of a surprise. If grown in the open air it should be in such a warm border as that recommended for *Z. can-*

dida, with a good layer of ashes to protect the roots in winter.

Z. tubispatha.—A handsome plant, bearing a white, slightly fragrant flower, 2 or 3 in. long. It is a native of Antigua, and of the Blue Mountains of Jamaica. Though properly a stove plant, it will thrive and flower well in mild localities, if well protected in winter. A pretty pink hybrid between this species and *Z. carinata* is sometimes met with under the name of *Z. Spofforthiana*.

ZIETENIA.—*Z. lavandulæfolia* is a dwarf, creeping, half-shrubby perennial of a grayish hue, 6 to 12 in. high, with purple flowers in summer, borne in whorls, forming a spike about 6 in. long, with a slender downy stalk. Suitable for the margins of borders and the rougher parts of the rock-garden, or for naturalisation in ordinary soil. Division. Caucasus.

ZINNIA.—Half-hardy annual plants of splendid colour and thriving best in our country on good warm soils. They are among the most effective of summer-blooming plants, and they flower well until autumn. Their blooms are not easily injured by inclement weather, but retain freshness and gay colour when many flowers present but a sorry appearance. In mixed borders, and in beds among sub-tropical plants, well-grown Zinnias are always attractive, but require a deep loamy soil and a warm open situation. Seed should be sown in gentle warmth. Nothing is gained by sowing before the middle or end of March, as, if the young plants have to stand before being planted, they become root-bound and seldom fully recover. If the tissues once harden so much as to bring the young plants to a standstill, there will be little chance of rapid progress when finally set out. It is not advisable to plant them out much before the second week in June, as they are sensitive to atmospheric changes, and are completely ruined by a few degrees of frost. Plant them in well-stirred, fairly-enriched soil and in full exposure, for they love to bask in the sun's fiercest rays, and demand merely a surface-covering, to protect the roots, and a constant supply of moisture. In a bed by themselves they would be greatly improved if the soil were thrown out, and a good depth of fermenting manure were well trodden in, and the soil replaced. Both the single and double Zinnias are fine garden plants, and display a diversity and brilliancy of colour equalled by few plants. The double forms have of late been most in request, although both the

double and single varieties have been greatly improved. There is one good characteristic about double Zinnias—they are not all so rank and unwieldy as the single types, dwarfing having gone hand-in-hand with multiplying petals in the flowers. Selection has also done something to induce a better habit; and it will be observed that particular types of flower often improve in habit and bloom at the same time. Some of the single Zinnias are very beautiful, for instance, the yellow, carmine, rosy-purple, scarlet, crimson, and orange kinds. *Z. elegans* is the species from which the numerous varieties mentioned in catalogues have been derived. *Z. Darwini* is a beautiful hybrid with very double flowers of various colours. *Z. Haageana*, known also as *Z. mexicana*, has a very neat habit, and rich orange-yellow blossoms; it also occurs with double flowers.

ZIZANIA (*Wild Rice*).—A small group of hardy grasses, excellent for planting in water, or in wet ground at the waterside. *Z. aquatica* is remarkable for the fine effect of its Oat-like stems, 8 to 10 ft. high, with broad vivid-green leaves and graceful bronzed plumes of nearly a yard long, the seeds of which are greedily sought by fish and water fowl. The plants thrive only in water with a soft mud bottom, and though they will often sow themselves, the seeds are so tempting that the safer way is to keep a store of them in a bottle of water through the winter, planting the seedlings in shallow water during June. The plant is of annual duration, and the seeds perish if kept dry. N. America.

Z. latifolia from Japan is a perennial kind, shorter, and of more drooping habit. It makes spreading tufts of a good size, but does not bear its purplish plumes freely in this country.

ZYGADENUS.—Plants of the Lily family, of no great ornamental value, for their flowers are all greenish-yellow, but their distinct growth makes them worth cultivating in a botanical or a full collection. They are slender bulbous plants, with narrow grassy leaves, and tall branching flower-stems, 1 to 4 ft. high. *Z. Fremonti* (also known as *Z. glaberrimus*, *Z. chloranthus*, and *Z. Douglassi*) is the largest flowered species. The other kinds are *Z. Nuttalli* and *Z. paniculatus*. Zygadeni thrive best in a wet peaty border in a shady position protected from cold winds. California.

PLANTS OMITTED IN THIS EDITION

MANY plants having a place in previous editions of this book, and in other books and catalogues, have been purposely omitted from this, owing to their ugliness, tenderness, difficulty of cultivation and other good reasons; and among these the following. The common neglect of the nobler families of plants, shrubs, and trees is in no way compensated for by the presence of many plants of doubtful value in gardens and in lists—plants which give no good effect in gardens generally.

A Abobra Aceranthus Aceras Achlys Achyrrachæna Achyrocline Actinomeris Adenostylis Ægilops Ægopodium Agrimonia Albizia Aletris Alfredia Alopecurus Alsophila Amblyolepis Amianthum Amorphophallus Amsonia Amygdalopsis Anacharis Anacyclus Andropogon Androstephium Anemiopsis Anemonopsis Anigosanthus Anisodus Antholyza Aphanostephus Aplectrum Aplopappus Aplotaxis Apocynum Arctomecon Arisæma Aronicum Ascyrum Asteriscus Athamanta Athanasia	Baldwinia Balsamita Balsamorhiza Beaucarnea Behria Bidens Biebersteinia Blennosperma Bletia Bloomeria Boehmeria Botrychium Bowia Boykinia Brasenia Brexia Brizopyrum Bromelia Bryonia Bulbine	Chrysocephalum Chrysosplenium Chrysopsis Chusquea Cinna Cirsium Cocculus Collinsonia Cooperia Coprosma Cortusa Corypha Cosmidium Cousinia Crassula Croomia Cucubalus Cucumis Cynanchum Cynoglossum	F Ferdinanda Ferraria Fœniculum Frankenia Fraseria	Hyoscyamus Hypochæris
B Bæria Bahia	C Cacalia Caccinia Caladium Calamintha Calimeris Callisace Calocephalus Carduus Carlina Carludovica Carthamus Caryota Castilleja Cathcartia Canlophyllum Cenia Cephalanthera Cephalaria Chamædorea Chamælirium Chelidonium Chlorogalum Chlorophytum Chrysocoma	D Dasylirion Dianthera Dichondra Dioscorea Dipcadi Diphyllia Diploxys Disporum Diuris Dolomiaea Dorema Dyckia	G Gagea Galactites Galium Gardoquia Geissorhiza Glaux Glechoma Glossocomia Glycirrhiza Goldfussia Gratiola Grindelia Gymnadenia Gymnolomia Gymnothrix	I Ianthæ Itea Iva
		E Echinocystis Echinosperrum Elsholtzia Emilia Emmenanthe Eremostachys Eurya	H Hablitzia Heimia Helianthella Heliopsis Helipterum Hemiphragma Hesperaloe Hesperochiron Hesperocordon Hierochloa Hippocrepis Hippuris Holcus Homogyne Horkelia Houttynia Hymenoxys	K Kleinia Kœleria Kuhnia
				L Lallemantia Lancea Lathræa Laurentia Leavenworthia Leersia Leontodon Leptinella Lespedeza Leucophyta Leucophyton Leuzea Levisticum Libanotis Ligusticum Lindelophia Liparis Listera Lophanthus Lowellia
				M Machæranthera Macrorhynchus

Madia
Magydaris
Malachodendron
Malaxis
Marrubium
Medeola
Melampyrum
Melanthium
Melia
Melilotus
Mercurialis
Merodon
Microdonchus
Micromeria
Mitella
Modiola
Mœhringia
Molinia
Moltkia
Monardella
Monolopia
Montagnæa
Moricandia
Morna
Morphixia
Muluccella
Myriophyllum

N

Napæa
Narthecium
Narthex
Neja
Nemastylus
Neottia
Nigritella
Nolina
Nonnea
Nothoclæna
Nothoscordum

O

Ocimum
Ophelia
Oreoseris
Ornithopus
Orobanche
Orychophragmus
Oxybaphus

Oxyria
Oxyura

P

Pachyphyton
Paederota
Palafoxia
Palava
Paracaryum
Paranaphelius
Pardanthus
Parietaria
Paris
Paronychia
Pascalie
Paspalum
Passerina
Patersonia
Patrinia
Pectis
Pedicularis
Peganum
Pellæa
Peltandra
Peltaria
Penthorum
Petalostemon
Petrocoptis
Peziza
Phalocallis
Phaseolus
Phegopteris
Phleum
Phleux
Phoenix
Phryma
Physianthus
Physochlaina
Physospermum
Picridium
Picris
Picrorhiza
Pimpernella
Pinckneya
Piptatherum
Piqueria
Pityrosperra
Plantago
Platyloma
Plectogyne
Plectranthes
Pocockia

Podolepis
Podospermum
Pogogyne
Pogonia
Potamogeton
Prangos
Prenanthes
Prosartes
Psoralea
Pulicaria
Purshia
Pynanthemum
Pyrrophappus

Q

Quillaja

R

Reaumeria
Rehmannia
Reineckia
Restio
Rhaphithamnus
Rhaponticum
Rhazya
Rhinanthus
Rhinopetalum
Rhodea
Rhodiola
Rhodochiton
Rhynchocarpa
Rœmeria
Romanzoffia
Romanzowia
Rubia

S

Salpichroa
Sanguisorba
Sapindus
Sarcodes
Sarcococca
Satureia
Satyrrium
Saururus
Saussurea
Schivereckia
Schœnus

Schrankia
Scleranthus
Scleria
Sclerolepis
Scoliopus
Scolymus
Scopolia
Scorpiurus
Scorzonera
Seaforthia
Secale
Securigera
Sesleria
Setaria
Silbaldia
Sideritis
Siegesbeckia
Simethis
Simmondsia
Sisymbrium
Smyrnium
Sogalina
Sonchus
Sorghum
Sparganium
Spartina
Spilanthus
Spiranthes
Stachyurus
Stellaria
Stenantheum
Stenosiphon
Stenotaphrum
Stevia
Streptopus
Strumaria
Stylidium
Stylophorum
Sullivanti
Symplocarpus

T

Tamus
Telephium
Tephrosia
Thapsia
Thaspium
Theropogon
Thymophylla
Tofieldia
Tolmizæa
Tolpis

Tommasinia
Tournefortia
Tovaria
Tragopogon
Trautvetteria
Trichosanthes
Trigonella
Triticum
Troximon
Tupidanthus

U

Uhdea
Ullucus
Ursinia
Urtica

V

Viguiera
Vilfa

W

Wachendorfia
Wilbrandia
Wyethia

X

Xanthium
Xanthorrhœa
Xanthosoma
Xiphion

Y

Youngia

Z

Zacintha
Zozimia
Zygophyllum

SUPPLEMENT.

AMPHICOME.—Dwarf shrubby rock-plants allied to *Incarvillea*, with trumpet-shaped flowers and elegant foliage. In *A. arguta* the flowers are red, coming as drooping racemes during August, and the finely-cut leaves are deeply serrated. *A. Emodi* is dwarfer and hardier, its pale-red flowers with an orange throat being 2 in. long and held erect. Freely produced from August, they are very showy and continue for weeks in a genial autumn. To do well the plants require well-drained soil and a sunny place, with protection from heavy rain and from sharp frost; a handlight or a tilted pane of glass is often sufficient, but in cold gardens the plants are safer in a greenhouse. Increase by seeds, or cuttings of the shoots in spring. Bignonia order, Himalaya.

ANTHYLLIS (*Kidney Vetch*).—Dwarf mountain plants of the Pea family, of which there are some half a dozen species in cultivation. As far as now known, few are worth growing on the rock garden.

Anthyllis montanus, the Mountain Kidney Vetch, is a very hardy rock-plant; dwarf, about 6 ins. high, the leaves pinnate, and nearly white with down, the pinkish flowers in dense heads, rising little above the foliage, and forming with the hoary leaves pretty little trailing tufts. I have never seen any alpine plant thrive better on the stiff clay of North London. Resisting any cold or moisture, it is among dwarf plants of the first order of merit as a rock-plant. The variety *rubra* has darker red flowers. Alps of Europe; division and seeds.

A. barba-jovis (*Jupiter's Beard*) is a shrubby plant of erect growth, with silvery, silky leaves and creamy-yellow flowers in spring. Coming from Spain, it is suited to a hot, dry place in the rock-garden, and in cold places is sometimes grown against a wall.

A. erinacea is a singular-looking much-branched, tufted, spiny, almost leafless shrub, about 1 foot high, with purplish flowers.

A. Vulneraria (*Woundwort*).—A native plant, is pretty, and well worth growing on dry banks. There are varieties, white and red.

APIOS TUBEROSA (*Ground Nut*).—A graceful tuberous-rooted perennial of twining habit, with leaves cut into five lance-shaped leaflets, and fragrant brown flowers in dense clusters from July to September. It climbs over bushes to a height of 4 to 8 ft., and may be planted to cover a trellis or to roam among the shrubs at the back of a sunny rock-garden, several tubers being planted together to secure the best effect. To do well the soil should be light and warm, with full sun and some shelter; on cold wet soils the plant is a failure. Increase by seeds whenever possible, but they do not ripen with us, and often fail to do so even in America; the roots may also be divided, but at some risk. Pennsylvania. The roots are eaten in winter by the American Indians.

ARCTOTIS GRANDIS.—A handsome kind from the Cape, with grey or silvery leaves and stems, and showy white flowers 2 in. or more across, with a gold-banded pale mauve centre, and shaded with lilac on the outside. It forms a bushy plant of about 2 ft. high, flowering freely and through a long season, and the long-stemmed flowers are useful for cutting if gathered on first expanding, though they close up each evening. Seed should be sown under glass in early spring, and the seedlings planted in rich light soil and in the hottest part of the garden, as soon as danger from frost is over. Though rejoicing in hot sun, the plants should be freely watered during dry weather. In the warm gardens of the south-west the roots are perennial, but in other parts it is best treated as we have said.

ARNICA (*Lamb's-skin*).—A small group of perennial herbs of the Daisy order, with clustered leaves and neat yellow flowers on long stems. They do well in the rock-garden or border, in open sandy soils. Increase by division, or seed when obtainable. *A. Chamissonis* from N. America is a pretty plant of 1 to 2 ft., with woolly leaves and yellow

flowers 2 in. across, from July to September. *A. montana* (Mountain Tobacco) is a European plant about 12 in. high, with smooth lance-shaped leaves and yellow flowers 2 in. across in summer, the blooms gathered into threes and fours on hairy stems. This pretty rock-plant is of slow growth, and should have a place in sandy peat and partial shade. *A. foliosa*, from the Rocky Mountains, is not unlike the last, but taller, with smaller flowers, and needs a damp place. *A. sachalinensis* from the Far East, grows 18 in. high with abundant yellow flowers.

BACCHARIS.—Curious evergreen shrubs mostly from South America and not always hardy with us inland, though excellent for sea-side places where they thrive down to the water's edge regardless of wind and spray. They do best in rather poor soils and upon dry stony banks, growing rapidly and giving distinct effect both of leaf and flower. The various kinds differ widely from one another, *B. halimifolia* (Sea Purslane) the best known, attaining a height of 6 to 12 ft., with rough coarsely-toothed leaves of a bluish-green colour and small yellow flowers succeeded by snowy seed-clusters. *B. patagonica* (Groundsell Tree) is handsome in foliage, and the white flower-heads, borne in great profusion, show prettily against the dark green leaves. This makes an effective hedge-plant. *B. salicina*, a shrub of about 6 ft. from Colorado, comes near *halimifolia*, but is hardier, with narrow grey-green leaves. *B. Xalapensis* and *B. trimera* are seldom seen, but well worth a place in coast gardens, the first with pretty pale green foliage, and the second, from the Pampas plains of La Plata, a singular little shrub with flattened winged branches growing erect to a height of several feet and studded over with small whitish flower-heads when in bloom. An interesting little shrub for the rock-garden, it will thrive in the hottest nook that can be found for it. Other beautiful species have never yet been introduced.

BERCHEMIA.—A small group of shrubby climbing plants or low trees, of the Buckthorn order, found in parts of Asia, Africa, and North America, and for the most part too tender for our gardens, though the following are worth growing—

B. volubilis (*Supple Jack*) from Carolina, is a vigorous and graceful summer-leaving climber of 10 to 20 ft., with bright glossy green oval leaves, sharply pointed and slightly waved. Inconspicuous green and white flowers appear from the leaf-

axils and the tips of the shoots, in June, and these are followed by oval fleshy fruits of a bluish-black colour. This species is hardy almost anywhere in Britain.

A nearly allied plant, *B. racemosa*, from Japan, is less freely climbing in habit, with more rounded leaves, greenish flowers, and showy fruits turning from bright red to black. There is a form of this kind in which the leaves are heavily variegated, but this is tender and needs partial shade.

The Berchemias grow in any good garden soil, and may be used to cover tree-stumps and roots, arbours, trellis, and the like. Increase by seeds, root-cuttings, layers, or cuttings of the ripened shoots, rooted under glass in the autumn.

BESCHORNERIA.—Mexican plants allied to the Agaves, but hardier and more easily grown and handled. They perish inland, but in warm shore-gardens several kinds thrive in the open air, their fine bluish-green leaves, like those of a Yucca but more fleshy, without spines, and often a yard long and several inches wide, create an effect unlike any other hardy plant. When well established they bloom freely, and though the flowers are only small and mostly green in colour, the large leafy bracts, the flower-stalks, and the great arching stems themselves, are of so vivid a crimson as to make a striking picture. The plants do not die after flowering, but increase by side-shoots, making strong and picturesque groups when undisturbed and well treated. They need all the sun they can have, a light rich soil, and a dry place such as the crest of a sheltered bank or the foot of a warm wall. Several kinds have been tried successfully, such as *B. yuccoides*, *B. bracteata*, and *B. tonelii*, but all are similar in effect, and though seldom seen except in the shore-gardens of Devon and Cornwall, the fact that two kinds grow well and flower against the cliffs at Scarborough, proves that the beauty of these quaintly effective plants might be far more widely enjoyed.

BIGELOVIA (*Plumed Golden Rod*).—Shrubby or half-shrubby perennials of the Golden Rod order, coming from the dry plains and mountain slopes of the Western States of America, as yet little tried in Britain. They thrive in dry soils and sunny places, where they are not overgrown by stronger plants. They are fairly hardy at the root, but not always free in flower save under the best conditions. Increase by cuttings or seeds, which germinate readily.

B. arborescens is a shrubby plant, covered with long, narrow leaves, and crowded heads of yellow flowers 6 to 8 ft. high, and rather pretty.

B. Bolanderi is about a foot high with viscid stems covered with dense white wool; its flowers are a bright yellow.

B. ceruminosa is a strongly scented shrub. The leaves are sticky and needle-like, and the flowers a pretty pale yellow.

B. Cooperi is a low growing plant with very narrow almost needle-like leaves and heads of yellow flowers.

B. Douglasii varies from 1 to 6 ft. in height, forming a stout, shrubby column or pyramid, with narrow leaves and bright yellow flowers.

B. graveolens, the best known species, is of shrubby habit and from 1 to 6 ft. high, much branched, and thickly covered with narrow light green leaves about 2 in. long and covered with white silky wool. The flowers appear as heads of 4 to 6 in., very fragrant and of a pale yellow, lasting from the middle of summer to late autumn. Though free-flowering in southern gardens and in a good year, further north it blooms less freely and is sometimes injured by spring frosts. Of *B. graveolens* there are several forms:—*albicaulis* (Dwarf Princess' Plume) with leaves more densely woolly and the tube of the flowers covered with long spreading hairs; it forms a low, rounded tuft of about a foot, each spray ending in a little golden plume. This is useful for edgings and low hedges. Other kinds are *hololeuca*, covered with woolly hairs so densely as to resemble a coat of wool; and *glabrata*, which bears only a trace of the wooly coating so conspicuous in other forms of the plant.

B. Menziesii is a gummy plant of 12 to 18 in., with spoon-shaped leaves and yellow flowers.

B. teretifolia is a shrub with long narrow leaves, sticky and fragrant as in other kinds, and the flowers a pretty pale yellow.

BOWKERIA.—*B. triphylla* is a scarce shrub from South Africa, hardy in a few sheltered places along the south coast. It grows to a height of 7 ft. or more, with wrinkled leaves and white flowers appearing singly or in loose clusters from the leaf-axils during July and August. They are hooded and pouched like a *Calceolaria* flower, and about an inch across every way. Syn., *B. gerardiana*.

BROUSSONETIA PAPYRIFERA (*Paper Mulberry*).—A small summer-leaving tree allied to the Mulberry, and somewhat similar in its broadly rounded head and the large and softly hairy leaves. The shape of the leaf is, however, most variable even upon the same tree, some being entire and others deeply lobed, while there are varieties with leaves crisped, variegated, and variously cut.

The catkin-like flowers are dull red, and with a scent of Cowslips, coming in May either as short spikes or rounded fleshy balls, according as they are male or female, while the fruits consist of small fleshy nutlets. Though hardy in the south of Britain, where it makes a shapely lawn tree, in the north it needs shelter and is safest against a wall. There are several means of increase, including seed, root-cuttings, layers, suckers, soft cuttings under glass, or ripened cuttings in the open air. Rich moist soil with a warm and porous sub-soil are the best conditions, and growth is rapid in young trees. It is one of the best of town trees, and a good shade tree for lawns or avenues, but if the roots get injured it gives some trouble with suckers.

The most distinct varieties are *macrophylla*, with large entire leaves; *heterophylla*, with leaves of different shapes; *cucullata*, with small leaves curiously crisped and twisted; *laciniata*, a tender variety in which they are finely cut; *dissecta*, somewhat similar but hardier, of very slender and compact growth; and *Billiardi*, a very distinct kind in which the leaf-stalk is strangely prolonged and the leaf reduced to a tiny leaflet at the end. In habit this is as distinct and graceful as the last, and either of these make pretty lawn trees, as indeed does also the good variegated variety. China.

There are two or three other species of a like general character, but not so hardy and useful. The best known is *B. Kazinoki* from Japan, a tree of vigorous but slender growth, with large rounded leaves, smother and less cut than in the common Paper Mulberry. That name is derived from the fact that the fibrous bark is used by the Chinese for making paper.

CARDUNCELLUS PINNATUS.—A pretty little alpine plant of the Thistle order, with finely-cut leaves and attractive heads of lilac flowers like a Cornflower. If in strong or rich soils it spreads from the root and becomes rank, but in light dry soils and full sun it makes neat tufts of about 8 in., hardy, and not troublesome. Division. Southern Europe.

CASTANOPSIS CHRYSOPHYLLA (*Golden Chestnut*).—A beautiful evergreen tree of the Pacific coast of N. America, coming between the Oaks and the Chestnuts. In moist valleys near the sea the finest trees reach a height of 150 ft., but it is often only a low shrub on the mountain sides. At a little distance these low densely-branched little trees look like a Bay or a Holly Oak, only the leaf is smaller and narrower, with a powdery golden under-surface of beautiful effect when stirred by wind. It blooms in Sep-

tember and ripens its fruits, like tiny sweet-chestnuts, in the succeeding autumn. Though borne freely upon little plants only 2 ft. high, they seldom reach perfection in this country. The plant is hardy even in the north of Scotland, and does well about Edinburgh and in sheltered parts of the west country, thriving in good heavy soil but growing very slowly, so that it must never be put near greedy shrubs that would outgrow and smother it. Being very averse to removal, it is mostly planted from pots. The hardiest form of all is *minor*, from the mountain tops of California—a pretty little shrub for raised banks in the rock-garden.

CELMISIA.—Charming plants from New Zealand, where they fill the mountain meadows with cushions of downy leaves covered with glistening daisy-like flowers. There are upwards of thirty kinds, differing more in leaf than in their flowers, which are mostly white, though sometimes purple and very variable in size. They grow in varied situations, some in swamps, some in dry shingly places, others on moist river-banks or the gritty mountain side. To succeed with them we need therefore to know just how each grows in its own country, and things are made more difficult by the fact that they are not fully hardy with us, and seem to dislike the moisture that gathers on their hairy leaves and stems in a wet season. The few kinds that have been introduced have never become common, though they may be seen doing well here and there, and are then exceedingly beautiful. The following are in cultivation:—

C. coriacea, a hardy little kind not difficult to grow, and the largest in its flowers, $1\frac{1}{2}$ to 3 in. across, pure white with a yellow centre, and borne on stout stems a foot long. The leaves are like those of a small Yucca, 10 to 18 ins. long, covered with cottony threads and dense white down. The plant needs a sunny well-drained place, and should be well watered in summer.

C. Haastii.—A plant of strong growth, with large leaves similar to, but less woolly than those just described, the flowers, $1\frac{1}{2}$ to $2\frac{1}{2}$ in. across, coming upon short sturdy stems.

C. Lindsayi forms dense tufts of leaves 3 to 6 in. long, very white on the under-side, and with white flowers 1 to 2 in. across on stems of 6 in.

C. Monroei is also hardy, growing well near the sea in North Wales. Its leaves are silver-grey with down, almost sword-shaped, and very white beneath. The

pure white flowers are 2 in. across, coming in early summer and lasting for a considerable time.

C. ramulosa is a very distinct and pretty plant, its small short leaves forming cushions completely covered with small white flowers on short stems. Among the stones of a rock-garden nothing could be more charming.

C. spectabilis.—In leaf, flowers, and manner of growth, this comes near *C. Monroei*, but the flower-stems are shorter, and the narrow ray-florets more or less tipped with violet.

CERATOSTIGMA POLHILLI.—A pretty creeping shrub from a great height in the mountains of Western China, with grey leaves and stems and clusters of charming pale lavender-blue flowers. It is hardy in warm well-drained nooks of the rock-garden, and is increased by cuttings.

CHILOPSIS LINEARIS (*Flowering Willow*).—A very pretty flowering shrub from the warmest parts of Texas, and hence only suited to our hottest and best sheltered shore-gardens. Its slender branches of 10 to 20 ft. bear narrow leaves like a willow, and an abundance of handsome lilac trumpet-flowers, 1 to 2 in. long, and continued as long as the warm season lasts. Light rich soil and a hot wall upon the south coast are the conditions most likely to suit this choice plant with us.

CINNAMOMUM CAMPHORA (*Camphor Laurel*).—That this beautiful sub-tropical evergreen tree is hardier than often supposed is proved by Mrs. Dugmore, of Parkstone, Dorset, who writes as follows:—"The Camphor Tree flourishes here, and is now a fine shrub about 10 ft. high and quite healthy, bearing handsome glossy leaves. It has never been artificially protected, though sheltered by adjacent shrubs, and it has been planted quite 12 or 14 years. The soil is peat with a sub-soil of gravel, the whole well trenched and manured." There is also a fine specimen at Leonardslee, near Horsham, and probably others in the gardens of Devon and Cornwall.

CORDYLINE ERYTHORACHIS.—A distinct and beautiful plant, hardy only in the warmest parts of Britain, and then only when of a certain age. It does not form a main stem like most of the Dracæna family, but remains as a bold spreading tuft which sends up graceful arching spikes of ivory-white flowers every year from near the ground to a height of 4 to 6 ft. The leaves are very stout, about 4 ft. long and 3 in. wide,

with dark edges and tapering rapidly; towards the base they become deeply channelled, with the edges rolled inwards until they almost meet as a tube. The plant seeds freely, the seed-vessels being white at first and then blue. It grows freely from seed, but the young plants should be wintered under glass until three or four years old. Botanically it is classed as a form of *C. Banksii*, but for garden purposes it is quite distinct. North Australia.

CORIARIA.—This group now contains two or three new and handsome kinds of greater value than the old plant mentioned on page 510. The peculiarity of these shrubs is in the formation of their berry-like fruits. The flowers are small and inconspicuous, with scale-like petals of green, yellow, brown, or pink, and the sexes mostly apart, though found upon the same plant. After flowering, however, the tiny petals thicken and swell into a juicy fruit-like envelope surrounding the seeds, and handsome when brilliantly coloured as in the finer kinds. While these fruits are of tempting appearance, they are all more or less poisonous—a fact to be borne in mind by planters. All the kinds are of the easiest culture in moist, loamy soils, the best kinds being hardy (at least, at the root), and growing again if cut down by frost. The following are in cultivation:—

C. japonica.—A handsome shrub with red-brown woody stems 8 or 10 ft. high. The leaves come in opposite pairs, arranged regularly along either side of the stem, while the tiny flowers of a pretty pink or coral-red, appear early in June as racemes of $1\frac{1}{2}$ to 3 in. upon the stems of the previous year. The fruits are round and bright red.

C. nepalensis.—A stout rambling shrub of nearly 20 ft., with woody stems bearing three-nerved leaves and axillary clusters of flowers and fruit, which distinguish it at once from *C. terminalis*, with which however it was long confused. The flowers are brown, appearing in May, and followed by black fruits. In the south-west of England and along the south coast, this plant succeeds in the open, but inland it makes little progress. In the variety *maxima*, the fruits are larger and of a bluish colour. Himalaya, China, and Japan.

C. ruscifolia is a tall shrubby climber of 10 to 20 feet, with square stems and slender arching shoots, covered with fresh green foliage and sprays of tiny green flowers drooping prettily from the leaf-axils. It is hardy even into Scotland, where it dies down like an herbaceous perennial. The flowers come in slender racemes of 6 to 12 in., and towards autumn the tiny green petals swell into juicy fruits, of a rich purple colour in

September and October, when this is one of the most striking of wall or border plants. New Zealand.

C. terminalis.—A plant from the Thibetan frontier of China, and quite hardy in the south of Britain at least, making a shrubby root-stock and herbaceous stems of 2 or 3 ft., which die back each winter. The bark is rough and warty, and the shoots thickly set with pairs of rounded, dull green leaves. The brown and yellow flowers appear in long racemes from the tips of the shoots, differing in this from other kinds, in which they burst from the leaf-axils. These inconspicuous flowers give place to glossy, orange-yellow fruits of great beauty, crowded upon long tapering spikes of 6 to 9 in. These last well upon the plant, but are worthless for cutting.

COROKIA.—Two pretty evergreen shrubs from New Zealand, allied to the Dogwoods, and hardy only in the warmer parts of Britain. Plants more unlike are seldom found so nearly related. Increase by cuttings rooted in sand under a hand-light, or by layers in the autumn.

C. buddleoides is from the New Zealand coast-belt, with glossy leaves forming a handsome shrub 10 ft. high and through, with lance-shaped dark green leaves, silvery on the under side, from a downy covering which extends to the stems and branches. Starry yellow flowers with an orange centre appear in loose spike-like clusters during May and June, followed by oval yellow berries. It likes a half-shaded position in good loam, growing fast and fruiting freely.

C. cotoneaster.—Coming from the mountains, this kind is hardier, and easily grown in southern gardens. Though really evergreen, the leaves are so small and scattered that even in full growth the plant has a peculiar appearance, and yet so thickly do the stems interlace that there is no suggestion of nakedness. The tiny leaves are in the shape of a miniature spoon rolled out under pressure, bright green while young, becoming dark, and finally orange red before falling. The small starry yellow flowers are scattered freely about the shoots, and should give place to red or yellow berries, but these are seldom seen in this country. The plant grows well in a north aspect and in partial shade, but will also bear the sun in sheltered spots on the lawn or in the rock-garden, where its tendency is to spread.

J. H. B.

COTYLEDON.—As understood by botanists, this now includes the groups long known as *Echeveria* and *Umbilicus*. The first of these is still known so universally under the old name that we have no

hesitation in keeping to it in this book, and we have therefore only to deal with the Pennyworts—little succulent plants similar to the Houseleeks and once grouped under *Umbilicus*. They are planted as edgings or in dry places where few other things would live, and even thus the kinds are not all hardy. Four or five sorts are grown:—

C. chrysanthus, a little plant like a small Houseleek, about 4 in. high, with white or creamy-yellow flowers in short panicles. *C. sempervivum* grows rather taller, its dull green rosettes shaded with brown, and the pink flowers coming as large clusters in early autumn. This kind is most used for carpet-bedding, and the flowers are then carefully pinched out. Kurdistan. *C. spinosus* is a quaint little plant like a small *Apicra* or *Haworthia*, with a rosette of flat, spoon-shaped leaves each tipped with a spine, and a spike of yellow flowers in early summer. It sometimes reaches a height of 12 in. or more and is only hardy in dry and sunny places; in a sharp winter and in cold places it is only safe under glass, and it needs careful protection from slugs at all times. Siberia, China, and Japan. Syn. *Sempervivum spinosum*. *S. sedoides* is a little plant with thick reddish leaves like a *Sedum*, from southern Europe; and *C. Umbilicus* is a hardy British plant, with queer rounded leaves almost like a tiny mushroom, and greenish-yellow flowers in June. It grows on walls and rocky places near the south and west coasts, with stems of 6 to 18 in., and leaves coming after the flowers are past.

CRATÆGUS.—Until of late, the hawthorns of America were little known; many kinds have now been described, among which the following kinds are said to be of garden value. They are adapted to all kinds of ornamental planting, and seem to prefer heavy limestone soil, for they occur very sparingly in light or sandy soils. Planters have an idea that they are difficult to transplant, but it pruned back rather severely, quite large plants may be moved without loss, and in two or three years' time they will be objects of great beauty.

Cratægus Arnoldiana, a tree 15 or 20 ft. in height, with a broad irregular head. The flowers are borne as loose downy clusters towards the end of May. The bright crimson fruit, usually a little longer than broad, ripens about the middle of August and soon falls. The tree is remarkable for the early ripening of its finely-coloured fruits in summer or early autumn.

C. Baxteri is a spreading shrub, with a broad head and 12 to 14 ft. high. The flowers come about the first week in June, and the orange-red fruits ripen about the middle of October. The leaves are dull bluish-green, nearly oval in outline, and with a peculiarly concave

surface, by which the tree is easily recognised.

C. beata, a handsome shrub of 15 to 18 ft., bearing large saucer-shaped flowers, an inch or more across, with dark crimson anthers, coming into bloom during the last week in May. The oblong, crimson fruit, gathered in large drooping clusters, ripens at the end of September or early in October. The foliage is a deep blue-green and the tree is exceedingly handsome when in flower.

C. coccinoides comes rather near *C. Durobrivensis*, but differs in its dark grey branches, smaller flowers, and the early dropping of its fruit. It is a handsome species, found from southern Illinois to eastern Missouri.

C. Dunbari forms a dense round-topped shrub of 12 to 15 ft. The flowers with rose-coloured anthers, gathered into long compound clusters, open about 20th May. The large drooping clusters of showy crimson fruit ripen towards the end of September. The leaves are very distinct in outline, oval or almost evenly rounded.

C. Durobrivensis, a tall, upright shrub of 15 to 18 ft., with olive-grey stems. The large showy flowers with rose-coloured anthers, open in the last week of May, and the glowing scarlet fruits ripen about the end of September and hang without loss of beauty all through the autumn and early winter, when their colour is very valuable.

C. Ellwangeriana is a handsome tree 25 or more ft. high, with a trunk a foot in diameter and branching into a spreading head 25 to 30 ft. across. The fragrant flowers, an inch across, with rosy anthers, come in large clusters about 20th May. The drooping crimson fruits ripen early in September and fall towards the end of the month; when just matured their effect is very striking, but the birds soon find them out. The leaves are large, oval, and dark green.

C. ferentaria, a tall handsome shrub of 15 to 18 ft., with hairy clusters of flower, open towards the end of May. The small fruits of a glowing crimson hang in broad drooping clusters, fully coloured from about the middle of September. The leaves turn to a fine yellow in the autumn and fall early.

C. formosa is a tall branching shrub of 12 to 15 ft., with a spreading head. The large showy flowers come into bloom about the last week in May, and the glaucous fruits ripen in October. The foliage is of a distinct yellowish-green.

C. Holmesiana, a tree 30 ft. in height, with upright branches and a broad compact head. The cup-shaped flowers, with purple-red anthers, open about the middle of May. The bright crimson lustrous fruits ripen and fall early in September. The leaves are yellowish-green in colour, with prominent lobes and long sharp teeth.

C. Laneyi, a tall shrub with slender, spreading branches, rare even in its own country. The large flowers on stems covered with

shaggy hairs, come into bloom during the first week of June, and the orange-red fruits ripen in October.

C. pedicillata bears flowers with rose-coloured anthers, which expand about 24th May. The bright scarlet fruits ripen early in September and fall about the middle of the month. The leaves are broadly-oval and rich dark green in colour. Prof. Sargent regards this as "one of the largest and most beautiful thorn-trees of the northern United States."

C. Pringlei forms a dense oval head, branching from near the ground and reaching a height of 20 to 30 ft. The white flowers with reddish anthers open about the middle of

CRINUM.—With the renewed attention given to these plants of late years our choice of hardy and fairly hardy kinds has increased, and the following may be added to those described on page 515:

C. Powellii. — The best of hardy crinums, raised as a cross between *C. Mooreanum* and *C. Capense*. It bears smaller flowers than *Mooreanum*, but is hardier, and with a little care in severe winters will grow well in almost any part of Britain. It makes a large club-shaped bulb 2 to 3 ft. long, with spreading leaves many feet in length and massive

Cratægus Ellwangeriana.

May, and the dull-red fruits—occasionally marked with yellowish freckles—ripen about the end of August and fall about three weeks later. This Hawthorn is readily distinguished by its drooping leaves of convex form, this being due to the infolding of the sides towards the mid-rib.

C. spissiflora.—A shrub or low tree in which the flowers, with ten stamens and purple-red anthers, are borne in dense short clusters, and come into beauty just after the middle of May. The bright scarlet almost pear-shaped fruits are borne in dense clusters, which begin to colour in August, but are not fully ripe till the middle of September. The foliage is ample and the fruit remarkably handsome when ripe.

spikes of fragrant flowers during August. Strong bulbs will give three spikes in one season, each spike bearing twelve to twenty pink flowers 6 inches across, with buds a deeper red, and opening in succession, so that the display lasts for some weeks. The roots of established plants go down 4 or 5 ft. and the ground should therefore be well prepared before planting, and the bulbs may then be left alone for ten years or more, feeding them freely with liquid manure during summer. They then increase rapidly in size and strength, growing into majestic clumps many feet across. When planting, there should be drainage arranged if the

ground is at all wet, and the soil deeply worked, adding some well decayed manure, or a dressing of crushed bones, which is really better. The manure should not come in contact with the bulbs, which are best started in pots and planted out when the roots are active, those put into place at once after a removal being often very slow to start away. The bulb should be so deeply planted as to show only the upper part of the neck, the whole being surrounded with clean sand and the crowns covered up with leaves and bracken during winter. In cold places a spot at the foot of a south wall is best, and shelter for the leaves from cutting winds should be considered even where the extra warmth is unnecessary. There are two or three colour varieties—*album*, pure white and the best of all, its flowers being beautifully refined though fewer; *intermedium*, with pale pink flowers; and a form in which the flowers are white with rosy streaks.

C. crassifolium.—A scarce kind from South Africa, which grows well in warm places and in certain soils, such as in the Cambridge Botanic Garden. It flowers earlier than *C. capense*, in June and July, with compact heads of flowers nine to twelve in number; many of them open at the same time. They are 3 ins. long, white turning to deep rose, and very fragrant. Though the bulbs flower freely, they increase slowly.

C. yemense is also hardy in the southwest and other favoured parts of Britain, bearing large sweet-scented flowers of a beautiful satin-white colour.

CYDONIA (*Quince*).—Among the most beautiful of hardy flowering shrubs long known as *Pyrus*. Free, hardy, of rich colour, and easily grown. Few shrubs have given so many fine varieties ranging in colour from deep crimson and scarlet through shades of cherry and salmon red to pink and pure white. The flowers also are larger and very abundant, there is much variety in habit of growth, and whereas the old kinds are best on a wall in our colder districts, these garden forms do well anywhere in the open in the south. They thrive in almost any soil and even on chalk, though what they like best is a deep warm loam, and what most tries them are dry and sandy heath soils, where they grow slowly and flower less freely. Their flowers continue in succession during several months, and branches cut while in bud will open prettily in a room and last fresh for a considerable time in water. A bold group of these shrubs is

seldom seen in gardens, yet there can be no more charming sight. A single plant on a lawn will reach sometimes 20 ft. through and 10 ft. high, and there are few more showy standard trees than a trained Japan Quince. There is a pretty use for the plant as a hedge, which grows as thick as Quick, bears any needful cutting, and is a charming sight in flower and in fruit. The one care needed is in transplanting, when any except quite young plants are apt to fail; large ones are only safe out of pots. Increase by layers, notched and laid down in the autumn, which root strongly in a twelve-month. Syn. *Pyrus japonica*.

C. japonica.—**VARIETIES.**—These are numerous, and give good variety in growth and colour, though many are much alike. Among the best are Knap Hill Scarlet, with large crimson-scarlet flowers; *nivalis*, the best pure white; *albo-cincta*, in which they are tinted pink; *coccinea*, bright scarlet; *princeps*, glowing crimson; *umbilicata*, bright pink and one of the best, its flowers thickly clustered and yet well distributed; *Moerloosei*, crimson-scarlet; *rosea*, rosy-pink; *sulphurea*, pale creamy-yellow; and *cardinalis*, deep purplish-crimson. New continental forms are *Baltzii*, with rosy-red flowers on the new wood; *Mallardi*, rosy flowers edged with white; *Gaugardi*, salmon-red; *semperflorens*, with a very long succession of bright red flowers; and *macrocarpa* and *Columbia*, remarkable for their large fruits, which in the last kind sometimes measure 10 ins. in circumference. There are beside several kinds of distinct habit, useful for planting in the rock-garden where the larger kinds would be out of place, and yet where the trailing shoots show to perfection. These are *C. Sargentii*, from the mountains of Japan, with a semi-prostrate habit and rather small, bright red flowers borne very freely. *C. pygmaea* is only 2 ft. high, of a more erect habit, and so near *C. Maulei* in appearance and colour of its orange-salmon flowers that it is supposed to have come from that kind. *C. Simonii*, a seedling form of *C. japonica*, is of prostrate habit, with large blood-red flowers of rich effect in the rock-garden.

C. Maulei (*Maule's Quince*).—This differs in its smaller growth, smaller foliage, spiny branches, smaller flowers, and also in the fruits, which are more deeply grooved, turn to a bright golden colour with ruddy cheeks, and are strongly scented. The plant has shown far less variation than the Japan Quince, but there are a few named forms, and other good seedlings distinct in colour are now in cultivation. The best variety is *superba*, with flowers of a deeper, richer colour than the bright orange-scarlet of the parent. This is a beautiful shrub of prostrate habit, covered with flowers in early May, and pretty again in autumn when loaded with its handsome apple-like fruits; though excellent in preserve, till cooked they are juice-

less and astringent. These plants grow in any soil, and the flowers generally escape the late frosts. Other good kinds are *alba*, with narrow yellow petals set far apart, changing eventually to white; *atrosanguinea*, with flowers of a deep blood-red; *grandiflora perfecta*, a shrub of strong growth, with glossy leaves and large orange-scarlet flowers; and *grandiflora rosea*,

FRUITING KINDS. — Beside the older varieties of Quince known for generations past, there are now many improved forms. The old *Orange Quince*, a round-shaped fruit of deep colour—was long the standard American kind, but has now largely given place to *Rea's Mammoth*, with larger fruits of tender flesh, free from the hardness and harshness of the

Flower-Spray of the Vranja Quince.

of erect and slender growth, with rosy flowers darker about the edges.

Cydonia sinensis and *C. cathayensis* are kinds of minor interest seen only in botanical collections, but a word may be said as to *C. vulgaris*, the Common Quince, a native of Europe, which, though grown chiefly for its fruits, is nevertheless a charming tree for the lawn or near water, especially when old. In spring it bears large blush-pink flowers, and in autumn is again attractive with its large golden fruits. The pear-shaped variety is the most ornamental, the branches of well-laden trees sweeping gracefully to the turf.

old Pear Quince. A newer kind, *Champion*, is also grown in the States. It begins to bear very early and its fruits come a fortnight later than the *Orange*—a useful succession where the winter in not too early. They are apple-shaped, bright yellow, of good quality and rich colour, while 18 ozs. is no uncommon weight. Another good late kind much grown for the American market is *Meech's Prolific*. Other American varieties little known in this country are the *Fuller Quince*, with large pale yellow fruits of soft flesh and fine flavour; and *Van Deman*, a seedling from the Portugal Quince, with handsome fruits of great size and

good quality. A variety thought well of in France is *De Bourgeaut*, a vigorous tree with large rounded fruits of golden yellow. Nor are the new sorts confined to America, for several good ones have been found in Southern Europe, such as the *Lescovez Quince* (from the town of that name, where it has grown for generations), an apple-shaped fruit of immense size and refined flavour, said to be the best of all for marmalade, yielding a clear jelly of rich colour. The tree is of rather weak habit, with small and very dark green leaves. Another kind from the Balkans is the *Bereczki Quince* (also known as the *Vranja*, from its native place), a tree of robust growth with large leaves, very free even from a small size in its large golden fruits with a clear shining skin. The Quince *De Baden* bears large pear-shaped fruits; *Monstrueux de Bazine*, fruits of the same shape but nearly 2 lbs. in weight and excellent for preserves; while the *Zucker* or "Sugar Quince" is a smaller kind from Asia, very sweet and good for stewing. Other sorts offered by continental growers are the Muskat Quince, the Persian Quince, the Constantinople Quince, and the *Angers*; this last comes freely from seed, and is that most used for grafting Pears.

CYRILLARACEMIFLORA (*Leather-wood*).—A handsome shrub or low tree covering a vast area in the warmer parts of America, yet hardy in the warmest parts of this country, where it grows as a shrub of about 5 ft. high, of slender growth, with fine glossy green foliage which is nearly evergreen in warm places and in a mild season. The flowers come as narrow slender white spikes of graceful effect from June to August, and the leaves take glowing tints of orange and crimson in the autumn. Moist sandy soil and partial shade are the best conditions for this scarce shrub. Increase by seed, or cuttings rooted under glass in gentle heat.

DIASCIA.—A pretty group of herbs from South Africa, allied to *Alonsoa*. The only kind in cultivation is *D. Barbarae*, a neat annual 9 to 12 ins. high, with square stems and small wedge-shaped leaves. Raised in heat in spring and planted out in May, it flowers until late autumn, the soft coral-pink flowers with two spurs. Though mostly treated as a half-hardy annual, the roots are perennial in the warm soils of southern gardens, spreading by short stolons into handsome tufts. As a precaution it is well to separate a few of these offsets and winter them in a cold frame, and in this way they make good plants for putting out in spring.

DIPLACUS GLUTINOSUS (*Shrubby Mimulus*).—A beautiful flowering shrub

from California, ordinarily grown under glass though hardy in mild places, and far more luxuriant when so planted than when grown in pots. Rich open soil and a sunny place, with abundant moisture in summer, are the best conditions, the pale brown woody stems growing to a height of 4 to 6 ft. with gracefully diffuse branches. In the south-west of Britain it is as hardy as a *Fuchsia*, starting away well every spring, free from insect pests, and with a long season of beauty. In many gardens, even as far north as Yorkshire, it may be grown well against a wall, and even if destroyed in a hard season increase is so easy that the loss is soon made good. During August in particular, the flowers, of a peculiar shade of buff-orange, make a fine show, though the colour is not one that goes well with other things. There are, however, many colour varieties even in the wild plant, and these have been added to under cultivation, seedlings being easily raised. Some of the good older varieties have doubtless disappeared, but *coccineus*, *aurantiacus*, *puniceus* with a deep carmine flower, *ruber*, Jubilee—bright orange, and Sunbeam with large flowers of a warm shade, are more recent and perhaps still to be found. Wild forms so distinct as to sometimes rank as species, are *D. tomentosus*, with soft hairy leaves and large pale yellow flowers; and *D. grandiflorus*, with larger flowers of a pale salmon-buff. Increase by seed or cuttings.

DISCARIA (*Wild Irishman*).—Spiny shrubs allied to *Colletia* and *Ceanothus*, and only hardy in the open in the more favoured parts of the south and south-west, though thriving against walls near London and further north. *D. serratifolia* from Chili, is a loosely branched shrub covered with stout thorns an inch or more long and sharp as a needle. The small bell-shaped flowers are white, coming in pairs at the base of the spines. The leaves are very small. *D. toumaton* from New Zealand, bears thorns almost at right angles with the stems, and the tiny leaves are more numerous. The flowers also, though much smaller, are in larger clusters and pretty when abundant as in a good season. Light loamy soil and a sunny sheltered spot are the best conditions. Increase by seed or layers.

DISTYLIUM.—Two species of small evergreen trees allied to the Witch Hazel, and much used for hedges in China and Japan. *D. racemosum* has recently been introduced and is probably hardy, but still on its trial in this country.

The leaves are thick, leathery, and narrowly-oblong in shape, and in one kind prettily variegated. The flowers are small and devoid of petals, but described as glowing like red fringed buttons all along the stems in early spring. Seed.

ELLIOTTIA RACEMOSA.—A deciduous tree from 15 to 20 ft. high, forming a pyramidal head of oblong dark green leaves 4 ins. long, and large terminal racemes of flowers each an inch in diameter, and consisting of four white petals borne on a short tubular hairy red-brown calyx. It is closely related to *Rhododendron*. So far it has proved quite hardy at Kew. It is, however, exceedingly rare even in its own country, where it is found growing in sandy woods. Southern United States.

ESCALLONIA.—Perhaps the best of all the Escallonias is *E. langleyensis*, a hybrid between *E. macrantha* and *E. philippiana*. It is a shrub of rapid growth, 8 to 10 ft. high, with slender wand-like shoots gracefully arched, bearing small neat leaves of a cheerful yellow-green becoming darker with age, and the stems wreathed throughout their length with vivid crimson flowers as large as a sixpence, in July. In cold places it needs the shelter of a wall, but is fairly hardy and so beautiful as to be worth trying anywhere.

EUSCAPHIS.—Summer-leafing shrubs from the far east, allied to *Staphylea*. There are two kinds, but only one, *E. staphyleoides*, is in cultivation, and that little known. It grows 10 or 12 ft. high, with smooth deeply-cut leaves and clusters of white or yellowish flowers at the tips of the shoots in early summer. In the autumn these give place to red bladder-like fruits of attractive appearance, filled with shining black seeds. China and Japan. The plant needs good soil and a warm place, and is increased by seeds, or cuttings of the ripened shoots rooted under glass.

FENDLERIA RUPICOLA.—A beautiful shrub allied to *Philadelphus*, reaching a height of 12 ft. in its own land but rarely much over 4 ft. high with us. Coming from dry rocky places of Texas and Colorado, it is hardy only in the warmer parts of Britain, and does best against a wall in light fertile soil and in a sunny aspect. The neat grey leaves are nearly like those of a Rock Rose, while the charming pure white flowers composed of petals set like a Maltese cross, are fragrant and appear in June. Plants

are sometimes found in which the flowers have a faint rosy flush. Increase by seeds which ripen in September, or soft cuttings rooted under glass.

GORDONIA.—Handsome flowering shrubs allied to *Camellia*, rare in gardens and, in the case of *G. pubescens*, apparently extinct as a wild tree. Most of the species are tender shrubs from Asia, but two fairly hardy kinds will grow with some coaxing in sheltered places of the south, particularly along the coast. These come from the "Pine Barrens" of Virginia and Florida, a region of sandy peat-bogs made beautiful by dense thickets of *Gordonia Lasianthus* in every stage of growth, from that of a low shrub to trees of 70 ft. or more. The long black roots run out just beneath the thin peaty layers, and the ground being covered deep with moss, it remains moist and cool during the hottest summer. *G. pubescens* grew under similar conditions on the banks of the Altamaha River in Georgia, but only two or three plants were ever found, and it seems long since to have disappeared altogether, those to be found in gardens having all come from one tree.

The great bar to growing the *Gordonias* in Britain is that they make their growth in autumn, too late for it to ripen, and this means fewer flowers, and that when the plants are injured year after year they soon die. Even in the Southern States the tips of the shoots are often nipped without doing much harm, but with us the injury is often serious. They seem to need the protection and warmth of a wall, and yet the dryness of such a position is against them. They should therefore stand in sunny and sheltered spots, with a constantly moist soil of sandy peat or leaf-mould, and at the same time perfect drainage. It is not easy to provide these conditions, but the flowers are so handsome that some trouble is well repaid.

G. Lasianthus (*Loblolly Bay*) with us rarely exceeds 10 or 12 ft., growing as a shapely pyramid, with glossy dark green leaves almost evergreen in a mild winter. Before falling they take golden, crimson, and purple tints, which are charming in midwinter after such tints have mostly disappeared. The fragrant white flowers come in succession from July to September, their broad-cupped petals set off by golden stamens.

G. pubescens is similar in general effect, but loses its leaves in winter and is smaller, hardly exceeding a low shrub with us. It may be known by its thinner leaves coated underneath with a pale down; the shorter stems of its hairy flowers; and the thin smooth bark of the stems. The flowers are larger and less

fragrant than in *G. Lasianthus*, 3 ins. or more across; in the States they come early in August but with us not much before September, and beginning late they are less abundant. The leaves turn a fine scarlet in autumn. While somewhat hardier than the Loblolly Bay, it is perhaps more difficult to manage in other ways.

G. grandis, a tender kind with creamy-white flowers and glossy leaves, is grown upon walls in a few of the warmest gardens of Cornwall, but it is really a greenhouse plant.

GRISELINIA.—There are certain exposed spots in our shore-gardens where even the toughest of shrubs are apt to fail, and in this little group we have the best of all plants for such a position, hardier than the *Euonymus* and the *Escallonias*, thriving in any soil, and fully sea-proof. The greenish flowers are insignificant, and the fruits, like clusters of small Ivy berries, are seldom seen in this country, but the fleshy leaves are so unlike any others in appearance that these are among the most distinct of evergreens. Of compact and fairly rapid growth, they make dense bushes of 6 to 10 ft., freely branched to the ground, and of so good a shape that they may be almost left alone. The leaves are of a light glossy green, set upon tough yellow stems, irregularly rounded or wedge-shaped, and with a graceful droop. While hardy far into the north near the sea, the *Griselinias* fail inland save in quite the warmest places, and are tender round London even upon sheltered walls. The glossy leaves are always attractive and seldom attacked by insects, and, when safe from frost, the shoots will cover a wall where even Ivy fails. There are two species, both from New Zealand:—

G. littoralis, which reaches a height of 30 ft., with wedge-shaped leaves, greyish beneath, where the veins show very faintly. The appearance of the sexes (which are apart) is very different, the male plant bearing small oval leaves of dark green, with an erect habit, and the female much larger and broader leaves of yellow-green, and of a more diffuse habit.

G. lucida is the finer kind in its very glossy pale green leaves, which are most unevenly divided by the midrib. It is of smaller growth than *littoralis*, reaching only 10 or 12 ft. with leaves more fleshy and the veins very distinct on the underside. *G. macrophylla* is a robust natural form of this, with much larger bright green leaves, so thick as to be almost succulent. This makes a handsome bushy tree of 20 to 25 ft., in the gardens of Devon and Cornwall.

Cuttings of *G. littoralis*, made in August and put under glasses in a cool house or frame

strike freely in six or eight weeks, the half-ripened weaker side-shoots rooting better than the stronger tips. *G. lucida* is of difficult increase by cuttings; it is therefore usual to graft it upon year-old plants of *littoralis*, choosing the same month and similar conditions for the work. The lower shoots of all the kinds will also root slowly if layered, but where seed is obtainable this is quite the best means of increase, the plants sowing themselves in favoured spots. The sexes being apart however in *Griselinia*, the plants are sterile unless the male and female forms are planted together.

GUEVINA AVELLANA (*Chilian Nut*).—An evergreen tree of about 30 ft. in its native land, and here confined to favoured gardens in Devon and Cornwall, the finest specimen in Britain being probably at Greenway on the river Dart, where it flowers and fruits freely. The blossoms, at their best in September, are carried as erect spikes of about 4 ins., each spike holding about a score of small ivory-white flowers with reflexing petals and protruding stamens. Although freely borne, they are not at all showy, the feature of the tree being its fruits, over 2 ins. in circumference, which become red and eventually purple. They contain Almond-like seeds of mild and somewhat oily taste, which are eaten in Chili and Peru, where the fleshy envelope is made a substitute for the Pomegranate. The foliage is very handsome, the great leaves, often 2 ft. in length, being divided into many deep green leaflets. Increase by layers and by seeds—which, however, do not germinate freely.

HELONIOPSIS.—Dwarf perennial plants of the Lily order, from Japan, forming neat tufts of erect lance-shaped leaves of a few inches high, and carrying short spikes of flower in early spring. In *H. breviscapa* they are 6 or 8 ins. long, white with deep lilac stamens, the whole turning a pretty rose-red before fading. In *H. japonica* the flowers are larger, but only two or three on a stalk, their colour a deep rose with blue anthers. The plants thrive in moist peaty soil and in sunny sheltered nooks; *H. breviscapa* also does well in partial shade. Increase by division late in summer, or seeds sown in a cold frame.

HEUCHERA.—A few years ago this little group of hardy perennials was hardly known, and had there not been improvement under cultivation they might well have remained in abeyance, many of the wild kinds have little to recommend them save a graceful leaf, while even *H. sanguinea*, however attractive at its best, is not a good plant, dwindling

away persistently in many gardens spite of rich soil and every care. By crossing, however, seedlings have been raised that are more tractable in the garden and not without effect in the border and for cutting. All are of somewhat slow growth, requiring shelter, a rich soil, and frequent division, or they deteriorate. They cannot endure drought or a poor soil, and therefore need special care in a dry season. All are easily raised from seed, but the seedlings need careful selection, their colour being often poor. Selected plants may be increased by division of the tufts in October, or cuttings of the creeping stems rooted in heat during spring. The following species and their hybrids are now in cultivation :—

H. brizoides (*hispida* × *sanguinea*).—A hybrid of strong growth and a good border plant, with neat bronzed leaves and abundant airy spikes of coral-pink flowers 3 ft. high. It blooms twice in the season, and is often better the second time than at the first.

H. Coralie (*brizoides* and *zabelana* × *sanguinea*).—A dainty border plant with the habit of *sanguinea*, and the coral tint of *brizoides* accentuated in its large wide-open flowers.

H. Flambeau (*sanguinea* × *zabelana*).—A pretty garden seedling of good colour, with numerous stems of red flowers 2 ft. high, and closely clustered as in *H. zabelana*.

H. hispida.—This is of no value unless for its leaves, marked with rich brown zones, and turning wholly bronze and crimson towards autumn. Being ever-green they are of some value for cutting, or as edgings and tufts in the rock-garden, the flowers being removed as soon as they show. The variety *macrophylla* has larger leaves. Syn. *H. Richardsoni*.

H. gracillima (*micrantha* × *sanguinea*).—This bears cloudy pink heads like a wreath of mist seen in the dim perspective of a shady border. Leaf like that of *micrantha*.

H. Kilnfieldense (*zabelana* × *brizoides*).—The best white Heuchera, with tall pale green spikes of pure white wide-open flowers, loosely clustered as in *H. brizoides*. The plant is a strong grower, with neat glossy leaves.

H. Lucifer (*brizoides* × *sanguinea*).—A good and vigorous plant of 3 ft. and a real gain, being easy to grow, with the bronze leaf-tints of *brizoides* and coral-red flowers smaller than in that kind, very abundant, and, like it, produced twice in the season.

H. micrantha.—A species of fairly free growth, with hairy leaves and tall stems of tiny greyish-pink flowers, pretty in a mass, or used cut like those of *Gypsophylla paniculata*. Syn. *H. erubescens*. *H. micrantha rosea* is an improved form, its charm increased by ruddy leaves and coral-red stems.

H. Rosamundi (*micrantha rosea* × *sanguinea*).—The best hybrid yet raised, with tall branched stems of rosy flowers, intermediate in size between those of *gracillima* and *sanguinea*. It is of good constitution and pretty for cutting.

H. sanguinea.—The prettiest of the wild kinds, and too well-known to need description. There are several varieties in cultivation, but none of them show much improvement in constitution; they are *grandiflora robusta*, with larger flowers of a paler pink; *splendens*, with larger and darker flowers, the best of all in colour; *rosea*, also with pale flowers; and *alba*, the so-called white form, though the flowers are only an uncertain greenish-grey, turning pink with exposure.

H. zabelana (*sanguinea* × *alba*).—An early hybrid, vigorous, easy to grow, and making compact tufts of dark stems with wide-open flowers of a soft rose tint, but densely clustered and less graceful than the airy inflorescence of later seedlings.

HIDALGOA WERCKLEI (*Climbing Dahlia*).—A showy climbing half-hardy plant from the mountains of Costa Rica, nearly allied to the dahlia. Planted out against a sunny wall at the end of May, its stems quickly cover a wide space with their cheerful bright green and much cut leaves, which attach themselves to surrounding objects by a twist of the stalk. Towards autumn bright scarlet flowers appear, 2½ in. across, and like those of a single dahlia, but lasting much longer, and pretty for cutting. The plant should have all the sun one can give it, and a soil not too rich, or there is luxuriant growth without flowers. Its beauty continues until the first sharp frost, while under glass flowers are produced almost the year round. Cuttings of the growing tips taken in early autumn root freely in a cold frame, and require the same winter treatment as *Mina lobata* and other tender climbing plants.

HOHERIA POPULNEA (*New Zealand Ribbon-wood*).—An evergreen shrub from New Zealand, in flower and habit like a coarse-leaved *Deutzia*, and not at all like the Mallows, to which it is related. It is hardy in the warmer parts of Ireland and in the south-west of Eng-

land, a fine plant 10 ft. high having flowered in the Trinity College Gardens, Dublin, for several years past. In colder places it must be wintered under glass, and only put out in summer. The pure white flowers are borne freely in clusters in autumn, and the sharply-tapering dark green leaves are deeply toothed. New Zealand. Seed, or cuttings of the young shoots in spring.

HOMERIA COLLINA.—A choice bulbous plant from the Cape, thriving in such light southern soils as suit *Sparaxis*, *Ixia*, and the like; indeed, this would seem to be hardier and more vigorous than these better-known plants. The flowers, in finely blending tints of orange or salmon pink shaded with purple about a yellow eye, are $2\frac{1}{2}$ in. across and borne four or more together on stems of $2\frac{1}{2}$ ft. They close towards evening until morning. The leaves are 4 ft. long and half-an-inch wide, and are so succulent that unless carefully protected from snails they are soon eaten through. The bulbs increase rapidly in warm open soils, and they may be left in the ground with a covering of ashes in the south. Seed ripens freely, and germinates without any trouble, in sunny seaside gardens. Syns., *Bobartia*, *Homeria aurantiaca*.

HYMENANTHERA.—A small group of shrubs and low trees from New Zealand, only one of which, *H. crassifolia*, has been introduced. This is a low evergreen with the spreading and freely-branched habit of a Cotoneaster, with small leathery leaves and inconspicuous flowers followed by small berries covered with tiny black specks. These berries are studded thickly over the ash-grey stems and even on the old main branches, the one fault being that clustering mainly on the underside, they are not readily seen. The plant seldom exceeds 3 or 4 ft. in height, though the branches trail widely, and it is hardier than many New Zealand shrubs, growing in exposed places and without protection in the north of England. Increase by seeds, or cuttings rooted under glass during summer and early autumn.

ISATIS.—A small group of perennials, with little garden value; the Dyer's Woad, a native plant (*Isatis tinctoria*) is interesting as yielding the blue dye with which the ancient Britons painted their bodies. *Isatis glauca* is a handsome perennial of 3 ft., with grey-green furrowed stems and long narrow leaves with a white midrib. The tiny bright yellow flowers come during July

in large feathery heads. The plant thrives in ordinary soil if given a moist and well-drained position, with full sunlight. Seeds or division. Asia Minor.

KIRENGESHOMA PALMATA.—A vigorous hardy herbaceous plant from the mountains of Japan, with dark stems of about 3 ft. high, bearing thin hairy leaves shaped like those of a Sycamore, and clusters of creamy-white flowers in early autumn. These are shaped like those of a Campanula, the five fleshy petals overlapping so closely as to appear like one, and measuring $1\frac{1}{2}$ in. long and about half as wide. The plant is best in moist, peaty soil, and in partial shade, fierce sun heat scorching both leaves and flowers. Increase by seeds and division.

LAURELIA AROMATICA.—A noble evergreen tree from South America, resembling the Common Bay in its fine appearance and fragrant leaves, and attaining a height of 30 ft. or more in parts of Ireland. Being scarce it has not yet been much tried, but like other Chilean shrubs it is probably hardy in the milder parts of Britain. The leaves are thick, fleshy, studded all over with minute transparent dots, and have a fine aromatic smell. The flowers and fruits are not showy, coming as dense clusters nestling in the leaf-axils, and only on well-established plants.

LILIUM.—Since the opening up of China many beautiful new Lilies have come to light and been introduced to cultivation, among others the following:—

L. Bakerianum.—A charming lily covering a wide area of country from Upper Burmah to western and central China, growing on steep rocky slopes amongst tall grass and brush-wood, and very variable in its character. It is a delicate plant not easy to keep in health, seeming to need a drier and warmer climate than can easily be given it in this country. The bulbs are small, throwing slender grey stems of 1 to 3 ft., sparingly covered with 3-nerved leaves. The stems are crowned with umbels of medium-sized drooping flowers, one to six in number, fragrant, and creamy-white in colour when fully open, with the inside of the tube dotted or splashed with reddish-purple.

L. leucanthum.—Though perfectly distinct for garden purposes, this is really a form of *L. Browni* brought from the Chinese province of Yunnan, *L. myriophyllum* and *L. formosum* (also best regarded as forms of *L. Browni*) replacing it in adjoining provinces. The stems of *L. leucanthum* are stout, 3 to 4 ft. high, and the leaves narrow and of a lustrous green. The fragrant flowers, borne two to four to-

gether, are of a long funnel-shape, ruddy-brown on the outside and milk-white within, with a rich yellow throat. Being at its best in August, when no other Lily of the same group is in flower, it promises to be an important gain, the more so as the plant is vigorous and hardy.

L. myriophyllum.—This, the handsomest Lily of the *Browni* group, is nearly allied to *L. leucanthum* (itself a form of *L. Browni*) from which it differs in its narrow one-nerved leaves densely crowded on the stems, the absence of bulbils, its earlier flowers, and other minor details. The grey-green stems vary from $1\frac{1}{2}$ to 5 ft. in height, bearing fragrant funnel-shaped flowers 5 or 6 in. long, shaded with purple on the outside, and pure white

frontier, and is commonly grown by the peasants on the roofs of their houses, and the bulbs used as food. The plant is of easy culture, and flowers in three years from seed. As many as twenty to twenty-five flowers and buds often are produced in a single head, so that when commoner it should be a very handsome garden plant.

LOMARIA PROCERA.—A handsome large-growing fern, thriving in the open air in the milder parts of Britain, particularly where the atmosphere is moist, as in Ireland and the south-west of England. It is a variable plant, spread over nearly half the world, the hardiest forms coming from Chili, New

Lilium Bakerianum.

shading to clear yellow on the inside and in the tube. The bulbs are found on the scrub-clad mountain sides of Western China at elevations of 3,000 to 6,000 ft., where they seem to prefer rocky, stone-filled soils.

L. Sutchuenense.—One of the showiest Lilies introduced of recent years. A good idea of it is gained by likening it to a miniature form of the old Tiger Lily, but with no bulbils, narrower leaves, and earlier flowers on very long flatly-spreading stalks. The hairy stems vary in height from $1\frac{1}{2}$ to 6 ft. with many narrow leaves and a head of bright scarlet flowers covered with black dots, which vary in density and are sometimes wanting altogether. It comes from the grass-clad mountain slopes of the Chino-Thibetan

Zealand, and Tasmania. *L. p. chilensis*, one of the best, grows in comparatively cold regions of S. America, its stout leathery fronds once cut to the midrib being 4 or 5 ft. long, and produced on stout red stalks from a prostrate fleshy stem or trunk. This trunk never rises but creeps along the ground, its underground rhizomes freely giving off young plants in rich open soils. *L. p. Gilliesii*, another fine evergreen form from Chili, differs from that just described in its short erect trunk, and shorter fronds on pale green stalks.

LOMATIA.—Beautiful evergreen shrubs of slow growth, with finely-cut

fern-like leaves so tough in texture that they outlast almost any other foliage employed in cut work. Though mostly grown with tender New Holland plants, several kinds are hardy in the milder parts of Britain, and, as shrubs of rare beauty, they deserve a more extensive trial. *L. ferruginea*, from Chili, has grown well for many years in the north of Ireland, at Castlewella, making a bush 9 ft. high and 27 ft. in circumference, flowering freely, and never yet injured during the winter, though grown in the open during the past twenty years. *L. longifolia*, an Australian species, planted out in a bed of Rhododendrons at Forest Hill, near London, grew luxuriantly in the open air, flowering and bearing seed, and only twice cut to the ground by frost during twenty years. *L. elegantissima*, of New Zealand, has also proved fairly hardy, and with other kinds, such as *L. filicifolia* and *L. propinqua*, might be given a trial with the choicer evergreen shrubs in the sheltered shore gardens of Devon and Cornwall. The rather difficult increase of these shrubs has probably been against them.

LOPEZIA.—Pretty little Mexican herbs or sub-shrubs, formerly much grown but now seldom seen, spite of their beauty and easy culture. All grow fast, with a Fuschia-like habit, neat foliage, and small attractive flowers in shades of pink, rosy-purple, crimson, and orange-red. After blooming in the summer garden they may be brought indoors, and continue in beauty during a great part of the winter. Increase of the simplest, by seeds or cuttings—which even take root in a vase among cut flowers. Those named *coronata*, *miniata*, *grandiflora*, and *macrophylla* have been in cultivation, but there are many other kinds. All are useful for cutting, the flowers seeming like little insects hovering with wings outspread.

MORÆA GLAUCOPIS (*Blue-eyed Peacock Iris*).—A charming bulbous plant 9 to 15 in. high, with flowers in early summer, about 2 in. across, pure white, with a beautiful porcelain-blue stain nearly $\frac{1}{3}$ in. broad, at the base of each of the three larger divisions. This stain is deep violet at the base, and edged with deep purple teeth. There is only one long narrow leaf. The plant should be grown on warm sheltered borders in sandy peat or sandy loam and leaf-mould. Increase by separation of the bulbs in autumn. Cape of Good Hope. Syns. *Viesseuxia glaucopis*, *Iris pavonia*.

NARDOSTACHYS (*Spikenard*).—

There are two kinds, but only one is in cultivation, *N. Jatamansi*, a pretty little perennial plant, hardy, and very attractive when well grown in the rock-garden. Its leaves are spoon-shaped and pointed, and rising above them are stems of 6 to 10 ins. high, bearing dense heads of pale pink or whitish flowers in September. Though the flowers are sweet, the special fragrance lies in the short thick root, from which the celebrated perfume of the ancients is supposed to have come. Himalaya.

NOCCÆA.—Pretty rock-plants, with evergreen foliage and flowers like a little Candytuft. The most familiar is *N. stylosa*, perhaps better known as an Iberis, which makes tiny dark green cushions barely 2 in. high, covered early in the year with clusters of rosy-purple flowers smelling like heliotrope. It will root into the narrowest of chinks upon walls or stonework, braving the full sun, and spreading into neat tufts in the rock-garden in dry, gritty soil. In seaside gardens it often comes into flower with the new year, and is seldom later than the first week of March anywhere, blooming thenceforward into early summer. Though short-lived, self-sown seedlings maintain themselves as pretty patches, coming year after year on old walls or any rocky surface. A variety known as *speciosa* has larger and deeper coloured flowers. Syn. *Iberis stylosa*. *N. alpina* is also attractive, with its glossy green leaves and white flowers. This is a more variable plant, *Auerswaldii* being a distinct form from Spain, and *brevicaulis* a Swiss variety needing a moister place if it is to do well.

OREODAPHNE. See *Umbellularia*.

PLANERA (*Water Elm*).—At one time the Zelkows were classed with Planera, but botanists now recognise only one kind, *P. aquatica*, a tree of the second size, seldom exceeding 50 ft. in height, and rare even in its own country—the southern part of the United States. It is hardy in Britain, thriving best in sandy soils beside water, but it will grow almost anywhere except in hot, dry places. It makes a rounded, much-branched head of slender, dark-grey shoots, bearing small, Elm-like leaves, and inconspicuous, reddish flowers which appear at the same time in early spring. The seeds are leathery and nut-like, not winged as in the Elm. Increase by seeds or layers, and not by grafting on the Elm, as is too often done. For groups beside water there are few more graceful trees than

this, but it is far from easy to get it true, other trees such as Zelkows and forms of the Common Elm being substituted for it even by nurserymen.

POTERIUM.—A small group of herbs or shrubby plants of the Rose order, confined to north temperate regions, and worthy of some attention for the rougher parts of pleasure grounds and for the wild garden, their dense spikes of flower being attractive and useful for cutting. *P. canadense* is a good back-row plant for the border, 4 to 5 ft. high, with deeply-cut grey-green foliage and long spikes of creamy-white flowers from the tip of every shoot during autumn. Several plants should be grouped to make a good bush-like mass. *P. sitchense* is much shorter, rarely exceeding 2 ft., and bearing purplish flowers; this grows best in damp ground. *P. tenuifolium*, with spikes of white flowers, is also worth growing, while *P. Sanguisorba* or Salad Burnet, is a pretty native plant with green or purple flowers, growing in dry places.

QUINCE. See *Cydonia*.

Serratula atriplicifolia.—To gardeners the plants of this genus were previously without interest, but in this new plant from Central China we seem to have a hardy perennial of some value. It is a bold plant, standing rigidly erect to a height of 5 or 6 ft., with large heart-shaped leaves and purple thistle-like flower heads, wrapped in overlapping bracts. They expand in early autumn but are formed long before they open, and a pretty feature of the buds is a fine

network of silky-white threads similar to that seen in the Cobweb Houseleek, running from point to point of the bract-covered calyx as an exquisite protective curtain.

SIMPLOCUS.—A group of shrubs or low trees allied to *Styrax*, only one of which is of any importance in our gardens. This is *S. cratægoides*, a compact hardy shrub of 10 or 12 ft. found in Asia from the Himalaya to Japan—whence all our plants have come. The leaves vary much in form and size, but are mostly ovate, scantily covered with down on the under side, and finely toothed. The small white flowers, coming in dense clusters during May, are of no great beauty, but give place to brilliant blue berries of fine appearance; so far, however, these do not seem to have been produced in this country.

SYNTHYRIS.—A group of hardy little herbs from the Rocky Mountains, allied to *Wulfenia*, and forming neat tufts of elegant foliage with dense spikes of blue, purple, or white flowers. The best is *S. reniformis*, with tough, prettily-cut leaves, and spikes of bluish-purple flowers a foot high. These come in early spring or sometimes even in autumn, and the plant does best in a cool, shady place with free soil. There is a good variety with white flowers. *S. rotundifolia*, from shady pine woods of Oregon, is a much smaller plant, with broad, leathery leaves and few flowers. *S. plantaginea* is a dwarf kind like the last, with bright blue flowers. *S. pinnatifida* is not so pretty as *reniformis* and is a weaker plant, with purple or white spikes of flower 9 in. high. Seed.

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