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ALPINE OR ROCK PLANTS.

L. W. sc

1. SOLDANELLA CLUSII.

2. THYMUS ALPINUS.

3. GENTIANA NIVALIS.

Clusius's Greater Soldanella.

Alpine Thyme.

Small Alpine Gentian.

ALPINE

OR

ROCK PLANTS

Despise not thou the wild flower—small it seems.
And of neglected growth, and its light bells
Hang carelessly on every passing gale:

W. H. LIZARS, EDINBURGH.

1845.

PRACTICAL HINTS
ON THE
CULTURE AND GENERAL MANAGEMENT
OF
ALPINE OR ROCK PLANTS.

BY
JAMES LOTHIAN,
GARDENER TO W. A. CAMPBELL, ESQ. OF ORMSARY.

TO WHICH IS ALSO APPENDED A LIST OF ALPINES, FERNS, MARSH, AND
AQUATIC PLANTS, ETC., ETC.

ILLUSTRATED WITH COLOURED PLATES.

"Some clothe the soil that feeds them, far diffused
And lowly creeping, modest and yet fair."—*Comper*.

EDINBURGH :
PUBLISHED BY W. H. LIZARS ;
S. HIGHLEY, LONDON ; W. CURRY, JUN. AND CO., DUBLIN ;
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TO

MRS. CAMPBELL OF ORMSARY,

THE EARNEST PROMOTER OF

HORTICULTURE AND HORTICULTURISTS,

THIS TREATISE IS INSCRIBED,

WITH THE

HIGHEST RESPECT, AND THE MOST SINCERE ESTEEM,

BY HER MOST OBEDIENT

AND MOST HUMBLE SERVANT,

THE AUTHOR.

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PREFACE.

In submitting to the Public the following Remarks on the Treatment of Alpine and other Plants, the author makes no pretensions to originality. He has carefully perused the many useful works containing instructions on the subject, and he trusts he has been candid enough to acknowledge the assistance he has received from them. Having, however, had considerable experience in their cultivation, under the direction and auspices of a worthy master, one of the most eminent cultivators of the present day, and having all along been much interested in their study and culture, the following observations are chiefly the result of experience; and he trusts they will not be altogether unacceptable or useless, to such as admire this beautiful family of Plants.

Regarding the Treatment recommended for Mosses, Succulents, &c., he has proved it superior to any other which has come under his own observation;

and he has had the advantage of assisting in the formation of a Rockery and Pond on the most extensive scale.

As he has long felt that this beautiful and interesting group are too much the victims of neglect, he has been induced to make the attempt of being useful in assisting the inexperienced botanical cultivator (for whom it is chiefly designed) to a knowledge of their culture; and to draw the attention of the admirers of Flora, in general, to this much neglected, but very interesting tribe of Plants; and, by perusing these hints, the practical man may likewise be stimulated to greater exertions in their cultivation.

There is no class of plants more worthy the attention of Ladies, as they are, in themselves, very interesting and beautiful; and when once a collection is formed, the major part of them are easily managed, as they do not, like many other families of Plants, require the application of manures and composts, or any extra labours which Ladies could not well overtake. Those who may try the Wardian Case, recommended at the close of the Treatise, will find it well suited for the growth of most of these Plants, and a source of much pleasure and amusement, either in town or country.

He therefore feels confident, that when this pretty class becomes a little more noticed and regarded, very few gardens will be found without its collection, and he hopes the following pages may be the means of drawing general attention to their study and cultivation. His aim to be useful may, he hopes, receive encouragement, and induce others to give to the public the results of their practice and experience.

LIST OF ILLUSTRATIONS.

VIGNETTE—Title Page.	Page
FOUR PLANS OF ROCKERIES.	
Figs. 1 and 2	35
Figs. 3 and 4	42
SPRING — 1. Clusius's Greater Soldanella ; 2. Alpine	
Thyme ; 3. Small Alpine Gentian .	44
SUMMER — 1. Mountain Avens ; 2. Trailing Azalea .	
	50
AUTUMN — 1. Menziesia Empetrifolia ; 2. Andromeda	
Tetragona ; 3. Andromeda Hypnoides	52
WINTER — 1. Common Maiden Hair or Spleenwort ;	
2. Round leaved Woodsia ; 3. Alternate	
leaved Spleenwort	54

CONTENTS.

	Page
INTRODUCTION	17
PART I.—Situation	22
The Rockery	24
The Pond	28
Arrangement of the Plants, &c.	32
Illustrations	35
PART II.—Main Collection of Alpines	38
Spring Treatment	44
Summer Treatment	50
Autumn Treatment	52
Winter Treatment	54
Treatment of the Tenderer and Rarer Kinds of Alpines	55
NOTE	62
APPENDIX.—Plants for the Rockery, Pond, &c.	65
I. List of Alpine Plants	68
Ferns and Allied Plants	77
II. Marsh or Bog Plants	78
III. Aquatic Plants for Pond	79
IV. American Shrubs	80
V. Mosses	83

INTRODUCTION.

THE cultivation of plants and flowers is one of the most rational occupations, as being most conducive to health and happiness, that can possibly take up our attention.

Every true admirer of plants and flowers can bear ample testimony to the pleasing and soothing associations accompanying the culture of the fair progeny of *Flora*. How delightful! and how many happy and cheerful thoughts are created in the mind, by simply taking a stroll or walk through the flower-garden, pleasure-grounds, or along the margin of the woods, in a summer morning, when the plants are still bathed in dew, and bedecked in silvery drops, and when all around is still and silent, save the deep and distant murmur of the ocean, and the waves beating heavily upon the surrounding shores; or, when the feathered melodists have commenced their morning carol; or when the sun begins to shine on the neighbouring hills, and already rapidly advancing in

its splendour, invites the exemplary bee to her industrious and persevering labours. This pleasure may probably, by some, be deemed of too solitary a nature; but, to use the words of the poet, it is

“ Not solitude,—’tis but to hold
Converse with Nature’s charms,
And view her stores unroll’d.”

How much more amusing and gratifying, then, must it be to those who attend to the culture of plants and flowers, and see the daily progress of those nurtured by their own hands, thus to observe the various processes of Nature? Are they not compelled, as it were, to acknowledge the wisdom, the power, and goodness of an all-wise Creator?

At every season of the year there is something to be learned among plants and flowers—something to cheer and arouse to energy the pensive mind. If we walk out in Spring, we behold the tender bud unfold; in Summer and Autumn, the perfection and diversity of floral beauties; and even in Winter, when the greater proportion has vanished, we discover some lingering gem still left to decorate a secluded spot and please the eye of the spectator.

How often have we felt, and been cheered, by pleasing thoughts, borne back on the memory by the recollection of such happy scenes, yea, perhaps, when hundreds of miles intervene!

When we revert to the annals of Horticulture generally, we perceive the great and rapid progress and improvements made both in science and art,

even within the last few years, which cannot fail to attract our attention.

The period, indeed, has not long elapsed, since the culture of flowers was taken much into consideration at all. There was no periodical, and scarcely a standard work on the subject; and any flowers, cultivated about the premises, were generally in the borders of the *kitchen-garden*.* But, although this is even still the case in many localities, and in limited or small places by no means improper or unsuitable, nay, in some situations better perhaps could not be adopted; yet in extensive localities, where there is ample scope and means, it is decidedly more desirable to have these matters arranged in separate compartments. In this branch of Horticulture, matters have assuredly progressed well and rapidly. A taste for plants and flowers universally prevails amongst the poor as well as the rich, from the highest peer in the land down to the humble cottager, who possesses a small patch of ground around his dwelling.

To the zealous exertions and industrious perseverance of many eminent and talented individuals, we are indebted for this new era in Floriculture, by the introduction of new species and varieties; and still farther, to the landed proprietors throughout

* See "Fruit, Flower, and Kitchen Garden," by Dr. Neill; the best work I know, especially for the northern part of the kingdom.

the country, who are, in most cases, zealous promoters and supporters of Horticulture in its various departments. No less serviceable are the many excellent periodicals and works now existing on the subject, besides societies, which act as direct stimulants to the British Horticulturist.

But notwithstanding this rapid and progressive change in the various departments of Horticulture, there is yet ample room for further improvements. Every year, every season that rolls along, brings something new, something to demand the attention and care of the votaries of Flora.

Plants and flowers are greatly attended to at the present day both by amateurs and gardeners; but evidently those more showy, or otherwise most conspicuous, receive most attention, while other plants equally interesting, and in themselves quite as beautiful, are comparatively neglected. The allusion is here made to Alpines or Rock-plants; for, excepting in extensive establishments, botanical institutions, &c., these are very rarely to be met with. This disregard very probably arises from their being so minute, consequently less conspicuous and attractive at first glance, than some of those going under the name of Florists' Flowers. But let Alpines be looked into closely, and viewed without partiality, and perhaps there exists not a more lovely group in Flora's train. But it is requisite here to observe, that this tribe is, for the most part, composed of plants, natives of high or Alpine situations, many of which

are denizens of the hills and woods of Great Britain,

“Sweets of the wild that breathe and bloom;”

while others are inhabitants of bogs and water—hence the latter are generally termed aquatics—in short, any plants, which from their minuteness and rarity, cannot with safety be planted out in the plots or borders. This constitutes (what are called by cultivators) Alpine-plants.

In order to insure success in the culture of this tribe of plants, they require a situation peculiar to their respective natures. This is properly denominated by Mr. M‘Intosh, in his *Practical Gardener*, “The Alpine, or Rock-garden,” and which should consist of a Rockery, a Pond, or piece of water of any size, and at one end a small artificial Bog, for plants requiring this mode of treatment.

In order to illustrate the subject, it is necessary to divide it into two parts.

I. As to situation, formation of the Rockery, Pond, and Bog, above referred to, general arrangement of the plants on the Rockery, &c.

II. Culture and general management of the main collection, or otherwise, plants in pots, &c.

PART I.

SITUATION.

IN treating of situation (the first thing to be observed in choosing a locality for the formation of the Rockery), one must be, to a certain extent, guided by the nature and style of the place, besides the taste of the proprietor. But again, regarding the selection of a situation to suit the plants, it is on this account necessary, that the site be neither shaded nor yet too much exposed. Let it be an open, airy, but at the same time a sheltered place. It may adjoin the flower-garden, or be in the vicinity of the shrubberies and kitchen-garden, and, should a suitable situation present itself along the walks, or drives leading through the woods or pleasure-grounds, it might form as desirable a site as any. It is, however, to be understood, that it is not meant to be exactly along the margin. A little off the walk would be more desirable, with a path leading to the Rockery.

Perhaps too much attention cannot be paid to the choice of a proper situation; for though these

plants be natives of high and bleak localities, where they enjoy the purest atmosphere, and though, in their native habitats, they endure a great degree of cold, still, when introduced into our gardens, and planted upon a Rockery, many of them will neither stand the winter frosts, nor yet bear the strong and sharp gusts of wind. The former, alternating with mild weather, keep a degree of vitality in their system, which they do not experience in their Alpine abodes, and thus they are more exposed to injuries from the latter.

THE ROCKERY.

IN the formation of the Rockery, there are other objects to be attained besides the imitation of nature. The rock-work must be so constructed as to insure the preservation and successful growth of the plants. It may be made any size the projector chooses, and various forms may be adopted and indulged in; but the plainer these are the better. And it should always be kept in view, to make it of the most fanciful structure, so as to show off the different kinds of plants, by which means it has the most effective display and appearance.

There is no great difficulty, nor need any great expense be incurred in the formation of the Rockery* when the locality is near the sea shore, as abundance of materials for this purpose are quite at hand, such as stones worn into different shapes by the waves, and some containing cavities, the use intended for which will be described hereafter.

* Any materials for the rock-work, excepting clay, can be driven when carts are more at leisure, say between Winter or beginning of Summer; hence not interfering with farm operations.

In making up the Rockery, the space it is to occupy, in the first place, must be cleared of any rubbish thereon, the ground then levelled, and the ground figure properly marked out. Then the earth taken out of the Pond may be laid down where marked; but should this soil not be of a kindly nature for the plants, that is, should it be of a cold clayey kind, when coming near the desired height, it will be well to mix up some good soil, and to lay a thick stratum of it on the surface. The kinds of soil requisite will be presently described. Then proceed with laying the stones on, properly and tastefully. Let a good many of those above referred to, as containing holes or cavities, be placed on the north side of the Rockery, for mosses, ferns, &c., &c., while, at the same time, a good many of them may be distributed over the whole for *Sedum*, *Sempervivum*, *Saxifraga*, *Mesembryanthemum*, &c. Then let the crevices between the stones have some earth put in. The soils may be distributed as follows:—

On the North Side of the Rockery,—

On one part a mixture of black peat or bog-mould, leaf-mould, and sandy loam; in another, red gravelly or ferruginous soil; and along the base on this side, an adhesive or clayey kind. Perhaps the soil from the Pond, and placed here in the formation, may be sufficient. In these varieties of soil, the larger ferns,

Osmunda regalis, and Alpines, *Adoxa*, *Chrysosplenium*, *Marchantia*, &c., can be grown.

On the South and two Ends,—

A mixture of light sandy loam and peat, containing a good deal of white sand, for *Helianthemum*, *Iberis*, *Stachys corsica*, *Achillea tomentosa*, *Saxifraga*, &c.

On the Top of the Rock-work,—

Very light loam, and a little peat and white sand, for such as *Thymus serpyllum*, *Saxifraga oppositifolia*, *Rhodiola rosea*, &c. The latter is common in various Alpine districts, and is found abundantly among the rocks on the south-west coast of Argyleshire.

Along the margin of the pond, and on the Rockery, soil composed of sandy loam and a good deal of gravel (not too coarse); or, what suits better, where it can be had, stone, or rather slate crumbled away into a resemblance of soil. It is found plentifully on the banks of mountain streams. As to the soil suitable for the cavities in the stones, it will be described under the head Arrangement.

After having distributed the soil, &c., petrifications, marcasite, or any other curious or rare specimens of minerals, may be placed here and there among the

stones, wherever suitable; but, at the same time, it is necessary not to interfere with the plants, or the situations they are to occupy.

It is further desirable, that around part of the rock-work (at the base) a border should be formed. Should your locality permit, perhaps the south-west side may be as desirable as any. This border should be made up with peat, containing abundance of white sand and small white stones, for some of the *Erica* tribe, *Azalea procumbens*, *Arbutus alpina*, &c. These thrive most luxuriantly in this kind of soil. We have observed them half way up Bennevis, and found there specimens of the latter plant in full fructification. Another portion of this border should be composed of sea-sand and gravel, with the addition of some peat well incorporated, for such as *Lithospermum maritimum*, *Glaux maritima*, &c., which are not by any means easily preserved, or cultivated in any other soil. Some large and curious stones may be placed here and there along the border.

THE POND.

REGARDING the formation of the Pond, it should be made to correspond with the Rockery, and should run along the margin on one side (the south side being the most suitable for the plants). It may likewise be here observed, that it is desirable to have a path left along the foot of the Rockery, and on the bank of the Pond, when again a walk surrounds the same on the opposite side.

Presuming that the Pond has been marked off when the Rockery was so done, and the principal part of the soil dug out when forming the same, we may therefore proceed to clear out the soil properly, to the depth, perhaps, of two feet (but such as this may vary according to size, &c.), leaving the bank all around, except the side next the Rockery, completely sloping out, so as that the surface of the water may nearly run parallel with the surrounding walk. This being finished, a sufficient supply of good tough clay must be got, to make the whole water-tight. The best clay for this purpose, that ever came under my own notice, was taken from within sea-mark, at ebb-tide, below Ormsary House,

Argyleshire, the seat of W. A. Campbell, Esq.; and, I have no doubt, equally good may be had in similar situations. It was perfectly tough, and had not such a tendency to crack in drying as some clays have, probably arising from the particles of salt it contained, keeping it in a moist state, until gradually dried.

Being furnished with a sufficient supply of clay, let it be wheeled into the Pond, dry or otherwise as it is dug up, and not worked up in water with the feet, prior to placing it in the Pond, as is sometimes done, a process by no means commendable. It may be a little more expeditious, but expedition in such cases is dangerous, and in the end very unprofitable.

Let one, two, or three men, as you have the means and the space to be occupied, proceed first to lay a thick stratum of clay along the bottom of the banks (the thickness of this first layer depending on the height of the bank, size of Pond, &c.), and let it be beat firmly, applying water to soften the clay as required. The beater may be the same as is sometimes used by paviors (see plate A), only it must not be so heavy; by being so, a man could never work the clay properly. In this manner, layer after layer may be applied, getting gradually thinner, as it comes near the top or lip of the bank, afterwards proceeding with the bottom in the same way, until all be finished.

But it may now be naturally inquired, how, or

whence, is the Pond to be supplied with water? This may be accomplished in several ways; but what I consider the best and most economical, is by means of a drain from wherever the water is nearest, and again another drain can be made to take off the superfluous water from the Pond. Leaden pipes are used; but I cannot see their advantage over good firm drains. A small lead pipe, however, could be introduced into the supplying drain, and led over the top of the Rockery. Besides being beneficial to the plants during the heat of summer, it would have the appearance of a rill, and would thus contribute to beautify the locality.

After the Pond has been allowed to dry for some little time, perhaps three or four days, it is necessary to see that the clay is not cracking, and should it show the least appearance of this it must be beat up instantaneously. After being dry, some suitable soil for the plants to strike root in, must be laid in the bottom. It may be composed of ditch cleanings, or soil from any other marshy place, cleared of noxious weeds, and mixed with gravel and some peat; then a thick layer of it can be placed in the bottom. The water may now be admitted.

The formation of a Bog for plants requiring this mode of treatment, may be accomplished at one corner of the Pond, simply by placing stones edgewise on the outside, to prevent the soil, &c., from being carried into the Pond. The soil, of course, must be bog-mould, or black peat and *Sphagnum*, a

common white moss in boggy places. But this and the foregoing remarks will be more fully described and illustrated.

Between the walk surrounding the Pond, and the margin of the latter, may be placed a quantity of good sea-sand and gravel, besides some stones, for the culture of *Convolvulus soldanella*, *Arenaria marina*, *Silene maritima*, and some other maritime plants.

ARRANGEMENT OF THE PLANTS, &c.

IN planting out the plants upon the rock-work, the proper disposal of them is essentially requisite, for appearance, as well as to insure success in their culture.

Therefore, the north side is to be taken up principally with *cryptogamic* plants, requiring the shade, and several strictly Alpine-plants, as indicated in the Index. To assist, as much as possible, some trees planted on this side are further required. A more suitable tree cannot, perhaps, be introduced into such a place, than the common Thorn, and its ornamental varieties, which is described by the Scottish bard as

“ The milk-white thorn that scents the evening gale.”

The larger ferns can be disposed among the crevices, and at the foot, when the soil consists of peat, leaf-mould, and sandy loam; while the lesser ones and mosses can be planted as follows:—

The stones already mentioned as being excavated, or worn by the waves, to be filled, when for ferns, with peat, leaf-mould, and a little white sand, and then planted with such as the *Adiantum*, or maiden-

hair family, *Polypodium vulgare*, *Asplenium trichomanes*, *A. viride*, &c., which have valuable medicinal properties; also *Scolopendrium*, *Cystopteris*, *Cryptogramma*, and *Hymenophyllum*, besides *Grammitis ceterach*, a pretty little rare fern.

Again, for mosses, let as much of the soil in which the plants are growing naturally be taken up with each plant (or tuft) as will fill the stone or hollow, but observing to leave it below the lip, in order to allow the rain to lodge therein, to supply the plants with sufficient moisture; and those growing upon sticks or stones, pieces of decayed sticks, or pieces of stone, can be placed in the cavities along with them. A collection of mosses thus formed, would, even of themselves, prove very interesting about a place.

Many of the lichens will also succeed by this treatment, which are highly interesting and beautiful, such as *Scyphophorus cocciferus*, *Lecanora tartarea*, &c.

On the top and sides of the Rockery, *Thymus*, *Iberis*, *Parietaria*, *Linaria*, *Phlox* (dwf.), *Saxifraga*, *Veronica*, *Polygala*, *Cochlearia*, *Draba*, and many others of a similar nature. Succulent plants also, such as *Sempervivum*, *Sedum*, *Mesembryanthemum*, &c., will thrive most luxuriantly in stones, as recommended for mosses, filled with sandy loam and a little peat. Here and there, throughout the Rockery, may also be planted the common heather and other hardy heaths, which have a very imposing effect during the summer and autumn months.

In the border, along the base of the rock-work, may be planted heaths, *Vaccinium*, *Azalea procumbens*, and other dwarf shrubs. *Rubus chamaemorus*, *R. arcticus* and others of the genus, must be raised a little higher. They may be planted in good-sized boxes, sunk on the Rockery, among the stones; soil composed of bog-mould and natural white sand. Maritime plants can be planted round the Pond at intervals, commencing at one end of the above border.

In a corner of the Pond, some of the larger grasses, &c., may be planted, such as *Typha latifolia*, *T. angustifolia*, and *T. minor*, and many others, also *Alisma plantago*, which appears to great advantage.

In the Pond plant the *Nymphæa lutea* and *alba*, *Ranunculus aquatilis*, and others; but, in planting these, they should first be potted in large pots. Though cracked, it does not matter, as they have to be cracked at any rate, so as, that whenever the roots begin to extend themselves into the soil at the bottom, the pots may fall away. They may be tied round the mouth with small twine, which will keep the pots together until the plants are settled, and beginning to strike out roots. By that time the twine will be useless, and consequently will give way.

Fig. 1.

Fig. 2.

ILLUSTRATIONS.

IN order to make the reader comprehend better the preceding remarks, he is referred to the Plate containing the ground-plan of a Rockery for Alpines, *Fig. 1*. Being, however, upon rather an extensive scale, one for smaller collections is shown at *Fig. 2*. But such matters can be added to or taken from *ad libitum*.

Plate, Fig. 1.

a Is the rock-work in front. *b* The Pond. *c* Is the space allotted for the bog, for the culture of *Eriophorum*, *Narthecium*, *Drosera*, *Pinguicula*, and other marshy or bog-plants. *eee* Is that portion of the Pond containing the different species of grasses. *d* Is the border for dwarfish shrubs; and, surrounding the Pond at *fff*, is the space mentioned for maritime plants. At *h* is the path along the foot of the Rockery, and which joins with the walks *iiii* on the opposite side of the Pond, and which, at the same time, surrounds the whole. *gg* Is a lawn or green, containing some white and scarlet thorns. At *l*, the small leaden pipe, in form of a rillet of water, runs

down, among the stones, into the Pond. Outside the walk, surrounding the Pond, is a border o, filled with dwarf American shrubs ; and, separating the walk from the border, is an edging of *Calluna vulgaris*, or common ling, mixed with the white variety.

Plate, Fig. 2,

As already mentioned, represents a Rockery and Pond upon a limited scale, but which, at the same time, may be extended to any size the proprietor chooses.

In the centre is a representation of a circular pond, supplied with water by a leaden pipe, which divides into three branches above water, from whence the water rises to a considerable height, forming a *jet-d'eau*, the fountain-head being a good deal higher than the pond ; and close beside this pipe, as marked in the *Plate* above, is another pipe to carry off the waste water.

At Ormsary there is a Pond of nearly the same description, and when the *jet* is made to play in a summer morning or evening, it has a truly pleasing effect ; and in the extensive gardens of Castlesemple, Renfrewshire, the seat of Colonel Harvey, if memory serves me aright, may also be seen one very similar to this.

Surrounding the Pond is the rock-work, outside of which a walk runs along, edged with *Calluna vulgaris* ; and, surrounding the entire Pond, a border for both dwarf American and native shrubs.

At *Plate, fig. 3*, is a fuller illustration of the above.

Having thus laid down some hints relative to the formation of the Rockery, &c., and what I consider requisite to give the reader a general idea how to proceed in the formation, operations, &c., connected with it; before proceeding with the Second Part, I cannot refrain from again observing, how ornamental an object of this kind is in any locality of either greater or lesser extent, and how little expense is incurred in the cultivation of these, in comparison to many other groups of plants.

PART II.

MAIN COLLECTION OF ALPINES.

As there are many Alpine-plants that will not endure the severity of our winters, and some, that cannot be exposed at all in this climate it hence becomes necessary to have a plant or two of each, according to the genus or species, in pots, that they may, with more facility, be covered or protected during severe or frosty weather. This will also afford the means of replacing any plants which may have died during Winter on the Rockery; it will serve, besides, for giving a better acquaintance with the names, and a general knowledge of each genus and species, which, when in pots, can be more advantageously studied, and correctly tallied; and, when in flower, the seeds of some, which are annuals, are more easily collected for general propagation.

As it not unfrequently happens, that a suitable place for the main assemblage of these cannot be

had convenient to the rock-work, I beg to make a few remarks regarding a situation for this purpose.

A great space is not required, though the collection be very extensive, as they take up little room when in pots. The spot where the greenhouse plants are *sometimes* placed in Summer, may be rendered a suitable situation for Alpines also; but where this cannot be spared, or where there is no greenhouse, a separate situation for themselves must be sought.

Should a site not naturally suitable present itself, it must be rendered so artificially; on the south side of this locality it is requisite to have a belt, or clump of shrubs and trees, planted promiscuously, to prevent the sun in Summer from beating too intense upon the plants, and consequently causing excessive evaporation. By being thus partially shaded, they are kept in a moist and cool state. The north side ought also to be sheltered, at some distance from where the plants are placed.

The space where the plants are intended to be placed, must be covered with a stratum, composed of a mixture of clay, coal ashes, and a little lime (in the same way that cottage floors are sometimes done), and beat down firmly; then a coat of ashes finely, riddled, can be laid on, previous to placing the plants on it. This prevents worms, slugs, and other vermin visiting the spot.

In order to protect the plants from frost, and very heavy rains, a frame of some description is necessary. I have seen a frame of wood serve admirably

for protecting a very extensive collection; and, in this manner, I have treated them successfully.

Mr. M'Intosh, however, recommends a pit of his construction. It can best be described in his own words. He says,—

“ In our practice, we have had a pit constructed in the flower-garden, which served a double purpose, being the abode of a collection of these plants during Winter, and, when they were put out in Spring, it was filled with the more showy species of *Mesembryanthemums* planted out in it, which flowered beautifully till Autumn, at which time it was again filled with the Alpine-plants, plunged into finely sifted coal ashes.

“ The walls of this pit were constructed of rock-work, which was planted with rock plants, and was soon completely covered. Nothing appeared, during Summer, of a pit, when the whole was covered with plants. The wooden wall-plates and rafters were removed as soon as the *Mesembryanthemums* had established themselves; and were only replaced in Autumn, when the others were placed into it; the lights, &c., were used during Summer for other purposes. In this pit, which was elevated about a foot in front, and two feet behind, we cultivated, for three years, one of the richest private collections of these interesting plants, probably brought together in this country.”*

* Practical Gardener, p. 873.

He adds,—“ At first sight there will appear something incongruous in placing a pit in any part of a well arranged flower-garden; but as rock-work and similar things are admitted sometimes, though rarely, in imitation of rocky strata, or mountains in miniature, but, for the most part, with a view to form a proper situation for plants, which are natives of rocky soils, to grow in, we can see no difficulty nor objection in constructing and arranging a rock-work, so as to be capable of being rendered a fit receptacle for such plants during the Winter. But as many, and by far the greater part of the rarer species of these plants, can only prosper in a low temperature, their removal to a cool shaded spot, during the heats of our Summer, becomes necessary, and will of course leave a space unoccupied. Few plants, therefore, can be brought in as substitutes, that will have a better effect than the genus in question. Their rapid growth, and capability of withstanding our hottest suns, without requiring much water, fit them, in a particular degree, for such a purpose.”*

It may be deemed presumptuous in any young man to add more, after such an authority as Mr. M'Intosh, or to question the opinion of such a talented individual. With all due respect, however, for this eminent Horticulturist, I beg to say, that I consider this sort of pit attended with a great deal of

* I am not aware of any plants more highly suitable for the purpose than those recommended.

labour; and when hands are scarce, and one cannot command other facilities, he may be exceedingly fond of this tribe of plants, and be anxious to cultivate them too, but must keep his taste for them in subjection to his limited resources. I allude to the labour of carrying backwards and forwards an extensive collection of these; as beds of ashes, on which to place the plants or pots in summer, would ill accord with a tasteful erection of this sort, but which, it is true, may be at a considerable distance from the Rockery. Besides, the expense of glass sashes, though in itself a *minor item*, is still not to be altogether overlooked, when better success than with the common method, cannot be expected.

Should the wooden frame be adopted, it can be placed close to the belt or clump sheltering the north side previously alluded to. This, however, may also be better understood, by referring to the

Plate, Fig. 4.

a Shows the belts or clumps on both sides, which may be of any form to suit the locality or proprietors' taste.

b Is the space for the wooden frame which is to protect the plants during Winter, plunged in coal ashes. It is raised higher than the surrounding space, to assist in keeping the plants dry and free from damp, and covered with wooden sashes. The size of the frame should vary with the collection.

c Is the space for the plants during Summer;

Fig. 3.

Fig. 4.

Fig. 5.

and which may be arranged in forms of beds, leaving spaces like alleys between each, *xxxxx*, to allow the passing amongst them when watering, &c., &c. It is to be understood, not to dig out alleys, but leaving spaces when the pots are placed on it.

d Shows the walk surrounding the whole, which may be edged with *Statice armeria*, or Thrift, or any other plant deemed more suitable; at each end, in the distance, are some scattered trees.

All that is necessary to be added, may, I believe, be included in the seasonal treatment of the plants.

SPRING TREATMENT.

ABOUT the latter end of February it is necessary to look over the rock-work, and should there be any blanks occasioned by the death of the plants, they can easily be replaced from your main collection when propagating. Indeed, the rock-work can be entirely furnished with plants from the collection, if fully established.

The time to commence propagation must be regulated according as the plants commence to vegetate, which they do at different periods. The month of March, however, may be considered the proper season for most of them.

Alpines are chiefly propagated by division of the plants, and by seeds. Some, but few, are propagated by cuttings, such as the *Dianthus*, or pink family; and these may also be propagated by seed, collected at the proper season.

If you do not require to increase your stock of this tribe of plants, and if they are not growing too large for the pots, a top dressing of suitable soil, and weeding, is sufficient.

But to proceed with the operation of propagation. *First*, A small temporary bench can be made of any old boards nailed together—it may be about $3\frac{1}{4}$ feet long, and 21 inches or so broad—and may remain beside the frame until you are done propagating, top dressing, &c.; then place your pots according to the number of plants intended to be increased or shifted. The sizes of pots, which are known as Nos. 60, 48, and 32, are most suitable for these plants; most of them succeed in No. 60 and 48, and some few require No. 32, such as some of the ferns, *Salices*, &c., &c. But, as the reader may not be acquainted with the dimensions of these sizes, it may not be improper to mention, that No. 60 is a pot 4 inches deep and $3\frac{1}{2}$ inches in diameter at the top, No. 48 is 5 inches deep and $4\frac{1}{2}$ inches in diameter, and No. 32, which is the largest size requisite for this group, is 6 inches deep and 6 inches in diameter.

Let also a quantity of *crocks*, or pieces of broken pots, and a wheel-barrow load or two of suitable soil, be brought beside you. The *crocks* are to be placed in the bottom of the pots, over the hole, for drainage, thus preventing the water from accumulating and souring the soil about the roots. The soil may be prepared as recommended for the plants on the Rockery.

In preparing the pots to receive the soil and plant, it is necessary to make sure that one piece of crock covers the hole, then a few more above, and afterwards a little of the riddlings of your soil;

then as much good soil above as will raise the crown of the plant at *a* (see *Plate, Fig. 5*), a little above the surface when potted; then proceed to divide your plants, which is accomplished as follows:—Take up the pot, turning it upside down upon your hand, allowing the top of the plant to pass down between your fingers, then give the pot edge, or rim, a gentle touch upon the bench, when the ball will loosen in the pot, and the latter may be easily lifted off and laid aside, the plant and ball laid down upon the bench, and divided into as many pieces, with roots, as can be done with safety to the main plant; and each piece may be potted, or if there be blanks on the Rockery, these can be supplied from the above divisions; or if you have already duplicates of the plant potted, these may be planted out having larger balls, and the divisions may be potted in their stead, and tallied correctly, using neat painted wooden tallies, written or painted; afterwards give them a good watering, replacing them into their respective quarters. But there are several of this tribe that do not require to be entirely divided. Among these, for example, the genus *Saxifraga*, and others, which layer of themselves as it were, that is, strike roots into the soil at joints around the parent plant. These can be simply cut off and potted, the parent plant dressed and laid aside.

Regarding the propagation of Alpines by seed, it is simply as follows:—Should the seed be very small, they may be sown when collected, as if kept

long, they lose their vegetative properties. This I have found, from experience, to be the case; having kept some paper bags of these, which I sowed in spring, 1842, and which never vegetated; I also sowed some of the same seed when gathered, which came up strongly. But the larger seeds may be kept in bags during Winter, and sown in March in pots, which, being properly crocked, can be filled with a mixture of sandy loam, peat, and a little leaf mould, and beat firmly into the pots, and the seeds sown thereon, with a top dressing or sprinkling of very fine sifted soil above them; then neatly tallied and placed in the frame, when attention must be paid to the progress they make. When fairly up, the seedlings may be pricked out into thumb pots, and afterwards potted into No. 60, 48, and 32, according to the kind.

But, to explain better the operation of pricking out, when the plants or seedlings have attained to one inch, half an inch, or when the second leaf is coming on, according to the genus or species, prepare thumb pots (the smallest size), by beating the soil into them; then, with a small sharp pointed stick, make a hole in the soil, in which the seedling is to be placed, then press the soil closely about it, giving it a watering with a very fine rosed water-pot. This operation is expressed by the Horticultural term, *pricking out*.

But there are some of this tribe that sow themselves naturally; these, however, are chiefly annuals,

such as *Draba verna*, *D. muralis*, but not *D. aizoides*, a pretty little thing which flowers about the end of March and in April, and is a perennial; *Arabis verna*, *A. arenosa*, and others of the genus; and many others of the *Cruciferous* plants. Therefore the pots containing these (if the seed be not gathered) should not be touched, as, very likely in a short time the seed will come up strongly, and should be attended to. As to the propagation by cuttings, such as have a tendency to make firm shrubby stems, such as *Dianthus*, *Linaria*, *Mesembryanthemums*, &c., may be increased by this method. The cuttings are taken off the plant, then cut clean across, below the first or second joint, then pricked into pots; a number may be in each pot, round the rim, filled with sandy loam and leaf mould. These can be placed into the shade, where they strike better than any other way that I am aware of. But, for the latter (*Mesembryanthemums*), if a slight hotbed be convenient, they will strike more expeditiously; and when fairly struck, they can be shifted into single pots of the sizes previously recommended.

For further information regarding this, reference can be had to the Summer Treatment.

Being finished with the propagation of these, and after the whole have been gone over, weeded, and received a general top dressing, the bench may be thrown into a shed, or any place where it will be at hand when required. The covers may be taken off the frames every fine day after this, and, about

the middle or latter end of April, entirely removed, should the state of the weather permit.

Attention must also be paid, during Spring, to see that none are giving way from the effects of damp, &c., and all appearance of decay removed. This being all that is requisite during Spring, I now proceed to give a few details regarding their Summer treatment.

SUMMER TREATMENT.

ABOUT the beginning of May, or sooner, if all danger from frost is considered over, the collection of Alpines may be entirely removed to their Summer quarters, as already described (see *Plate, Fig. 5*). It is presumed this space has received a general dressing with the hoe and rake, besides a fresh layer of riddled coal ashes. Afterwards, they must be kept clear of weeds, and the vermin destroyed, by scattering some hot lime over the ashes, which forms an effectual remedy. For the same purpose, Mr. M'Intosh recommends watering with lime water. When the weather becomes hot, the plants must be supplied abundantly with water every night, commencing about six o'clock, or sooner, if the sun's influence is removed; watering them completely over head, beds and all, which assists in keeping the soil moist in the pots, and the ground cool all around them, a condition essentially requisite at this period.

In the morning, should it have the appearance of being very hot, they can be gone over in the same way. But I have found once a day sufficient, when in a suitable place, and watered effectually.

1. *DRYAS OCTOPETALA*.

Mountain Avens

2. *AZALEA PROCUMBENS*.

Trailing Azalea

In July, and when done flowering, cuttings may be taken off all those plants admitting of this mode of propagation. They may be placed any where in the shade, under hand glasses or in a frame; in a very slight hot-bed some strike quicker; but attention is requisite to shade them during the day, when the sun is powerful. Those species which flower early soon ripen their seeds, which should be preserved, if it is intended to propagate them by this means.

AUTUMN TREATMENT.

IN August, ripening seeds must be looked after and gathered, and the more minute sorts sown, as already directed.

The main collection must be still watered plentifully, until the weather becomes cooler and more moist. If there are any plants which could not be divided in Spring, being too small, this may now be done successfully.

Both during the Summer, and at this season, the Rockery must also be looked after, and the plants, walks, and pond, kept free of weeds. About the end of September the latter may be cleared of leaves, grass, stems, &c., &c., by cutting them away with a scythe fastened to a pole; drawing them thence with a rake, and wheeling them off to the compost heap.

Towards the close of September, any of the more rare and delicate Alpines may be placed within the frame, as the weather will now be coming in cold and boisterous. Avoid, however, putting the sashes on, as this would only tend to cause damp, and, perhaps, induce the plants to make additional

Linnaea sc.

soft growths, which would promote decay and cause damp, so much to be guarded against in winter.

About the middle of October, according to the weather, the whole may be gone over, cleaned thoroughly of weeds and any decayed leaves, and the soil stirred a little about the plants, which are then to be placed in the frame, and plunged in coal ashes as before alluded to. But the sashes need not yet be put on until there is an appearance of frost; when this may be done, taking them off every good day at noon, for the greater part of the day.

WINTER TREATMENT.

As to the Winter treatment of Alpines, it merely consists in keeping the plants and pots free from decayed leaves, or any other matter which may tend to cause dampness; taking the sashes off every fine day, about mid-day, for several hours, and carefully covering them up at night; should the frost be very severe, an additional cover of mats may be added. With this attention they will hybernate in safety, and be ready, on the approach of Spring, to repay, by their fresh beauty, the labour that has been bestowed on their protection during the inclemency of Winter.

1. ASPLENIUM TRICHOMANES. 2. WOODSIA HYPERBOREA. 3. ASPLENIUM ALTERNIFOLIUM.
 or Common Maiden Hair, or Spleenwort. or Round-leaved Woodsia. Alternate leaved Spleenwort.

TREATMENT

OF THE

TENDERER AND RARER KINDS OF ALPINES.

As there are many of this lovely and interesting tribe, that can never with safety be out of the pit or frame during the whole season, I think it right to add a remark or two regarding their culture. They are such as plants of the natural order, *Lycopodineæ*, or club-moss tribe; *Filices*, or fern tribe; *Sarracenieæ*, of which the *Sarracenia purpurea* forms an example, the only genus in the order; *Amaryllidaceæ*, of which the genus *Anomatheca* is one. In this last are some very showy plants. To add more than these examples would be superfluous. I will therefore proceed with the mode of culture I have adopted, and also seen practised successfully.

The pit for this group should be situated in the neighbourhood of the hot-houses, that where hot water pipes are used, a small pipe may be led through from the main pipes, heating the general range, and which could be regulated by valves, in order to preserve a proper temperature during winter. But where there is no such convenience, a furnace,

with a pipe running along some inches below the level of the earth in bottom, or a small stove, which I use myself, will be quite sufficient.

The walls of this pit may be either of brick or stone — I prefer the latter; cut 6 inches by 4 inches. It should be about 22 inches or 2 feet at the back, and a foot or 10 inches in front, and $4\frac{1}{2}$ or 5 feet wide; the length varying according to the collection.

The interior can be neatly plastered and white washed, and the sashes neatly painted and glazed, and opening on hinges.

Close wooden shutters, often used for Alpine plants, are inadmissible here, as the nature and treatment required by the two groups are very different; and the want of due consideration on this one point, may perhaps have been the cause that so many attempts made to cultivate them have proved rather unsuccessful. I have some of this group under my own care, treated as here recommended, and thriving most luxuriantly — such as the *Lycopodium*, *Sarracenia*, &c.; both genera are very easily brought to perfection, though we find at times *L. denticulatum* under the shade of some stone or greenhouse shrub. In this case glazed sashes are necessary, to give all the light possible during the whole season, as the plants are never out of the frame or pit. Though expected by some, that most of them may yet be brought to bear exposure in this country, I do not feel very sanguine on this head. At all events, until

this can be accomplished, suitable places for their culture must be attended to.

As to the hardier tribes of Alpines, wooden shutters are quite sufficient, although for successive days they may be covered up or in the dark; during winter it does no harm, they being then in a torpid state, and resembles what they are accustomed to in their native abodes, at that season enveloped in a mantle of snow. The only reason for uncovering them, or taking off the wooden sashes, every fine day in winter, is simply to assist in drying up damp, and clearing away any thing in a state of decay; during the rest of the season, the sashes can be taken off during the day, or entirely removed. I have seen both used, but would not say that glazed ones are in any degree preferable to wooden ones, in regard to their culture.*

In the culture of this group that we are treating of, they require large pots, Nos. 24 and 16, the former are 8 inches deep and $8\frac{1}{2}$ diameter, the latter 9 inches deep and $9\frac{1}{2}$ diameter; in some instances, the roots penetrate deep, and when this is not the case, the plants are sometimes of a spreading nature, consequently requiring room, a good depth of soil and moisture.

Regarding the potting and shifting of these, it may be performed in January or beginning of the

* Now that the heavy duty on glass has been abolished, glazed sashes will, doubtless, be generally adopted.

February. The soil may be mostly *sphagnum* moss mixed with bog mould, a small quantity of white sand, and pieces of decayed sticks, leaving a good deal of room around the plant, on the surface, to be filled to the top with fresh moss, for such as *Sarracenia* or *Sidesaddle* plants. For *Lycopodium* bog mould and white sand is sufficient; and these require the largest pots. For ferns, bulbs, &c., &c., bog mould and white sand, as in *Lycopodium*; only in the latter there may be added a very small quantity of sandy loam. Many of these are denizens of America and the Cape of Good Hope.

Great attention is necessary, during the Summer months, to admit plenty of air, by lifting up the sashes, and also keeping the whole in a *moist state*.

This must be regulated according to the season and weather; but in any case, during Summer and Autumn, water must be supplied copiously.

Before concluding, there is another subject I would advert to, and space will only permit me to say a few words on it. It is probable that this Treatise may fall into the hands of a class of readers, to whom many of the preceding remarks on the Rockery will be comparatively useless; I refer to such as are residents for the whole or greater part of the year in our towns and cities.

Now, I know there are many such who admire, like myself, these and other interesting tribes of Flora, and still continue to cultivate them, though

they have to combat the unfavourable atmosphere of a town residence. The poet has justly said, that

“ Man, immured in cities, still retains
An inborn unextinguishable thirst
For rural scenes.”

And rural occupations might have been added, as it is well known, that the most successful cultivators of various fruits and flowers, are the weavers and artizans of our manufacturing towns. To return, however, to my subject, my design in making these remarks, is to bring before my town readers a mode by which a great variety of plants may be grown more successfully than hitherto. This is by means of the Wardian, or Portable Greenhouse, first brought into notice, a few years ago, by Dr. Ward of London, who has written a treatise on the subject. Perhaps it is not generally known, that in many of the houses in the west end of London, and also in Edinburgh, a greenhouse has been formed by making double windows, with a considerable space between the interior and exterior ones, which have been found very effectual for growing many kinds of plants. The Wardian Case is constructed on a similar principle, but of a different form. It may be made of any size, but that usually adopted is such as will fit well into the space occupied by a window. The form of the base of such a case, should be that of a trough, sloping from the top to the bottom, and it should be supported by a table, such as is used for

a flower basket. The glass case above, to be of such dimensions and form as will suit the plants grown in it, with one or two of the panes on hinges, to admit access, when necessary. Little attention, however, is necessary, after the plants have been placed in it and thoroughly watered; as Dr. Ward grew, for several years together, various plants, without once watering or admitting free air. Care should also be taken to secure proper drainage, by a good layer of broken pots and moss at the bottom of the case.

The success of this method seems to be, first, the effectual manner in which fuliginous (sooty) matter and dust is excluded from the plants, both of which are great barriers to growing them in towns, as the pores of the leaves (the vegetable lungs) are completely closed by their presence; and second, the still atmosphere and equal temperature which they experience when thus enclosed. Various tribes of plants have been grown in these cases with more or less success; but it seems best adapted for those whose natural habitats are in shaded or moist localities, and we know that many of our Alpine and Rock-plants are of such a description. Nothing can exceed the beauty of some of the minuter Ferns and *Lycopodia* when thus grown. For further particulars, however, I must refer to Dr. Ward's treatise, and various articles which have appeared in the Horticultural Magazines and Newspapers. In the latter, I frequently see advertisements from trades-

men, who are making their construction a branch of their business; and now that glass is so considerably reduced in price, I do not doubt that these cases will be very generally adopted, by those for whom these remarks are chiefly intended.

I have now done with the subject, and have given what I know, and have practised, regarding the culture of Alpines, and if others would do the same, it might prove the means of elucidating the treatment best adapted for this tribe of plants generally.

I am not aware of any separate treatise extant on the cultivation of Alpine-plants. In M'Intosh's Practical Gardener (a work worthy of a place in every library) are the only remarks I have seen written on the subject; and from the preceding pages, it will be seen, that although I differ from him on some things, I nevertheless agree with him in most points. The subject is more generally discussed in Horticultural periodicals, indicating an attention to these hitherto comparatively neglected objects, and I hope soon to see more of these discussions. In short, this is given with a good intent, and, I trust, will prove effectual in assisting and drawing general attention to this lovely family.

“ Sweets of the wild! uncultured, blowing,
Neglected, in luxuriance glowing;
From the dark ruins frowning near,
Your charms in brighter tints appear,
And richer blush assume;
You smile with softer beauty crowned,
While all is desolate around,
Like sunshine on a tomb.”

NOTE.

To such as feel disposed to study or cultivate these interesting tribes of Plants, I would recommend a visit, whenever that can be accomplished, to the Botanical Gardens of Edinburgh or Glasgow, or the Experimental Gardens of the former city, where they are arranged according to the Linnæan and Natural Systems, in different compartments, so as to permit of their respective habits and forms being examined. The nursery establishments of the same cities, always keep a supply of them in pots or in the open ground, where collections may be had at various prices; and other information, regarding the materials and soil suitable for the formation of Rock-work, obtained. Those who are botanists do not require to be informed, that many of these interesting plants are natives of the mountains, bogs, and woods, of our own country.

APPENDIX.

APPENDIX

APPENDIX.

PLANTS FOR THE ROCKERY, POND, &c.

DESPISE not thou the wild flower—small it seems,
 And of neglected growth, and its light bells
 Hang carelessly on every passing gale;
 Yet it is finely wrought; and colours there
 Might shame the Tyrian purple; and it bears
 Marks of a care eternal and divine:
 Duly the dews descend to give it food,
 The sun revives its drooping, and the showers
 Add to its beauty, and the airs of heaven
 Are round it for delight.

IN arranging the plants *on the Rockery*, the great object to be kept in view, is to place them so, that the flowers, foliage, and habit of each, will contrast well with each other; always taking care, that in doing this, the healthy growth of each species is secured, by placing it in a congenial soil and situation. Tallies, with numbers to correspond with an alphabetical list, may be inserted beside each plant.

When they are removed to their Winter quarters, they may be classed either alphabetically or botanically, according to the taste and convenience of the cultivator.

The works of Loudon, and other Horticultural writers, afford much useful information on this and kindred subjects.

It is desirable, that the nomenclature of these plants be carefully attended to, as there is otherwise great danger of the collection getting into confusion, from its frequently being necessary to change the situation of plants, replace those that have died out, and other causes.

With the view of assisting collectors, I hope the following lists of Alpines, and other Plants, whose cultivation is the subject of the preceding Treatise, will prove serviceable in the arrangement of collections.

The Botanical synonymes, which are circumflexed, have only been given in a few instances; but ample information on this subject, as well as regarding the colour, height, and habitats, of the different Plants enumerated, may be gleaned from Botanical Works.

Where the Plants have popular English names, these are added in Italics.

The following Lists comprise Four Classes of Plants, viz. :—

I. ALPINE-PLANTS, or those which may be confined to the Rock-work; and tender sorts, requiring more or less frame protection.

II. MARSH or BOG-PLANTS, for the artificial Bog at the end of the Pond, or the dampest spots among the stones.

III. AQUATICS, or Plants which will thrive success-

fully either at the bottom, or on the surface of the Pond, or with their roots embedded in its margin.

IV. AMERICAN SHRUBS.—These will be found useful to plant in borders beyond the Rockery.

The marks employed are—

- * Placed at Plants which are natives of more temperate climates, and requiring protection, in frames, from the severity of our Winters.
- † Plants of a trailing or creeping habit.
- ‡ Plants suitable for edging to borders.
- ¶ Plants with bulbous or tuberous roots. Such as have an *a* attached to them, are annuals; and those with a *b*, are (or may be treated as) biennials.

I.—LIST OF ALPINE PLANTS.

ACERAS
anthropophora

ACHILLEA, *Milfoil*
clavennæ
serrata
tomentosa

ACINOS
vulgaris *a*

ADONIS
vernalis

ADOXA
moschatellina

ÆTHIONEMA
* membranaceum

AGROSTIS
pulchella *a*

AJUGA, *Bugle*
alpina
chamœpitys *a*
genevensis
pyramidalis
† reptans, fol. variegatis

ALCHEMILLA, *Lady's Mantle*
alpina
vulgaris

ALETRIS
farinosa

ALYSSUM
calycinum *a*
montanum
orientale
saxatile
fol. varieg.

ANAGALLIS, *Pimpernel*
* Monelli
* Phillipsi

ANDROSACE
* carnea
* chamæjasme
* lactea
nana *a*
obtusifolia *a*
* villosa

ANEMONE
alpina
apennina
baldensis
hortensis
fl. pleno
hudsoniana
narcissiflora
nemorosa cœrulea
fl. pleno
palmata
patens
ranunculoides
sylvestris
fl. pleno
thalictroides
vernalis

ANTENNARIA (Gnaphalium)
alpina
dioica
* triplinervis

ANTHYLLIS
* montana
vulneraria

AQUILEGIA, *Columbine*
alpina

ARABIS

alpina
arenosa *a*
bellidifolia
caucasica
ciliata
hirsuta *b*
incana
lucida
fol. variegatis
petrea

ARBUTUS (Arctostaphylos)

alpina
uva-ursi

ARENARIA

balearica
ciliata
grandiflora
laricifolia
longifolia
nardifolia
peploides
rostrata
rubra *a*
saxatilis
verna
vulgaris

ARETIA

alpina
vitaliana

ARMERIA (Statice)

alpina
formosa
† maritima
montana

ARNICA

montana

ASARUM

canadense

ASPERULA, Woodruff

cynanchica
odorata

ASTER

alpinus
fl. albo

ASTRAGALUS, Milk Vetch

alopecuroides
alpinus
canadensis
depressus
hypoglottis
leucophæus
monspessulanus
tragacantha

ASTRANTIA

carniolica
major
minor

AUBRIETIA

† deltoidea
hesperidifolia
purpurea

AZALEA (Chamæledon)

† procumbens

BARTSIA

alpina
viscosa *a*

BELLIDIASTRUM

Michelii

BELLIUM

crassifolium
minutum

BRIZA

minor *a*

BRASSICA

monensis

BRODLEA

† * congesta

BULBOCODIUM

† vernal

CAKILE

maritima *a*

CALOPOGON

† * pulchellus

CAMPANULA, Bellflower

carpatica
collina
fragilis
† garganica
glomerata
fl. albo
hybrida *a*
nitida
fl. cœruleo
patula
pentagonia *a*
pulla
fl. albo
pumila
fl. albo
rigida
rotundifolia
fl. albo
rubra
rupestris
saxatilis

- CARDAMINE, *Lady's smock*
 bellidifolia
 pratensis
 fl. pleno
 trifoliata
- CAULOPHYLLUM (Leontice)
 thalictroides
- CERASTIUM
 alpinum
 arvense
 latifolium
 perfoliatum
 tomentosum
- CHAPTALIA (Tussilago)
 tomentosa
- CHEIRANTHUS, *Wallflower*
 alpinus
 mutabilis
- CHERLERIA
 sedoides
- CHLORA
 perfoliata *a*
- CHRYSANTHEMUM
 alpinum
- CIRCEA
 alpina
 lutetiana
- CLAYTONIA
 grandiflora
 perfoliata *a*
 virginiana
- CNICUS
 acaulis (Carlina)
- COCHLEARIA
 danica *a*
 groenlandica *a*
- COMAROPSIS (Dalebarda)
 fragarioides
- CONVALLARIA, *Lily of the Valley*
 majalis
 fl. rubro
 fl. pleno
- CONVOLVULUS
 soldanella
- CORNUS
 canadensis
 suecica
- CORONOPUS
 † didyma *a*
 † Ruellii *a*
- CORTUSA
 Mathioli
- CORONILLA
 coronata
 minima
 Securidaca *a*
 varia
- CORYDALIS (Fumaria)
 bracteata
 bulbosa
 † claviculata *a*
 lutea
 tuberosa
 albiflora
- COTYLEDON
 lutea
 umbilicus
- CRUCIANELLA
 † * stylosa
- CYCLAMEN
 * coum
 europæum
 hederifolium
 album
 * repandum
 vernum
- CYPELLA
 Herberti
- CYPRIPEDIUM, *Lady's Slipper*
 ¶ * arietinum
 ¶ * calceolus
 ¶ * humile
 ¶ * parviflorum
 ¶ * pubescens
 ¶ * spectabile
- CZACKIA (Anthericum)
 ¶ liliastrum
- DIANTHUS, *Pink*
 alpinus
 armeria *b*
 arenarius
 cæsius
 † deltoides
 fragrans
 nitidus
 pallidiflorus
 petræus
 saxatilis
 superbus

DIELYTRA (Fumaria)

Cucullaria
eximia
spectabilis

DIGITALIS, *Forglove*

lutea *b*
purpurea *b*
fl. albo *b*

DIPHYLLEIA

cymosa

DONDIA (Astrantia)

epipactis

DRABA

aizoides
ciliaris
incana
muralis *a*
pyrenaica
† repens
rupestris

DRACOCEPHALUM

botryodes
grandiflorum
nutans
peregrinum

DRUMMONDIA (Mitella)

mitelloides

DRYAS

Drummondii
integrifolia
octopetala

ELICHRYSUM, *Everlasting*

† arenarium

EPILOBIUM, *Willow-herb*

alpinum
alsinifolium
Dodonæi

EPIMEDIUM

alpinum
diphyllum
grandiflorum (macranthum)
violaceum

EPIPACTIS (Cephalanthera)

† ensifolia
† grandiflora
† latifolia
† rubra

ERICA (*Heath*)

cinerea
fl. albo
† ciliaris
Mackaii
tetralix
fl. albo

ERIGERON

acris
alpinus
glabellus
Villarsi

ERINUS

† Hispanicus

ERIOPHORUM, *Cotton-grass*

alpinum
polystachion
vaginatum

ERIOPHYLLUM

lanatum

ERODIUM

maritimum *a*
moschatum *a*

ERPETION

reniforme

ERYNGIUM, *Sea Holly*

alpinum
maritimum

ERYTHRÆA

centaurium *a*
littoralis *a*

EUPHORBIA, *Spurge*

esula
cyparissias
exigua

FEDIA

dentata *a*
olitoria *a*

FRAGARIA

monophylla

FRANKENIA

lævis

FUMARIA

parviflora *a*

GALIUM

saxatile

GALEOBDOLON

luteum

GENTIANA, *Gentian*

† acaulis
alpina
campestris *a*
gelida
nivalis *a*
pneunomanthe
fl. albo
† verna
fl. albo

- GERANIUM**
 altaicum
 argenteum
 columbinum *a*
 lancastricense
 lucidum *a*
 nepalense
 nodosum
 pyrenaicum
 rotundifolium, *a*
 sanguineum
 striatum
 wallichianum
- GEUM**
 album
- GILIA**
 tenuiflora *a*
- GLAUX**
 maritima
- GLECHOMA**
 † hederacea, *Ground Ivy*
- GLOBULARIA**
 cordifolia
 nudicaulis
- GOODYERA (Neottia)**
 † repens
- GYPSOPHILA**
 elegans *a*
 prostrata
 repens
 viscosa *a*
- HABENARIA**
 † albida
 † bifolia
 † ciliaris
 † fimbriata
 † viridis
- HEDYSARUM**
 alpinum
 obscurum
- HELIANTHEMUM**
 † guttatum *a*
Other species in great variety.
- HELIOPHILA**
 araboides *a*
- HEPATICA**
 triloba cœrulea
 fl. pleno
 rubra
 fl. pleno
 albo
 stam. rub.
- HERBERTIA**
 pulchella
- HERMINIUM**
 † monorchis
- HEUCHERA**
 americana
 cylindrica
 villosa
- HIERACIUM, Hawkweed**
 alpinum
 † pilosella
 pumilum
 rupestre
- HIPPOCREPIS**
 † balearica
 † comosa
 † glauca
 humifusum
 elodes
 pulchrum
- HYDROPHYLLUM**
 canadense
 virginicum
- IBERIS, Candytuft**
 † saxatilis
 sempervirens
 tenoreana
- IRIS, Fleur-de-lis**
 cristata
 furcata
 pumila
 fl. luteo
- ISOTOMA**
 † axillaris
- JASIONE**
 montana *a*
 perennis
- JEFFERSONIA**
 diphylla
- KONIGA**
 † maritima *a*
- LAMIUM**
 maculatum
 orvala
- LATHYRUS**
 maritimus
 nissolia
 tuberosus

LEUCOIUM, Snowflake

- æstivum
- * autumnale
- pulchellum
- vernum

LINARIA

- † alpina
- chalepensis *a*
- † cymbalaria, fol. varieg.
fl. albo.
- elatine *a*
- Perezii *a*
- † pilosa
- origanifolia
- spartea *a*
- spuria *a*
- † reflexa *a*
- tristis
- vulgaris peloria

LINNEA

- † borealis

LINUM, Perennial Flax

- flavum
- * monogynum

LISTERA

- † cordata
- † ovata

LITHOSPERMUM

- maritimum
- purpureo-cæruleum

LOBELIA

- † begonifolia
- † erinus
- † erinoides
- inflata *a*
- ramosa *a*

LOTUS

- † corniculatus, fl. pleno

LYCHNIS

- alpina
- pyrenaica
- viscaria
- fl. albo
- fl. pleno

LYSIMACHIA

- ciliata
- † nummularia
- vulgaris

LYTHRUM

- triflorum
- roseum superbum
- virgatum

MATHIOLA

- maritima *a*

MELAMPYRUM, Cow Wheat

- pratense *a*
- sylvaticum *a*

MESEMBRYANTHEMUM

- † cristallinum *a*
- † tricolor *a*
- And several other species.*

MEUM

- athamanticum

MITCHELLA

- repens

MITELLA

- diphylla
- nuda

MYOSOTIS, Forget-me-not

- alpestris
- nana
- † palustris
- rosea
- versicolor *a*

MYOSURUS

- minimus *a*

NEMESIA

- floribunda *a*

NEOTTIA (Spiranthes)

- † æstivalis
- † * autumnalis
- † * cernua
- † spiralis

OMPHALODES

- linifolia *a*
- lucida
- verna

ONOSMA

- tauricum

OPHRYS

- † apifera, *Bee Orchis*
- † aranifera, *Spider O.*

ORCHIS

- † fusca
- † hircina
- † militaris
- † morio
- † pyramidalis
- † ustulata

ORNITHOPUS

- † perpusillus *a*

OROBUS

- albus
- canescens
- niger
- sylvaticus
- vernus
- fl. albo

OXALIS

- acetosella
- † * Bowii
- corniculata *a*
- † * Deppel
- † * floribunda
- † * rosea
- † * tetraphylla
- † * versicolor

OXYRIA, *Mountain Sorrel*
reniformis

OXYTROPIS

- campestris
- uralensis

PAPAVER, *Poppy*

- alpinum
- cambricum
- nudicaule

PHLOX

- nivalis
- setacea
- † stolonifera
- subulata
- suaveolens
- fol. variegatis
- † † verna
- purpurea

PHYTEUMA

- cordatum
- hemisphæricum

POLEMONIUM, *Greek Valerian*

- gracile
- reptans

POLYGONATUM, *Solomon's Seal*

- verticillatum
- vulgare
- fl. pleno

POLYGALA

- vulgaris

POLYGONUM

- viviparum

POTENTILLA, *Cinquefoil*

- alba
- alpestris
- argentea
- Calabra
- † reptans
- fl. pleno
- rupestris
- sericea
- Tonqua
- tridentata
- verna

PRIMULA, *Primrose, &c.*

- altaica
- carniolica
- ciliata
- cortusoides
- decora
- denticulata
- † farinosa
- fl. albo
- helvetica
- integrifolia
- longifolia
- † marginata
- minima
- † nivalis
- Palinuri
- pusilla
- † scotica
- sibirica
- stricta

PULICARIA

- dysenterica
- vulgaris *a*

PULMONARIA

- daurica
- mollis
- officinalis
- virginica

PULSATILLA, *Pasque flower*

- Halleri
- vulgaris

PYROLA, *Wintergreen*

- minor
- rotundifolia
- secunda
- uniflora

RAMONDA (Horminum)

- pyrenaica

RANUNCULUS

- alpestris
- amplexicaulis
- gramineus
- parnassifolius
- thora

RHODIOLA, *Rose Root*

- rosea

RUBUS, *Dwarf Bramble*

- arcticus
- chamæmorus

SANGUINARIA, *Bloodwort*

- canadensis

SANVITALIA

procumbens *a*SAPONARIA, *Soapwort*

ocymoides

SAUSSUREA

alpina

SAXIFRAGA

aizoides

angustifolia

aspera

bryoides

ceratophylla

cernua

crustata

elongella

† geum

† granulata

fl. pleno

hirculus

hypnoides

irrigua

ligulata

lingulata

moschata

nivalis

† † oppositifolia

pedatifida

propendens

pygmæa

† retusa

rivularis

rosularis

sibirica

stellaris

tricuspidata

tridactylites *a*

† umbrosa

SCHIVERECKIA (*Alyssum*)

podolica

SCILLA

† autumnalis

† bifolia

† fl. albo

† fl. roseo

† verna

† fl. albo

SCUTELLARIA

alpina

fol. varieg.

galerculata

minor

SEDUM

acre

album

anglicum *a*

SEDUM

cæruleum *a*

dasyphyllum

* Eversii

Forsterianum

monregalense

populifolium

roseum

sexangulare

* Sieboldii

telephium

SEMPERVIVUM

arachnoideum

ciliatum

montanum

tectorum

SHORTEA

† c alifornica

SIBBALDIA

procumbens

SIBTHORPIA

† europæa

SILENE, *Catchfly*

acaulis

fl. albo

alpestris

chloræfolia

conica *a*

incarnata

laciniata

maritima

fl. pleno

quadridentata

rubella *a*

saxifraga

SISYRINCHIUM

anceps

Bermudianum

* grandiflorum

striatum

SMILACINA

umbellata

SOLDANELLA

alpina

Clusii

crenata

minima

montana

pusilla

SPERGULA

† nodosa

fl. pleno

saginoides

STATICE

Gmelini
sinuata

STELLARIA

cerastoides
holostea
nemorum

STIPA, *Feather grass*
pennata

SWERTIA

perennis

TELLIMA

grandiflora

TEUCRIUM

chamædrys
montanum
pyrenaicum

THALICTRUM

alpinum
anemonoides

THLASPI

alpestre
perfoliatum *a*

THYMUS, *Thyme*

azorica
† corsicus
† lucidus
† serpyllum, fl. albo
tomentosus

TIABELLA

cordifolia

TRICHONEMA

† * bulbocodium

TRIENTALIS

americana
europæa

TRIFOLIUM

arvense *a*
† fragiferum
repens fol. atro purp.
† ornithopodioides *a*
† uniflorum

TRILLIUM

* cernuum
* erectum
grandiflorum
* pictum
sessile

TRIPTILION

* spinosum

TUSSILAGO

alpina
fragrans
nivea

VACCINIUM

uliginosum
vitis-idæa

VALERIANA

dioica

VERONICA

alpina
aphylla
Buxbaumii *a*
chamædrys fl. albo
fol. variegatis
fruticulosa
gentianoides
humifusa
† montana
multifida
† prostrata
† repens
saxatilis

VESICARIA

utriculata

VICIA

angustifolia *a*
lutea
lathyroides *a*
sylvatica

VINCA, *Periwinkle*

herbacea

VIOLA, *Violet*

calcarata
canadensis
cornuta
hirta
lactea
lutea
* neapolitana
palmata
pedata
primulæfolia
pygmæa
striata
suavis

WAHLENBERGIA (*Campanula*)

grandiflora

WALDSTENIA

geoides

FERN S.

ADIANTUM, *Maiden hair Fern*
capillus veneris
pedatum

ASPIDIUM, *Shield Fern*
aculeatum
acrostichoides
bulbiferum
cristatum
dilitatum
fili mas
Goldieanum
lobatum
lonchitis
noveboracense
oreopteris
spinulosum
thelypteris

ASPLENIUM, *Spleenwort*
adiantum—nigrum
alternifolium
fontanum
lanceolatum
marinum
ruta—muraria
septentrionale
trichomanes
viride

BLECHNUM
boreale

BOTRYCHIUM
lunaria, *Moonwort*

CETERACH (Grammitis)
officinarum

CISTOPTERIS, *Bladder Fern*
dentata

CRYPTOGRAMMA (Allosorus)
crispa, *Rock Brake*

CYATHEA
alpina
fragilis

HYMENOPHYLLUM
Tunbridgense
Wilsoni

ONOCLEA
sensibilis

OPHIOGLOSSUM
vulgatum, *Adder's tongue*

OSMUNDA
regalis, *Royal Fern*

POLYPODIUM, *Polypody*
calcareum
dryopteris
phegopteris
vulgare
vulgare cambricum

PTERIS
crenata
cretica

SCOLOPENDRIUM, *Hart's tongue*
officinarum
crispum
undulatum
furcatum

STRUTHIOPTERIS
germanica

TRICHOMANES, *Bristle Fern*
brevisetum (speciosum)

WOODSIA
ilvensis
hyperborea

ALLIED PLANTS.

LYCOPodium, *Club moss*
alpinum
* circinale
* cordifolium
* denticulatum
inundatum
selaginoides
selago
* stoloniferum

EQUISETUM, *Horse tail*
hyemale
sylvaticum
variegatum

II.—MARSH OR BOG PLANTS.

ANAGALLIS tenella	LYSIMACHIA † nummularia
BIDENS cernua a	MALAXIS paludosa
CAREX, several interesting and curious species	NASTURTIUM terrestre
CARUM verticillatum	OXYCOCCUS, Cranberry † palustris
CAMPANULA hederacea	PARNASSIA, Grass of Parnassus. asarifolia palustris
CHRYSOSPLENIUM, Golden Saxifrage alternifolium † oppositifolium	PEPLIS portula
COMARUM palustre	PINGUICULA, Butterwort. alpina grandiflora lusitanica lutea vulgaris
† CORALLORHIZA, Coral root innata	SAMOLUS valerandi
DROSERA, Sundew anglica longifolia rotundifolia	RANUNCULUS lingua
ELATINE hexandra	SCIRPUS Savii setaceus
ELEOCHARIS acicularis	SEDUM, Stonecrop villosum
EPIACTIS palustris	SIMUM angustifolium
GALIAM uliginosum	STELLARIA glauc
HELIOSCIADIUM repens	TOFIELDIA palustris
HYDROCOTYLE vulgaris	VALERIANA, Valerian dioica
ILLECEBRUM verticillatum	VERONICA scutellata
LATHYRUS palustris	VIOLA palustris
LIPARIS † Loeselii	

III.—AQUATIC PLANTS FOR POND.

ALISMA	NYPHÆA, <i>White Water Lily</i>
natans	alba
ranunculoides	odorata
APONOGETON	POLYGONUM
distachyon	amphibium
BUTOMUS	PONTEDERIA
umbellatus	angustifolia
CALTHA, <i>Marsh Marigold</i>	cordata
palustris, fl. pleno	POTAMOGETON
CALLITRICHE	crispus
autumnalis	densus
verna	lucens
CERATOPHYLLUM	perfoliatus
demersum	pusillus
ERIOCAULON	RANUNCULUS
septangulare	aquatilis
HIPPURIS, <i>Marsh's tail</i>	hederaceus
vulgaris	SCIRPUS
HOTTONIA, <i>Water Violet</i>	fluitans
palustris	lacustris
HYDROCHARIS, <i>Frog bit.</i>	SPARGANIUM
morsus—ranæ	natans
HYDROPELTIS	simplex
purpurea	SAGITTARIA, <i>Arrowhead</i>
LIMOSELLA	sagittifolia
aquatica	STRATIOTES, <i>Water Soldier</i>
LITTORELLA, <i>Shoreweed</i>	aloides
lacustris	SUBULARIA
LOBELIA	aquatica
dortmanna	UTRICULARIA
MYRIOPHYLLUM	minor
spicatum	vulgaris
verticillatum	VERONICA
NUPHAR, <i>Yellow Water Lily</i>	anagallis
advena	beccabunga
Kalmiana	fl. albo
lutea	scutellata
pumila	VILLARSIA
	nymphæoides

IV.—AMERICAN SHRUBS.

THESE are mostly natives of North America, and, in general, require peat earth to grow them successfully. They are suitable neighbours to the Alpine-plants, and may be planted in the borders leading to, or in beds around the Rock-work. Those marked * are evergreen.

ANDROMEDA

- * acuminata
- * arborea
- * axillaris
- * calyculata
- cassinefolia
- coriacea
- * Drummondi
- * floribunda
- * hypnoides (Cassiope, h.)
- mariana
- * paniculata, *several varieties*
- * pulverulenta
- * racemosa
- * rosmarinifolia
- serratifolia
- * speciosa
- * tetragona (Cassiope t.)

ARBUTUS, *Strawberry Tree*

- * Andrachne
- * serratifolia
- * hybrida
- * procera
- * sibirica
- * unedo
- * ruber (*Scarlet A.*)
- * fl. pleno
- * salicifolia
- * tomentosa

ARCTOSTAPHYLOS (Arbutus)

- * alpina
- * nitida
- * pungens
- * uva-ursi

AZALEA

- calendulacea, *several varieties*
- canescens
- glauca
- fl. pleno
- grandiflora
- nudiflora, *several varieties*
- pontica, *several varieties*
- speciosa
- salicifolia
- viscosa
- crispa
- dealbata
- glauca
- odorata

BUXUS, *Box-tree,*

- * balearica
- * sempervirens

CALLUNA

- * vulgaris (Erica)

CALOPHACA

- wolgarica
- * albo.

CALYCANTHUS, Allspice

- † acuminatus
- † floridus

CEANOTHUS

- † americanus
- † cœruleus

CEPHALANTHUS

- * † occidentalis

CERCIS, Judas Tree

- † canadensis

CHIMONANTHUS

- † fragrans
- † grandiflora

CHIONANTHUS

- maritima
- † virginiana

COMPTONIA, Fern-Gale

- † asplenifolia

CORNUS, Dogwood

- † canadensis

COTONEASTER

- † frigida
- † macrophylla
- † microphylla
- tomentosa

CUPRESSUS, Cypress

- * † australis
- * † lusitanica, Cedar of Goa
- * pendula
- * † sempervirens
- * † horizontalis
- * † thyoides, White Cedar
- * variegata
- * † torulosa

DAPHNE

- Aucklandi
- * † alpina
- * altaica
- * † Cneorum
- * † collina
- * Neapolitana
- * † Laureola

ERICA, Heath

- * † arborea
- * † ciliaris
- * † cinerea, with several varieties
- * herbacea
- * carnea
- * mediterranea
- * Mackayana
- * † multiflora
- * † alba

ERICA, Heath

- * † ramulosa
- * scoparia
- * stricta
- * tetralix
- * alba
- * vagans, Cornish Heath
- * rubra
- * † alba

FOTHERGILLA

- † alnifolia
- † speciosa

GAULTHERIA

- * † procumbens
- * shallon
- * † serpyllifolia

HALESIA, Snowdrop Tree

- † tetraptera

JUNIPERUS, Juniper, &c.

- * alpina
- * Bermudiana
- * communis
- * excelsa
- * † lycia
- * oxycedrus
- * Phœnicea
- * Sabina, Savin
- * variegata
- * sinensis
- * suecica, Swedish J.
- * thurifera
- * † virginiana, Red Cedar

KALMIA

- * † augustifolia, several varieties

KŒLREUTERIA

- † paniculata

MAGNOLIA

- * † grandiflora

MEDICAGO, Medick

- arborea

MENZIESIA, Irish Heath

- * † cœrulea
- * globularis
- * polifolia
- * alba

OXYCOCCUS, Cranberry

- * † macrocarpus
- * † palustris

PERNETTIA

- * † mucronata
- * † pilosa

POLYGALA, Milkwort* † *Chamæbuxus***RHODODENDRON**

* † *azaloides*
 * † *campanulatum*
 * † *catawbiense*
 * † *caucasicum*
 † *album*
 * † *Chamæcistus*
 * † *chrysanthum*
 * † *dahuricum*
 † *atrovirens*
 * † *ferrugineum*
 * † *hirsutum*
 * † *lapponicum*
 * † *maximum*
 † *album*
 * † *odoratum*
 * † *ponticum*
 † *album*
 * † *fol. argent. var.*
 * † *fol. areis var.*
 * † *Kalmianum*
 * † *pumilum*
 * † *punctatum*
 * † *roseum*

RUSCUS, Butcher's Broom

* † *aculeatus*
 * † *hypoglossum*

SPIRÆA

† *argentea*
 † *ariæfoliæ*

SPIRÆA

† *bella*
 † *hypericifolia*
 † *salicifolia alba*
 † *tomentosa*

SYMPHORICARPUS, Snowberry

† *montanus*
 † *racemosus*
 † *vulgaris, Common S.*

TAXODIUM, Deciduous Cypress

† *distichum*
 † *pendulum*

THUJA, Arborvitæ

† * *occidentalis, American A.*
 † * *orientalis, Chinese A.*
 † * *plicata*

ULEX, Whin

† * *europæus fl. pl.*
 † * *strictus, Irish U.*

VACCINIUM, Bilberry, &c.

† *amœnum*
 † *arctostaphylos*
 † *buxifolium*
 † *marianum*
 † *myrtillus*
 † *stamineum*
 † *uliginosum*
 † *vitis-idæa*

VINCA, Periwinkle

† * *major*
 † * *minor*

V.—M O S S E S.

THE following list of *Musci* and *Hepaticæ* (Mosses and Liverworts) is added, for the use of those who may wish to try their success in growing a few on the Rock-work, or in Wardian Cases, for the latter of which they are especially adapted. It comprises only such as are pretty generally distributed, and calculated to make some show by agreeable contrasts. Those who are Botanists will have no difficulty in augmenting the collection to an almost indefinite extent; as, in addition to those of our own country, there are many interesting exotic species, which might, with little trouble, be introduced, from their retaining their vitality when in a dried state.

The native *habitats* of these will form the best guide for placing them on the Rock-work as these will indicate the situations in which they thrive best. The majority, when once established, will-succeed on the north side of the Rock-work.

Those distinguished by an asterisk will only succeed where a constant supply of moisture can be insured.

MUSCI (MOSSES).

BARTRAMIA, *Apple Moss*
 * *fontana*
pomiformis

BRYUM, *Thread Moss*
 * *androgynum*
argenteum
cæspitium

BRYUM, *Thread Moss*
hornum
ligulatum
nutans
roseum
punctatum
turbinatum
ventricosum

DICRANUM, Fork Moss

adiantoides
bryoides
cerviculatum
flavescens
heteromallum
* squarrosum
taxifolium
varium

DIDYMODON

capillaceus
flexifolius
purpureus

ENCALYPTA, Extinguisher Moss

ciliata
vulgaris

FUNARIA, Cord Moss

hygrometrica

GRIMMIA

apocarpa

GYMNOSTOMUM, Beardless Moss

* æstivum
pyriforme
* rupestre
truncatulum

HOOKEERIA

lucens

HYPNUM, Feather Moss

denticulatum
myosuroides
pulchellum
undulatum, &c.

NECKERA

crispa

POLYTRICHUM, Hair Moss

aloides
undulatum

PTERIGONIUM

gracile

TETRAPHIS

pellucida

TRICHOSTOMUM, Fringe Moss

* aciculare
heterostichum
polyphyllum

WEISSIA

acuta
contraversa
curvirostra
* verticillata

HEPATICÆ (LIVERWORTS).**PEGATELLA**

* conica
* hemispherica

JUNGERMANNIA.

The frondose species of this most extensive genus are those best suited for cultivation, as the foliose section, though the most extensive, contains generally such as are very minute, or of too rambling a habit to be kept within due bounds.

FRONDOSE SPECIES.**JUNGERMANNIA**

* Blasia
* epiphylla
furcata β maxima
* multifida, &c.

FOLIOSE SPECIES.

* asplenioides
nemorosa
* tomentella, &c., &c.

MARCHANTIA

* polymorpha

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