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RARE FLOWERS

FROM SEED.

HOW TO GROW TUBEROUS BEGONIAS, CALCEOLARIAS, CINERARIAS, CHINESE PRIMROSES, COLEUS, CYCLAMENS, SINGLE AND DOUBLE PETUNIAS, FUCHSIAS, AND OTHER RARE FLOWERS.

✓ BY

E. D. DARLINGTON,

SUPERINTENDENT FORDHOOK FARM.

1955aa-

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SB405
D22

Rare Flowers from Seed.

PART I.

INTRODUCTION.

ALL improvements in living forms, be they plants or animals, follow from the struggle for life.

The strongest and the best survive, the weak and the poor perish. This law, by which slight variation, if useful,

is preserved,

Darwin has

named "Natu-

ral Selection,"

while Mr. Her-

bert Spencer

has given to

the same prin-

ciple of evolu-

tion the more

felicitous title of "The Survival of the Fittest."

All improvements in plants and animals are due to the operations of this underlying law of nature, which, as has been said by the great English naturalist, "is incessantly ready for action." * In the struggle for existence man, too, may play an important

* "Origin of Species."

part. "Man by selection," says Darwin, in the "Origin of Species," "can adapt organic beings to his own uses through the accumulation of slight but useful variations given to him by the hand of Nature."

In the pregnant formulary of Science we perceive a great axiomatic principle of evolution, a self-evident truth, which the stock breeder, the horticulturist, and even the lover of rare flowering plants cannot afford to ignore. All improvements in floral structures, whatever be their nature, must be assigned to the operations of this fundamental natural law, and under its influence, in a measure, plants become plastic in the hands of man. To take advantage of every valuable variation, to improve by selection and careful breeding, to sift out the bad from the good, and to perpetuate that which is best, is the true province of the seedsman, and to this work he must bring broad experience, profound knowledge, sound judgment, and rare professional skill. If, therefore, we are to attain the greatest success in planting, we must have the purest types of seed, and these must have suitable conditions of soil and environment. Hence, if we wish to succeed with the rare flowers which are the subject of this little book, we must begin right. We must get fresh seed of the finest strain of the type to be grown, remembering that it is no more trouble to raise the finest strains of flowers than the poorer ones.

The difference in first cost between the best and inferior strains is generally very slight, and is many times repaid by the increased size and greater beauty of the flowers.

Having selected the best strains of the best varie-

ties, next provide a suitable soil. To have the best results with these rare flowers the soil must be specially prepared to meet their requirements.

Take one-third good friable loam, one-third leaf-mould, or the rich, dark surface earth from woods,—or if rotted peat from the swamp can be had it is better still,—and one-third sharp sand, all nearly dry, thoroughly mixed and sifted. For sifting the soil an ordinary ash-sieve with about nine meshes to the square inch is just right.

This admixture of earths is necessary to secure a light, porous soil that will easily drain off any surplus moisture, just retaining enough to be constantly damp, but neither wet nor dry. It must be loose and not liable to become packed or hard, that the fine, delicate roots may spread rapidly through the pot or box. By friable soil is meant a good loam, well stocked with decaying vegetable matter. Where a regularly built and frequently turned compost heap is not at hand, the best way to secure a suitable soil is to cut sods, three or four inches in thickness, from an old fence row or meadow where the grass is luxuriant. Turn the sods upside down and with a large knife or sharp spade shave off the under soil nearly to the surface; this will be full of fine roots, which, if piled in a heap, will soon decay and furnish food for the young plants. The woods dirt, if no fibrous peat is at hand, can be found in any neighboring woods,—in a damp hollow or ravine, where the trees stand closely together and the leaves lie thickest, the best woods earth will be found. Scrape aside the leaves and gather the loose, decaying mixture of leaf mould, fine roots, and soil, which is usually from one to several inches in depth. In the

depths of old forests this accumulation of leaf mould is often a foot or more in depth. Pick out the larger roots and sticks and break up any lumps which will not go through the coal sieve. From the roadside or the banks of a stream gather a quantity of fine, clean, gritty sand. With these three ingredients, carefully and thoroughly mixed in equal parts, we have a soil suitable for use.

SOLFERINO
CINERARIA.

For seed boxes we suggest small, empty boxes from twelve to fifteen inches long, such as may be had from the grocer.

Saw them through the middle lengthwise so that the bottom and top of each will form two shal-

low boxes or flats with sides about four inches in height. To secure good drainage, bore five or six holes in the bottom with a half-inch auger.

Having secured the seed, soil, and seed boxes, we are now ready for the sowing. In this latitude (Philadelphia) the last of February or the first of March—that is, when the days begin to get warm, bright, and sunshiny—is the proper time for seed sowing. The directions will be given for the sitting-room windows, as but few flower growers have conservatories or greenhouses; the general treatment is the same, though the atmosphere of the greenhouse is

more favorable for rapid growth ; but with a little care these beautiful flowers can be started in the house, and when the warm summer days come may be grown on a stand under a large, leafy tree or on a cool and shady veranda. We have in mind a lady who lives near us, whose flower stand is brilliant every summer with these beautiful flowers, and whose sitting-room window in winter is always bright with many blooms of Chinese Primrose and kindred plants,—the room being heated with an ordinary coal stove.

The seeds to be sown at this time are those wanted for summer blooming, such as Tuberous Begonias, Calceolarias, Gloxinias, Coleus, Achimenes, etc. Seeds of Chinese Primroses and Cinerarias for winter blooming should be sown the latter part of April ; the general culture is the same. Cover with pieces of broken pottery or small, flat stones the holes in the bottom of the seed boxes, which for convenience we will call by the florist's technical name of flats. This will permit the surplus water to pass off without washing out the soil. Fill the flat to a depth of two and a half inches with coarsely sifted prepared soil, jar the box to settle the earth evenly throughout, scrape level with a small piece of lath or flat stick, scatter the seed evenly and thinly over the surface, and give the soil a good sprinkling of water. The seed is so small that even a light covering is too deep for good germination. This we have repeatedly proved at Fordhook.

Subsequent watering must be done at the right time and with great care, this being the most important point in the culture of this class of plants. Do not let the seed box get really dry, nor must you wet

it very much at one time, little and often is the rule ; at first once in two or three days will be sufficient, but this must be increased as the weather becomes warmer, until the plants are well advanced, when twice a day on hot days is not too often. The water should be tepid or have the chill taken off ; water which has stood for half an hour or more in the room where the plants are growing will be all right. It must be applied gently, so as not to wash the small seeds or plants out of the soil ; if a watering-pot is used it must have a much finer sprinkler than is ordinarily in use ; if you have no such sprinkler, an old hairbrush or whisk may be dipped in the water and gently shaken over the surface of the soil. Do not water the seed box or very small plants with a cup, as it will wash the surface, making it too wet in places, and is also apt to cause a crust to form on the surface, which will retard germination. The temperature of the room where the seed box is placed should not go below sixty degrees at night and should be from seventy to seventy-five degrees on bright, sunny days. This is the main reason for waiting until the early spring days before sowing the seed.

The seed flats should be in a bright, sunny window, and as the air of a stove or furnace-heated room is apt to be dry, cover the flat with a pane or panes of glass, which should be an inch or more above the surface of the soil in a four-inch-deep seed flat. The glass retains the moisture and converts the flat into a miniature greenhouse. When heavy drops of water form on the under side of the glass the box is too wet ; in such cases remove the glass for a little while and allow the soil to slightly dry. In the hottest part of very warm days cover the box with

a single thickness of newspaper. This will prevent too much drying, or the young plants from being burned by the hot sun. Remove the shade as soon as the hottest part of the day has passed, that the seedlings may have the benefit of the light. On dull days do not water, or if necessary water as little as possible until the sunshine comes again. Small, green moss starting to grow before the seed has started is a sure indication of too much moisture. After the plants have made three or more leaves more water must be given, and the appearance of moss then will do no harm.

When the young plants have made from two to four leaves prepare a second box in the same manner as the seed box, water well, and drain ; then carefully transplant the young seedlings, setting them an inch apart each way. Water with care until they are well established. For transplanting seedlings, take two small sticks the size of a lead-pencil, make a sharp point on one to make the holes with, and shave the other down thin and flat at one end, making a small notch in the flattened end ; slide this notch under the leaves and around the stem ; then with the pointed stick dig the plant out, lifting it and the dirt attached to the roots carefully into the hole prepared in the new box, and gently pack the soil around it with one of the sticks.

The plants will grow more rapidly in this second box than in the seed flat, and can be allowed to stand until the leaves begin to crowd each other, when they are ready for potting.

For the first potting use small pots, two or two and a half inches in diameter. Use the same sifted soil, placing a small pebble over the hole in the

bottom of the pot to prevent the soil washing out. After the plants start to grow well, water more frequently and more plentifully except on dull days or in the evening, when water should be withheld. The plants should remain in these pots until they are well filled with roots but should not be overcrowded; by the time the leaves cover the surface the soil is full of roots, and such as are to be grown in pots should be transplanted to larger ones (four

BEGONIA REX.

inches in diameter), into the bottom of which place about an inch of broken pottery or small pebbles. When the surface is again hidden by the growth of leaves, re-plant to pots six inches in diameter, using slightly coarser soil.

Some of the smaller plants, such as Gloxinias, Fuchsias, Tuberous and Rex Begonias, and Primula

Obconica will bloom somewhat earlier in the four-inch pots, but to secure a large amount of the finest bloom larger pots are necessary. Plants like Coleus, Calceolarias, Begonia Vernon, Tuberous Begonias, and Linaria Cymbalaria can be planted out from the small pots as soon as the weather is warm enough, taking care to have the soil loose and rich and to keep the plants sufficiently supplied with moisture.

PART II.

FOR SUMMER BLOOMING.

BEGONIAS.—Sow the seed, as directed in the foregoing pages, the last of February or early in March. Keep the young plants growing rapidly until large enough to begin blooming. Any check suffered in growth will have an injurious effect both in the size and number of flowers produced.

A check or stoppage of growth may result from too much moisture, causing the young roots and leaves to partially rot or to make a soft, unhealthy growth. More frequently a check in growth is caused by allowing too long a period to pass without supplying water ; both foliage and roots become hardened or woody in character and the plant does not respond in rapid growth when more moisture or fresh soil is furnished. Stunting is also due to permitting the plants to remain too long in pots without replanting to larger ones ; in such cases the growth becomes hardened and the plants come prematurely into flower without having attained full development. They remain small and stunted, though blooming profusely, but the flowers will be much smaller than in well-developed plants.

Granted that our young plants are well grown, how shall we care for them while blooming? Both the tuberous-rooted sorts and *Begonia Vernon* make excellent displays as bedding plants. The beds should

be well dug and heavily manured with well-rotted compost or with equally well-rotted manure, which will serve the double purpose of keeping the soil light and loose and furnishing abundant food for the growing and blooming plants. It is well to have the

FORDHOOK GIGANTIC TUBEROUS-ROOTED BEGONIA.

beds slightly rounded above the surface of the lawn, so that any surplus moisture from heavy rains may readily run off, and also to give the plants in the center of the bed more prominence.

To insure a constant and more even degree of moisture after setting the plants out in the beds, it is well to lightly mulch the soil. The rakings after mowing the lawn are excellent for this purpose ; being quite short, they will cover the soil evenly and

A SINGLE PLANT OF BEGONIA VERNON.

smoothly without heavily packing the surface of the bed. To beds thus mulched water may be applied freely in the evenings without baking the soil even during a term of dry weather ; nor will so much water be required, nor need it be so often applied.

Early in the fall, as soon as the edges of the leaves and the flowers become slightly blackened or blighted by cool nights, the plants should be dug, the tops and some of the roots cut off the tuberous-rooted varieties, and the bulbs carefully dried for winter storage; they must not be dried too quickly, or the bulbs will shrivel up and lose their vitality. Some of the soil may be left on the plants when first dug, and if placed in a cool, airy shed they will dry gradually. When well dried and cleaned, wrap in cotton wadding to prevent moisture and place in a dark closet where there is not enough warmth to cause them to shrivel.

In spring the bulbs may be planted about the same time seed was sown the previous year. Plant in four-inch pots, using soil such as we have described; place in a warm, sunny window, where they will soon start into growth, and with careful attention and regular repotting as growth continues they will make fine plants. Plants of Tuberous Begonias that have been flowered in pots throughout the summer can be dried in the pots if kept in a cool, dry place and not watered. It may be well to water them at first to prevent a too rapid drying, when store away as before.

BEGONIA VERNON, unlike the above, has no tuberous roots. For winter blooming the plant may be dug up in the fall, the tops cut back one-half or two-thirds, and the plant potted in something large enough to contain the roots without crowding. It will bloom freely in a warm, sunny window.

THE REX BEGONIAS are not suitable for general bedding, as they do not stand exposure to

the sun well; but in a moist, shady bed under a large tree, or in rock work around a fountain not exposed to strong sunlight, they are most excellent. But such favorable situations are not at the command of the majority of flower growers, nor are they necessary to grow the plant. The finest plants can be grown in a shaded conservatory or on a plant stand under the veranda. If the plants are frequently repotted and kept properly supplied with moisture, very large and handsomely zoned leaves may be obtained, and the plants will produce a fine, ornamental effect. To keep them through the winter a warm room or conservatory will be necessary; very little growth will be made during the winter months unless kept quite warm. A pot six or seven inches in diameter is needed for the largest plants, but one four or five inches in diameter will be large enough for the majority of plants.

GLOXINIAS.—These are essentially pot plants and have generally been considered purely greenhouse flowers, but while they are very ornamental in summer in the conservatory, they can be grown with equal success in our warm summer climate on a plant stand under a shady porch or tree, or in the sitting-room window; but to grow well and bloom freely they must have plenty of heat and moisture.

General directions for growing the young plants have been given in Part I (see page 7). When the plants begin to show bloom-buds in the center we must stop repotting, as they will grow no longer for the season. By this time they should be in pots from four to five inches in diameter. Keep the plants well supplied with moisture; if too much of a tax to

water so frequently, stand the pots in shallow dishes or flower-pot saucers, which keep filled with water; the plant will then draw up a supply of moisture as needed. This is an excellent plan for all plants requiring constant moisture, and avoids spotting the ornamental leaves of such plants as Rex Begonias,

GLOXINIA,—LARGE-FLOWERING HYBRID.

From a Photograph, as grown at Fordhook Farm.

etc. As the blooms fade cut them off, that the strength of the plant may be thrown into succeeding blossoms and not diverted to forming seed, which produces exhaustion and, consequently, materially shortens the period of bloom.

When done blooming, gradually withhold water

from the plants until they are dried, then clean the bulbs and store away in cotton as directed for Tuberous Begonias ; in spring pot up again and start into growth in the same manner.

PRIMULA OBCONICA.—This pretty little plant is very useful both for summer and winter, beginning to bloom when quite small and constantly producing a profusion of beautiful flowers. Sow the seed and pot the plants as directed in Part I (page 7). While the young plants can be set out in a moist and shady bed during the summer months and will bloom quite freely, they will succeed best as pot plants in summer and as window plants during winter. They will grow and bloom freely in a room which is too cool for many other plants.

The young plants will begin to bloom in the small two-inch pots in which they are first potted, growing and blooming at the same time, but the best results are obtained by potting into larger pots with increasing growth ; this may be continued until the plant is in a pot six or seven inches in diameter, when it will produce a grand mass of bloom, the spikes being formed of three or four distinct whorls of blossoms.

The leaves of this plant are covered with minute spines or prickles which are quite poisonous to some skins, and we therefore recommend that gloves be worn when repotting is necessary. The poisoning is not dangerous, but is frequently painful for several days after handling the leaves.

PETUNIAS.—While the culture of the ordinary type is simple and well known, the superb flowers of

the Superbissima and large double-flowered types will amply repay us for the greater care required in their culture. The main object of this increased care is to get a fine, large, vigorous plant to set out in the bed; seedsmen have devoted great care and much expensive labor to provide seed that will produce

DOUBLE PETUNIA.

flowers of the largest size, superb in form, and richly beautiful in colorings and markings.

Sow the seed rather thinly, transplant the seedlings as soon as possible, and repot as frequently as is necessary. The stems and leaves of these vari-

eties are strong, thick, and of good substance, very different from the slender growth of the older types. One of the main points in the culture of these plants is never to let them get crowded or stunted, as this will produce a drawn, slender stem and small, inferior flowers. The flower bed must be made rich with well-rotted manure and plenty of room allowed for each plant. Set about one and a half feet apart each way. In our fields at Fordhook we plant two by four feet apart, and by midsummer the ground is covered; in beds they may be planted one foot apart each way, and as the plants increase in size every other one may be pulled out to keep up the large size of the flowers; the remaining plants will soon cover the bed. This refers more particularly to the large single-flowered types, as the double-flowered ones grow more compactly and do not spread over the ground like the former.

Very fine flowers can be grown on plants in five- and six-inch pots during spring and early summer, but *Petunias* are strong growers and gross feeders, and as the soil in the pots is impoverished, growth becomes spindling, with much smaller flowers of a very ordinary type of coloring.

COLEUS.—Many flower lovers who have admired the dazzling display of this bright foliage plant in public parks or on extensive private lawns have no doubt thought it impossible to have them without greenhouses, except by purchasing in quantity from the florists. Many of our friends are far from florist establishments where such plants can be had, and it is for their benefit that these directions are given. Not only can the plants be grown easily from seed,

but the variety of coloring is greater, and, from a good strain of seed, fully as rich and brilliant as can be obtained from florists. To our mind a bed planted with varied-hued seedlings without regard to geometrical design is more artistic and naturally beautiful than straight or curved lines of sheared, stiff form. Sow the seed and raise the young plants as directed in the general instructions for this class of plants, except that after the first potting you may leave the peat or woods dirt out of the soil, of which make two parts loam and one part sharp sand. The *Coleus* is a rank grower and strong feeder, and must have a rich soil.

Give the young plants plenty of sunlight and keep them quite warm, and when planting-out time comes they will begin to show their brilliant coloring, enabling one to arrange them in the bed to suit the individual fancy. If all light sorts are wanted, raise a number of plants and pot only those that are richly colored, but we think the dark, self-colored varieties, when intermingled with the flaming ones, add greatly to the richness of the bed.

Do not set the plants out until the thermometer stands during the night above sixty degrees Fahrenheit; the least chill will dull the coloring and blight the leaves. Plant from nine inches to a foot apart each way and have the soil as rich as possible, so as to promote the growth of fine, large leaves; the heat of the sun will bring out the brilliant coloring. To secure the finest effect, cut off the tip of the plant as soon as the flowering spike appears, which will promote the growth of the side branches; the flowers are small and insignificant and only detract from the beauty of the plant.

LINARIA CYMBALARIA, OR KENILWORTH IVY.—We have included this old garden favorite in this list, as we do not think it is nearly so well known as its merits deserve, and because many flower growers fail when trying to start it in the open ground. Sown in the house where the moisture is well regulated and an even degree of heat maintained, the seed germinates very readily. When the young plants are large enough they may be potted into small pots in a soil composed of two parts friable loam and one part sharp sand. The plants will grow very nicely in these until planting-out time.

For planting on a bank, at the top of a stone wall, for rock work or edging flower boxes, vases, etc., wherever they have a chance to run or trail, nothing can be prettier than this delicate and graceful creeper. It is entirely hardy, and in spring is densely covered with small, pearly flowers.

CALCEOLARIAS, like Gloxinias, are essentially pot plants, but are very easily grown; free flowering and of brilliant coloring. The seed is sown and the young plants are grown under the general cultural directions as for others of this class. Owing to the stiffer and more shrubby growth of Calceolarias we advise planting after the first potting in rich soil composed of two parts loam and one part sharp sand.

Keep the young plants growing rapidly until they are in pots from four to five inches in diameter, when they should be ready to bloom. These plants do not require quite so much heat to produce flowers as do the Gloxinias, but both plants will do very well together on the porch or flower stand. The foliage

is rather low and compact and is surmounted by flower-stems bearing large clusters of large, pocket-shaped flowers of yellow, crimson, and maroon, spotted and blotched with rich, deep hues. They are very profuse bloomers and quite useful for bouquets, etc.

A SINGLE FLOWER OF CALCEOLARIA HYBRIDA.

RAISING GERANIUMS FROM SEED.—Most varieties of Geraniums grow from seed as readily as Verbenas; indeed, we may say that the seed germinates more quickly and readily than does that of the Verbena. Some few of the fancy varieties, such as the Apple-scented and gold and bronze Zonale varieties, are of weaker constitution and vitality; the latter varieties will require a slightly warmer place and more careful attention. Do not water too freely. The

ordinary flowering varieties are strong and robust, and, if well fed and treated to lots of sunshine, will grow very strongly when once started, and when they have attained sufficient size will furnish an abundance of bloom. The ordinary purchaser of a Geranium plant probably overlooks the fact that all the finest varieties have been originally raised from seed, and that florists are constantly raising seedlings to secure choice new varieties. With our fine hybridized seed you have an equal chance with the florist to secure something new and distinct at but little cost, outside of your own labor, while raising a fine lot of blooming plants for lawn or house decoration.

SINGLE GERANIUM.

To start the young seedlings, prepare a seed box or pot as directed in the first chapter, using the same prepared soil; the light woods dirt may be dispensed with if you have loose, loamy soil, but it will be better to use the woods earth if at hand. Sow the seed as early in the spring as convenient,—say early in February or March,—cover lightly and press the soil down quite firmly; this will greatly aid germination and insure a larger percentage of seedlings. Keep in a warm, sunny window until the young seedlings have three or four good leaves; then transplant to other boxes or to small pots, and transplant to larger ones as the small pots become well filled with roots.

Do not let the young plants get cramped or stunted in the pots, as it will make them small and poor. Keep all growing vigorously ; especially nurse the more delicate ones, for these will give you the finest and most delicately shaded flowers. The strong and vigorous plants are nearly always bright scarlet, the natural color of a geranium. As soon as the weather will permit, that is, when the trees are well out in leaf, set out the young plants in the garden or bed, where they should come into bloom in a short time. The earlier the start is made the sooner will blooms appear. In the fall, just before frost, take up the most desirable plants, cut them back one-half, and plant in good, rich soil for winter blooming. However, plants lifted from the flower beds rarely give much bloom before January.

THE ZANZIBAR WATER LILY.—This beautiful Water Lily readily blooms the first year from seed, requires no great amount of care and but a small expenditure for seed.

Sow the seed, if possible, early in January in saucers or small pans about two inches in depth, half filled with loamy soil ; scatter the seed thinly on the surface. After sowing, cover the soil with an inch of water, adding more as it evaporates. Place the saucers where they will get all the sunlight possible and keep the temperature at from seventy to eighty degrees Fahrenheit ; if impossible to have this temperature, defer the sowing until the latter part of spring. You can still get plants to bloom freely the same season.

In four weeks' time the young seedlings should be ready to prick out or transplant. Have pans two

and a half to three inches in depth, in which there is an inch to an inch and a half of prepared soil. The soil should be composed of one-half loam and one-half fine, clean gravel; cover this with one inch of water and set the young plants out in the pan one

inch apart each way, or even farther if they are of good size. Take only one plant at a time out of the seed saucer and put it at once into the water in the pan into which you are transplanting; this must be done quickly, as they soon wilt if kept out of

the water. Keep the water at least an inch deep in the pan at all times.

In April the young plants will be ready to transplant to the flowering-tubs; these can readily be made by sawing strong, water-tight barrels in half; fill these five or six inches in depth with rich loam and fine gravel, and set the young plants, being careful, as before, to have them out of the water as short a time as possible. Six or more plants may be set in a tub together and covered with water to a depth of four to six inches.

Well-grown plants may be planted out in shallow ponds about the middle of May. It is a good plan to pot the plant in a six- or seven-inch pot and sink the pot in a pond or fountain twelve to twenty inches in depth, as it can then be taken up and put in a tub of moist earth for the winter. Where no pond is at hand the tubs in which the young plants are grown may be set outdoors in the sunshine early in May, or after danger of frosty nights is past. Keep well supplied with water, which should be from four to six inches deep, or even deeper. In the fall the tubs and plants should be taken into the conservatory or greenhouse before there is danger of frost, and stored under the benches until March, when they can be again started into growth.

If no facilities are at hand for wintering plants, very good success may be had from seed each season. - Plants making a good growth should flower in from one hundred and ten to one hundred and twenty days from seed. The tubs of plants may also be wintered in a warm, light cellar, where there is no danger of frost, or where rats and mice cannot eat the bulbous roots. By pouring off the water and

storing the roots away in the soil, which should be moistened occasionally, the plants may be started into growth in March or early April, and will begin to flower early in May. One plant will be amply sufficient in each tub the second season, as they will grow stronger and make much larger blossoms.

PART III.

FOR WINTER BLOOMING.

PRIMULA SINENSIS, OR CHINESE PRIM-ROSE.—This well-known favorite, which can be grown at home with very little trouble, is one of the most satisfactory and constant bloomers for window culture. It requires a rather cool location, and can be grown in north windows or in much cooler rooms than are required for ordinary flowering plants. The seed should be sown the latter part of March or in April, and the plants grown as rapidly as possible in a cool, shady location. If you have no suitable plant stand a smooth bed of ashes in a shady corner of the garden or lawn is a good place to stand the pots during the summer. Place the pots a little distance apart from each other that there may be a free circulation of air at all times. When well started the young plants grow rapidly, and by September or October should be in pots four or five inches in diameter and ready for blooming. The young plants are quite brittle and break off easily, so great care must be exercised in repotting. They should be set at just the same depth in transplanting, not allowing the soil to cover the leaf stems or crowns of the plants. If there is shown a tendency to droop after potting, support the plant by inserting several match-sticks or toothpicks in the soil close to the

stems, which will hold them erect until again established.

Seed of *Primula Obconica* can be sown at the same time and raised in the same way, but as it is an all the year round bloomer it has been treated under the head of summer-flowering plants. Of Chinese Primroses it is especially true that the finest strains

PRIMULA SINENSIS—SINGLE CHINESE PRIMROSE.

are the best ones to grow ; they flower as freely, and are much finer in form, foliage, and coloring than the older varieties.

FUCHSIAS.—Though in some parts of the United States these beautiful plants are hardy and are trained on trellises covering an ordinary two-story dwelling, with us they are pot-plants for house and stand culture, being unable to withstand the hot

sun of our summer months. Sown indoors the seed germinates very rapidly, and on a cool, shady stand you may have fine plants full of bloom by midsummer. Up to this time the plants may be in from four- to five-inch pots. If repotted into six-inch pots they will continue to grow and bloom through the

THE TRAILING FUCHSIA IN A BASKET.

winter. After the plants get a good start they are very little trouble to grow, if frequently repotted and kept supplied with sufficient moisture.

The Fuchsias rarely flower well the second summer, but can be kept alive during this time in a cool, moist, shady place and repotted in the fall, when

they will again grow and bloom ; but young plants freshly raised from seed are by far the most satisfactory.

CINERARIAS.—The time for sowing and the mode of culture for these grand blooming plants is the

CINERARIA HYBRIDA—LARGE-FLOWERING. *A Single Plant.*

same as for the Chinese Primrose ; but as Cinerarias are very liable to rot, great care must be taken not to give them too much water at one time ; excessive dampness can be prevented by allowing between

each pot a space of two inches, which permits of a free circulation of air and enables the plants to throw off any surplus moisture.

These plants grow more rankly than the Primrose and do not need the peat in the potting soil after being shifted from the first small pots. By fall they should be in five-, six-, or even seven-inch pots, and when they begin to flower should be kept constantly supplied with moisture; this can be readily done by keeping a saucer of water under them.

They should be kept in a rather cool, airy room,—a temperature of forty-five to fifty degrees Fahrenheit at night is plenty warm enough for them. Cinerarias are liable to become infested with green fly or aphids, which, if neglected, will soon destroy the plant. Fine tobacco dust sprinkled over the pots and on the under sides of the leaves destroys the insects. To apply this insecticide, turn the plant upside down and dust the underside of the leaves. But the best cure in this as in all other cases is the ounce of prevention; each time you water the plants watch for the first green fly and kill it at once, either with the fingers or an old, soft toothbrush. Carnations, when grown in the house, are also infested by this insect, but the pest is more easily observed and killed than on Cinerarias. The best results are obtained by sowing the large single-flowered varieties, though the dwarf and the double-flowered varieties are very fine when well grown. After blooms appear be very careful not to wet the flowers and they will last much longer. Pick off the single flowers as they fade, that seed may have no opportunity to form, and the plant will remain beautiful a long time.

CYCLAMEN PERSICUM.—To obtain the largest plants and finest flowers the seed should be started in November, but very fine plants can be grown from seed sown in February and March. Sow the seed as directed in Part I and grow the

CYCLAMEN PERSICUM.

plants along as rapidly as possible until fall. They are not as rapid growers as some of the varieties previously described, but by fall should be in four-inch pots, possibly some of the earliest and largest in six-inch pots. When the seedling has made two or three leaves and is ready to transplant a small

bulb will be observed from which the leaves spring ; this must be carefully watched during transplanting or repotting ; it should be about half buried in the soil, the upper side from which the leaves and blossoms spring being entirely exposed. As the seeds of the *Cyclamen* are larger than some of the foregoing varieties, they should have a light covering of soil, or you may take a pointed pencil and push each seed slightly under the surface before watering. While growing and blooming in the window the plants are best watered through the saucer in which they stand, watering the pot itself freely as the spring advances. Pick off all flowers as they fade ; if permitted to form seed the period of blooming will soon end.

When done blooming in the spring gradually withhold water from the plants until the leaves have died off ; then store the pots in a cool, dry place until September, when they are to be shaken out clean, repotted in fresh soil, and watered sparingly until growth begins.

These plants are apt to be infested with a small brown scale on the under side of the leaves and on the stems ; these insects can be easily crushed with a small, sharp-pointed stick. The *Cyclamen* is among the most beautiful winter-flowering plants ; the blooms are very odd in form and exceedingly beautiful in coloring ; the self colors range through bright shades,—pink, crimson, and pure white,—the latter frequently spotted with rich splashes of color.

CARNATIONS FOR WINTER BLOOMING.—

The new *Marguerites* and florists' varieties are the only ones suited for this purpose. Sow the seed early and plant in the open ground one foot apart

early in the spring. Many of these, especially the Marguerites, will bloom during the latter part of summer. About the middle of September lift and pot them carefully, cutting off any flower stems; keep shady and cool for a few days, and then grow

MARGUERITE CARNATION.

them the same as the Chinese Primrose, watching carefully for the green fly. If allowed to get a foothold this pest will soon destroy the plant. Carnations need very little water in winter—just enough

to keep them moist, but never wet. It is much better to err on the dry side, especially during dull weather. These plants need slight stakes to support them; place three or four slender stakes around the outer edge of the pot and run the strings from one stick to another.

MUSA ENSETE FROM SEED.—Soak the hard, dry seeds in tepid water for twenty-four hours before sowing, then clean off the decaying crust found adhering to the seed. Take a fairly deep saucer or tin dish, in which place a layer of absorbent material like moss, or if you can get no moss use cotton wadding; lay the seeds on the

layer of absorbent material with the eye or germinating point near the top and cover with another layer of moss or cotton; then fill up the saucer with tepid water until the upper layer is covered, and set in a warm, sunny window or corner of the greenhouse. Renew the water every three days, being careful

that the fresh water is slightly warmed before being poured into the saucer. Cold water will check the development of the germ; nor should the water be hot, as it would kill the plant,—about milk-warm is the right temperature. In two weeks the seeds should be well sprouted. Lift them out carefully and pick off the moss or cotton; in doing this, care

must be exercised not to break the young shoots. Plant in quite small pots in a mixture of leaf-mould and clean sand ; set back in the sunny window and water freely, using slightly warmed water. In four weeks' time the seedlings will be ready for four-inch pots. Prepare the soil by taking two parts good loam, one part dry cow manure broken fine, and one part sharp sand. Transplant and keep in the warm sunlight, which will insure rapid growth. From these pots the seedlings may generally be transplanted to the open ground, but this should not be done until the weather has become quite warm. If the plants fill the pots before planting-out time, give them larger pots, using the same mixture of soil. If well fed and well provided with sunlight, grand plants will be had the first season ; but to secure the finest effect, take up the plants before danger of frost and plant in good-sized boxes or small tubs and keep over winter, planting out in a rich bed the following spring. In its native climate *Musa Ensete* frequently attains a height of eighteen feet, and the large leaves produce a magnificent tropical effect. We would advise all lovers of fine plants to try to raise a few specimens of this grandest of all foliage plants. The fruit of this variety is not edible, the edible variety being smaller in growth and by far less ornamental ; it can only be grown from offshoots of the parent plant, as is also the case with the Pineapple.

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