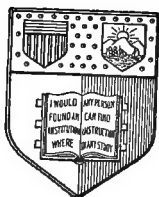


ALPINE
PLANTS



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— Jasmine House, —

Bishopthorpe Road, YORK,

IS prepared to undertake and carry out all work in connection with Alpine Rockwork, the laying out of Water Gardens, the construction of Japanese Gardens, and the general arrangement of Grounds; providing all necessary material for the construction and stocking of the work undertaken; and all labour, by competent men, to carry it out.

Mr. Clark is confident that his long and large experience in this class of work will enable him to give entire satisfaction.

He is also prepared to advise in respect to the selection of plants of all kinds for special positions, soils, or climates.

In every case it will be Mr. Clark's especial endeavour to regulate all estimates given, so that efficient results may be obtained at reasonable cost.

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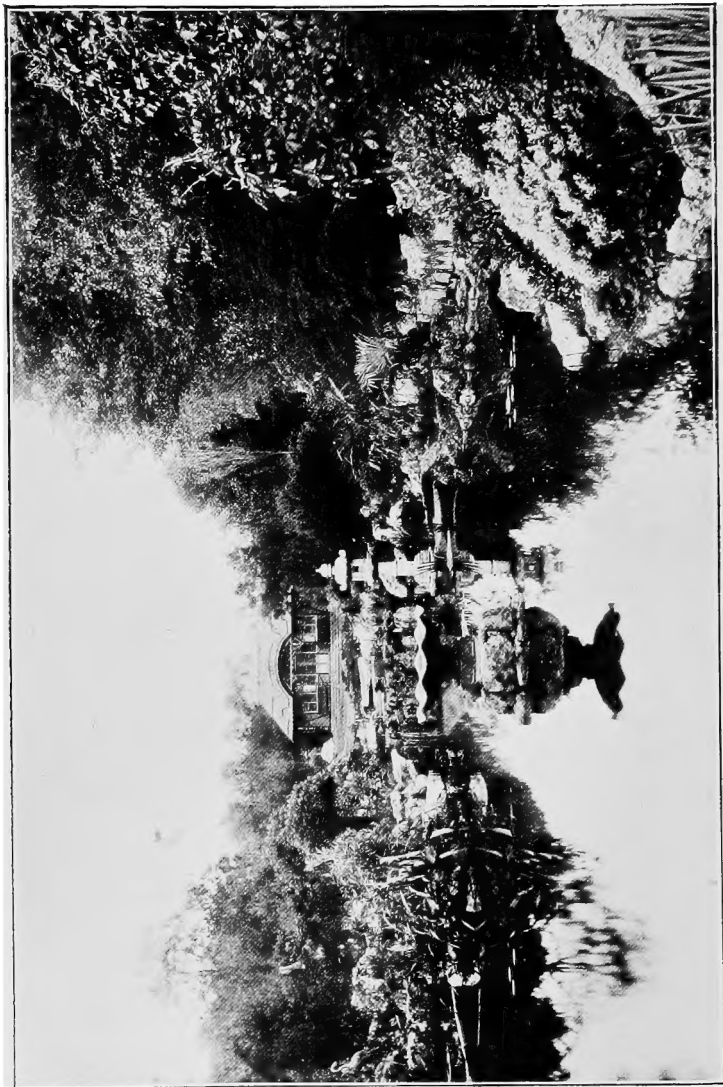
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ALPINE PLANTS.



View in Rock-gardens, The Pleasaunce, Overstrand, Cromer.

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ALPINE PLANTS

A PRACTICAL MANUAL
FOR THEIR CULTURE.

By

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— **Jasmine House,** —

Bishopthorpe Road, York.

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With a supplementary Essay

on

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PREFACE.

INDUCED in the first instance to write this little book by frequent requests for information as to how the rarer Alpines and those which, though not rare are yet exacting in their requirements, should be grown, I have, in this Second Edition, endeavoured to enlarge the scope of the work in such a way as to give it extended usefulness without detriment to its original aim.

Although I have no longer confined attention either to rare plants or to such as are difficult to establish, keep, or grow well, I trust it will be found that the enumeration of these is now more complete, and the directions for their treatment more clear than before; while, in dealing with the far wider range of easily cultivated Alpines, none have been included which are either straggly, coarse, or commonplace.

But my aim has grown more ambitious still, for I have sought to comprehend in one manual such a survey and such indications as shall provide a practical and suggestive guide over the broad field of Alpine gardening, and a comprehensive equipment for approaching those problems which arise in a pursuit that it is my sincere desire to encourage and assist.

I have pleasure in acknowledging my indebtedness to the Rev. C. A. Barry for his contribution of an essay to the close of this volume, for drawing up the chart of cultural devices, and also for assistance throughout the work of revision and enlargement.

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ALPINE PLANTS.

INTRODUCTION.

MOST Alpine plants are quite easy to grow, but all are not so; and the aim of this little treatise is simply to set forth, in the case of these more especially, such a method of planting, choice of soil, position, and after-treatment, as experience has shown to have satisfactory results.

Any practical system for the culture of Alpines must be based upon an intelligent recognition of the primary importance of three things: drainage, mixture of composts, and periodic top-dressing.

A brief statement of *why* these things are so important will serve to impress the sense of *how vitally* important they are.

The primary aim of drainage is to promote the percolation of water and air throughout the soil.

Good drainage enables the rain or other surface water to descend readily into the soil, and promotes the rapid escape of its "free" portion from the soil, which is thus prevented from becoming either sodden or sour; while at the same time it is unhindered from retaining in suspension the

moisture which is essential to the maintenance of plant life.

The admission of frequently renewed supplies of air into the soil is of equal importance to its fertility, and the possibility of this also depends upon drainage.

When rain falls upon the surface of well-drained land, it makes its way into the innumerable extremely minute channels which run among the particles of soil, expelling before it the air with which they were previously filled ; then, on the diminution or ceasing of the supply, the surplus water runs away rapidly through the fissures of the mould, and as it leaves the pores of the soil empty above it, is followed by the air, which fills in renewed volume the numerous cavities from which the descent of the water had driven it. When land is ill-drained, it remains full of water, and no such renewal of air can take place.

The condition of the drainage modifies, in an equally striking manner, effects due to the temperature of the falling rain.

If the temperature of the rain as it falls through the atmosphere is higher than that of the surface soil upon which it falls, the latter is heated by it. Should, therefore, the rain be copious and sink easily into the subsoil, it will carry warmth with it throughout the whole body of earth.

Hence drainage plays an invaluable part in respect to local heat-supply ; the undersoil, in well-drained places, being warmed, and the effects of evaporation reduced, as the rains of summer bring down warmth from above to add to the specific heat of the soil,

thus both greatly increasing general growth and fostering its vigour.

It is true that under any circumstances the sun heats the surface of the soil ; yet, even in the hottest weather, this direct influence of the solar rays descends only a few inches into the ground, and can do little to neutralise the chilling effects of evaporation and a water-logged condition. Further, in ill-drained land, this superficial heating, in conjunction with the wetness of the soil, speedily leads to the formation of a baked surface, very impervious to moisture ; so that any rain which falls upon it, instead of sinking in, immediately runs over the surface, dissolving any soluble matter lying upon it, and discharging it into the nearest hole, or carrying it away on to any adjacent walk.

Hence, in the absence of efficient drainage, rain is actually injurious rather than beneficial to the land, even while it is indispensable. When, on the other hand, the rain can penetrate where it falls, it carries down to the roots of the plants whatever it dissolves in its course, and thus promotes growth.

Further, by again distributing throughout the whole body of the soil such saline matters as the constant action of evaporation would otherwise withdraw from the general mass and accumulate on or near the surface, it helps to preserve the average constitution of the bulk of material from steady impoverishment, and removes the danger of total loss of any of its constituents through exposure.

Again, if the drainage is good, no substances which are injurious to the roots of the plants can

collect on the subsoil; for the rain in its passage washes away these noxious matters, leaving only wholesome material to receive the roots as they descend.

It might be supposed that drainage in hot, dry soil would render drier a soil already parched up, but experience seems to show that such is not the case.

A little judgment must, however, be used in dealing with such exceptionally warm light soils. Hence, instead of the drainage being say one foot from the surface, as in clayey subsoil, in sandy arid places it must be deepened, so that the roots can penetrate further, for in this way they will be rendered more independent of the surface moisture.

The importance of proper mixture of soil is therefore evident, so far as it promotes satisfactory drainage.

But the *nature*, as well as the condition, of the soil has also very direct physical bearing upon plant welfare.

Under the influence of heat, soil shrinks in proportion to the quantity of clay or peat it contains, whereas sandy soil diminishes very little in bulk by dryness.

Hence, not only is air excluded from the roots of plants by heavy soils in dry weather, but the plants themselves are also placed in a condition exceedingly unfavourable to vitality through constriction of the vessels in the "collar" of their stems, and even more immediately through the destruction of those delicate root-hairs by which they take in their nourishment, under the compression to which they are subjected.

On all these grounds, it will be clearly seen how much depends upon the proper blending of earthy and vegetable constituents in mixtures of soil, quite apart from their chemical character.

But, if it is necessary to practise a method in planting which shall procure proper conditions of drainage and porosity of soil, it is no less necessary that such a method of treatment should also regard the living activities of each specific kind of plant.

Different sorts of plant are marked by peculiarities of assimilation, and use up distinctive proportions of the food-stuffs upon which they live. Hence, as plants are unable to move from place to place, except by circumferential growth, it is necessary, under the artificial conditions of cultivation, to supply by appropriate means that renewed provision for their continued activities which is brought to them under the natural conditions of their life.

Such a provision is most effectually made by the practice of top-dressing, which, in correspondence with the sequence of events in a state of nature, is best given in autumn, when the flowering season of most Alpines is past and that of active growth begun.

It is perhaps hardly necessary to add that this work of top-dressing should be undertaken mindful of the necessity for free access of air through the soil already mentioned. Hence, before this top-dressing is begun, the whole surface should be worked up with a fork, so as to lighten the soil and give free access of air ; and then care must be taken

in its progress to work backwards, so as not to tread upon the newly-loosened soil.

Finally, the regulation of atmospheric humidity is often of great importance; and while this is but little under direct control, yet much may be done to promote favourable conditions, by selection of site, angle of planting, and seasonable protection or exposure.



CHART OF CHIEF SUBSIDIARY DEVI

PLANT FIRMLY, TO AVOID LOSS.

- PLANT {
1. ON A STEEP SLOPE {
 - a. To secure general dryness.
 - b. To obtain tilted crowns, and so prevent danger of their damping off through lodgment of wintry wet or snow.
 2. ON A DEAD FLAT.. {
 - a. To reduce danger of bared roots through denudation.
 - b. To facilitate top-dressing.
 3. NEAR EYE {
 - a. To see minute beauties.
 - b. To remind of needed care.
 4. HIGH UP {
 - a. To obtain "trails" or "curtains."
 - b. To obtain plant-silhouettes.
 - c. To see into pendent bell-shaped flowers.
 5. OVER WATER {
 - a. To benefit from humidity given off to air.
 - b. To keep leaves of delicate or spongy texture green.
 - c. To keep succulent leaves from shrivelling.
 - d. To mirror plant with striking habit or sheet of bloom.

- PLANT IN .. {
- LOAM .. {
 - Rough.* To promote drainage and evaporation; avoid dampness and increase warmth.
 - Poor....* {
 - a. To get "hard" growth in tender subjects.
 - b. To check "sappy" growth in luxuriant foliage.
 - c. To stimulate flowering.
 - d. To make dwarf, or retain dwarf habit.
 - CLAY .. {
 - a. To keep Sempervivums true to colour and type.
 - b. To retain plants in crevices.
 - SAND .. To grow .. {
 - a. "Miffy" plants.
 - b. Plants with running roots.
 - STONES To bake and ripen bulbs.

- PLANT WITH {
1. ROCK BEHIND {
 - a. To drain away wet. [warm.
 - b. To keep clinging roots; sheltered, moist, and
 - " " TO OVERHANG {
 - a. To protect from battering rains or clotting snow. [roots.
 - b. To collect water and divert it to
 - " " " " A ROCK-SHELTER, with water-shed into clayed bottom.
 2. ROCK BEFORE {
 - a. To ripen and display hanging shoots.
 - b. To prevent a plant settling into bog, and so being lost.
 3. ROCK AT ONE SIDE, to provide {
 - a. Shade... {
 - (i.) and keep glossy, juicy foliage fresh.
 - (ii.) and prolong flower.
 - b. Shelter. {
 - (i.) from drying winds.
 - (ii.) from cutting winds.
 4. STONES ABOVE AND BELOW.. {
 - (Sandwich-fashion) to keep roots moist and foliage dry.
 5. STONES AT BOTH SIDES {
 - a. To wedge tightly.. {
 - (i.) and promote quick settlement of roots.
 - (ii.) against {
 - (a.) wind.
 - (b.) drought.
 - b. (Splayed from collar) to keep roots moist and stem dry.
 6. STONES AROUND PLANT {
 - a. Superimposed on soil {
 - (i.) to preserve moisture.
 - (ii.) to provide against encroachment.
 - b. Imbedded in soil, to increase drainage.
 7. VERTICAL SLAB OR SLATE close to {
 - a tuber {
 - (a.) to assist ripening.
 - a bulb {
 - (b.) to control direction of future growth.
 - a root {
 - (b.) to control direction of future growth.

CES IN THE CULTURE OF ALPINES.

- PROTECT UNDER } ..
- I. STONE { To keep resting crowns } from rotting in winter through resting rain or snow.
 - II. GLASS { To keep woolly-leaved yet active plants .. }
 - III. STRAW WINE-BOTTLE COVER. { To preserve tender plants } (a.) from winter wet or snow. (b.) from severe frost.
 - IV. BRACKEN { To preserve newly-planted subjects .. } (a.) from spring winds. (b.) from summer sun.
 - V. BRANCH..... { To preserve newly-planted subjects .. }
- PROTECT AGAINST } ..
- Slugs and snails { a. By hoop of perforated zinc round plant. b. By rough grit c. By steel turnings } strewn round collar of plant.
- TOP-DRESS ..
- I. WITH COMPOST.. { a. To receive young roots when they are given off superficially. b. To provide against being "out of the ground." .. } (i.) by natural growth (ii.) by action of frost
 - c. To stay plants { (i.) with brittle.. } stems against winds. { (ii.) with hollow woody }
 - d. to promote formation of layers.
 - II. WITH SAND { a. To run down about roots in planting. b. To make plants snug, after planting. c. To keep soil cool in summer and warm in winter. }
 - III. WITH FINE GRIT To keep leaves safe from damping off in wet season.
 - IV. WITH COARSE GRIT OR STONES { a. To keep soil damp in summer and dry in winter. b. To check snails .. } (i.) from seedlings. (ii.) from small plants instead of zinc circles.
 - V. WITH SANDSTONE (in nodules or pieces), to absorb surface moisture.
 - VI. WITH PEAT { a. To keep plant warm in winter. b. To support young leaves c. To provide humus for young surface roots } in spring.
 - VII. WITH LOAM { Over surface of } Sand bed { (i.) to improve appearance. Peat-bed { (ii.) to keep in moisture.
- PUT { STONES OR RUBBLE } UNDER { To obtain drainage and a dry site. [site.] } { CLAY } { To obtain cool bottom and a moist }
- PIN DOWN .. Young shoots { a. To form layers. b. To prevent blowing about. }
- CUT BACK .. In spring.... { a. To increase summer flower. b. To keep compact. }
- PULL OFF .. In autumn .. { a. To let young growths spring. b. To remove worn-out old ones. }
- WATER
- I. To keep leaves from flagging through excessive evaporation { (a.) under hot sun. (b.) " " " during quiescence of root-action after planting. }
 - II. To promote { a. General growth. b. Development of flower-buds. }
 - III. To maintain average of root-moisture.
 - IV. To settle soil close to roots and prevent shrinkage of ball when newly planted.
 - V. To make newly planted ball and surrounding earth equally moist.
 - VI. After top-dressing, to settle soil among roots.
- CEASE WATERING } AT BEGINNING OF AUGUST, TO FORWARD RESTING-STATE.

DIRECTIONS FOR SPECIFIC CULTURE.

Acæna Buchanani (New Zealand).

A beautiful foliage plant, of rather rampant growth, useful for surfacing bulbs. As it colours best in partial shade, it should be planted either on a bank or on the flat with a south or south-west aspect, in two parts of sand to one of poor loam.

Acantholimon venustum (Cilicia).

A very beautiful as well as rare Alpine, well adapted for the dry chinks of rockwork facing south, where it is exposed to the full heat of the sun in summer and is dry in winter. Plant in a compost of limestone, loam, and sand in equal parts. In early spring, top-dress with the same compost worked well in amongst the foliage by means of a small piece of stick.

Achillea ageratifolia (Greece).

Sometimes mistakenly classed as an annual. Plant on a very dry part of the rockery, either between stones or on a sloping bank, where it will be dry in winter. Every autumn it is essential that

a top-dressing of sandstone should be worked well among the foliage if this plant is to be kept from damping off.

Achillea Clavennæ (Austria).

Plant on the flat in full sun facing south, in deep loam. When the leaves fall after flowering, before the plant goes to rest, it must be top-dressed with equal parts of loam and sand or it will be lost.

Achillea Herba-rota (France).

Treat like *Achillea Clavennæ*.

Achillea Huteri (Switzerland).

The bright green foliage and pure white flowers of this plant make it useful. It grows well on a sunny part of the rockery, in common sandy loam. Top-dress once or twice in the year, otherwise the stems may grow loose and the wind blow off the young growths.

Achillea rupestris (S. Italy).

A pleasing and early flowering kind, of very easy cultivation. Does well in a full south aspect, in very sandy soil, with a little limestone added when possible. The foliage of this plant often turns brown in early autumn, so that it appears dead or in a dying state. This rusting may be prevented and free growth induced by top-dressing with a mixture of grit and leaf-mould worked among the shoots immediately after the plant has ceased to flower.

Achillea tomentosa (Europe and N. Asia).

Plant, facing full south, in poor sandy loam. About every second year, when the plant becomes

lank and rusty, it should be replanted after flowering, or else filled in with grit and loam.

Aciphylla squarrosa (New Zealand).

A very quaint and interesting plant, useful on large rockeries for an elevated place among stones. In such a position its long spiny foliage forms a most imposing feature. Plant, in a full south aspect sheltered from the north and east, in half limestone or rough grit and half loam. It should be planted with a tilt to one side, so that the rain does not rest in the axils of the leaves, as it must be kept from any damp during winter.

Acis autumnalis, see **Leucojum autumnale**.

Actinella grandiflora (Colorado).

Plant in a sunny position on the flat, facing full south, allowing sufficient room for the plant to develop, as it is of somewhat loose habit ; in rather poor loam.

Adonis amurensis (Manchuria.)

A. amurensis resembles *A. pyrenaica*, but flowers considerably earlier, affording an attractive mass of golden-yellow in February and March, just before the Daffodils and yellow Alyssum appear. Plant, in a well-drained place having a south aspect, in good deep sandy loam. Every autumn give a little top-dressing with similar soil. Every third or fourth year, in the month of October, divide and replant.

Adonis pyrenaica (Pyrenees).

Treat like *Adonis vernalis*, which it succeeds in bloom, prolonging the display of flower into June.

Adonis vernalis and *v. alba* (Europe).

Treat like *Adonis amurensis*, which it follows in flower; except that every third or fourth year it should be divided and replanted in early spring.

Æthionema armenum (Armenia).

Treat like *Æthionema coridifolium*, except that this species does not require to be cut back after flowering.

Æthionema cordatum (Orient).

Treat like *Æthionema coridifolium*.

Æthionema coridifolium (Asia Minor).

A sun-loving rock plant of very easy culture, too little grown. Plant on an elevated place between stones, in a mixture of equal parts of rough limestone and loam, or it will do equally well in rough gritty sandstone; but in any case the soil must be kept poor. While leaving plenty of room for the roots to descend, care should be taken to press the plant closely between the stones, so that it is made as firm as possible. In spring, see that the plant has not worked loose, and apply a little top-dressing of stone and loam in the chinks. After flowering, the plant should be cut back.

Æthionema græcum (Greece).

Treat like *Æthionema armenum*.

Æthionema grandiflorum (Persia).

Treat like *Æthionema coridifolium*.

Æthionema Thomasiana (Piedmont, etc.).

Treat like *Æthionema armenum*.

Alkanna tinctoria (Europe, Orient).

An almost extinct species, extremely rare in gardens. Since it requires to be kept as dry as possible during winter, while it will stand abundance of water during the growing season, plant on the south of rockwork, under a stone which hangs over from the north, in a deep sandy loam, plenty of room being left for the tap-root to descend among the rocks, as then the plant, when well established, will stand any amount of burning in summer. In spring top-dress with sand, taking care to keep the top-dressing away from the neck of the plant as it requires freedom in that quarter.

Allium angulatum, syn. **acutangulatum** (Siberia, etc.).

Treat like *Allium narcissiflorum*.

Allium cæruleum (Siberia).

A dwarf kind, from 6in. to 8in. in height, with pale blue flowers in upright round heads flowering from May to June. Plant in a south aspect, in ordinary loam.

Allium cyaneum (Kansu, China).

A very dwarf species, only growing about 4in. high, with white buds and light blue flowers in August. Plant in a south aspect, in ordinary loam.

Allium grandiflorum (S.W. Europe).

A species with drooping bells of a refined shade of rose colour, flowering in July. Plant in ordinary soil.

Allium Kolpakowskianum (Turkestan).

Treat like *A. grandiflorum*.

Allium narcissiflorum (S.W. Europe).

A limestone-loving plant, best grown in a full south position. Where limestone cannot be had, strong clayey loam should be used mixed with gritstone. If planted on the level part of the rock-garden the place should be well drained.

Allium Ostrowskianum (Turkestan).

This species has bright rose-coloured upright flowers and blooms in early May. Treat like *A. grandiflorum*.

Allium pedemontanum, *sec* **Allium narcissiflorum**.

Allium senescens glaucum (Europe, Siberia).

A late-flowering kind, flowering in September. Plant in ordinary soil.

Allium triquetrum (S. Europe).

One of the prettiest *Alliums*, with pendent flower-heads; beginning to flower in April, and continuing in flower for weeks. Plant in sun or shade, but preferably in shade, in ordinary soil.

Alyssum alpestre (S. Europe).

Treat like *Alyssum pyrenaicum*.

Alyssum pyrenaicum (Pyrenees).

A limestone-loving species requiring a little more care than the other *Alyssums*. Plant, tightly wedged between stones, in a warm dry crevice with a south aspect. Every spring, the plant must be carefully examined, as it does not root very deeply, and should the soil have become washed away from it at all in the course of the preceding winter, the deficiency must be made good with a little limestone

and loam, and all be made firm again; for if left bare to the hot sun, the plant will soon die.

Alyssum serpyllifolium (S.W. Europe).

Plant behind a stone, on the flat or on a slope in full sun facing south, in equal parts of grit and poor loam—the loam must be poor, or the plant will not flower well. In early spring give a little top-dressing with a mixture of equal parts of sand and loam.

Andromeda, *see* **Cassiope**.

Androsace alpina (Switzerland).

Treat like *Androsace helvetica*.

Androsace carnea, and *c. eximea* (Switzerland and Auvergne Alps).

Plant on a flat part of the rockery, where the soil is not liable to be washed away from the plant, facing south-west and sheltered from the midday sun, in a mixture of equal parts of sandy loam and grit. In early spring, top-dress with white sand or any sand free from weeds; in this the plant will seed freely, and so spread into little carpets in the course of a few years.

Androsace Charpentieri (Switzerland).

Treat like *Androsace carnea*.

Androsace ciliata (Pyrenees).

Treat like *Androsace carnea*.

Androsace coronopifolia, *see* **Androsace lactiflora**.

Androsace cylindrica (Pyrenees).

Treat like *Androsace helvetica*.

Androsace foliosa (W. Himalaya).

A somewhat robust species, requiring a well-drained position facing full south, in limestone and good loam. In early spring top-dress with same compost.

Androsace glacialis (Alps).

Treat like *Androsace imbricata*; but in autumn work a little fine limestone among the foliage.

Androsace hedreantha (Thrace).

Treat like *Androsace carnea*.

Androsace helvetica (Switzerland).

Requires rather special treatment. Plant in a well-elevated position facing south, wedging tightly between pieces of limestone, or other stone if this cannot be had, but leaving plenty of room in the chink of rock behind the plant for its roots to descend. During early summer a plentiful supply of water should be given, care being taken, however, so far as possible to avoid watering on to the face of the plant, or the foliage will turn quite brown and the little rosettes be destroyed.

Androsace imbricata (Switzerland).

This species does not need to be wedged between stones. Plant in a sunny position, in a mixture of leaf-mould, sand, and fibrous loam, in equal parts. A stone should be fixed behind it to take away any moisture that may lodge near. Small pieces of sandstone worked around the plant also assist to absorb superfluous surface moisture. A top-dressing of stones once or twice a year is very

beneficial, serving to keep the plant warm in winter and to retain moisture during hot sunshine.

Androsace lactiflora (Siberia).

A pretty and useful biennial, which makes a very nice companion to *Erinus alpinus*. If a little seed of this plant is scattered on the sunny side of a rock it will grow and flower freely, sowing itself year by year.

Androsace Laggeri (Pyrenees).

Treat like *A. carnea*. In autumn top-dress with sand and leaf-mould.

Androsace lanuginosa (Himalaya).

Requires the same aspect and soil as *Androsace foliosa*. This species resembles *Androsace sarmentosa* in that it is liable to be injured if standing moisture is permitted to rest too long upon it in the winter season; but as its leaves are more silky it does not suffer so severely in this way. *A. lanuginosa* also differs from *A. sarmentosa* in not rooting from its rosettes. For both these reasons, and from its habit, it is placed to best advantage when planted immediately behind a stone, over the face of which the young growth will trail down and flower freely. *A. lanuginosa* may be pruned back annually, as it sends out young growths from the base each year—indeed, the old shoots should be entirely cut away every second year, for if allowed to remain on season after season they become very straggly, and do not flower so freely as when young.

Androsace pubescens hirtella (Alps).

Treat like *Androsace carnea*.

Androsace pyrenaica (Pyrenees).

Treat like *Androsace helvetica*.

Androsace sarmentosa (Himalaya), s. var. **primuloides**, and
s. × **villosa** syn. **Chumbyi**.

This species requires the same aspect and soil as *A. foliosa*, but is best placed on a rocky slope, so that the woolly rosettes of the plant may not become sodden with the wet and snow of winter, which are otherwise very apt to rot out their crowns.

Androsace sempervivoides (Western Thibet).

Plant in a dry, sunny position on the flat, facing south-west, in a soil of loam, sand, and leaf-mould in equal parts. In autumn top-dress under each rosette with grit, and pin down the rosettes, which will then speedily root.

Androsace septentrionalis (Northern Hemisphere).

Treat like *A. sempervivoides*; but it is an altogether stronger grower, with large rosettes.

Androsace villosa (Pyrenees).

Treat like *A. carnea*.

Androsace Vitaliana, see **Douglasia Vitaliana**.

Androsace Wulfenalia (Styria).

Treat like *Androsace carnea*.

Anemone alpina and a. var. **sulphurea** (Middle Europe).

Plant on the flat, or on a bank, in full sun facing south or south-west, in deep and rather retentive loam. In autumn top-dress with a little loam.

Anemone angulosa (E. Europe).

This plant will thrive in shady places on banks in the rock-garden, or under trees, where nothing else will grow. It does not lose its foliage in winter. If placed in the open, a little top-dressing of peaty loam worked among the leaves, once a year, is very beneficial.

Anemone cernua (Japan).

Treat like *Anemone pratensis*.

Anemone Fannini (Natal).

This plant is very distinct in habit and perhaps should be classed more as an herbaceous plant, but its distinct and robust foliage looks very imposing as a background on a large rockery. It requires a rather shady position in good deep loam and sand, a little dry bracken being placed over the crowns in winter.

Anemone globosa (Hab.?).

Treat like *Anemone Pulsatilla*.

Anemone narcissiflora (N. America).

This plant requires similar treatment to *Anemone polyanthes*; it is, however, a better and more robust grower, with smaller flowers, and much less liable to injury by slugs.

Anemone nemerosa Robinsoniana (Britain, etc.).

This should be planted on a sloping bank facing west, but where it is visible from the other points of the compass, as the flower follows the sun in its course, and its beauty is, therefore, most fully exhibited when the plant is given this position.

Anemone palmata (S.W. Europe).

Plant this species in a shady place on the flat, facing south, in a deep soil of leaf-mould and peat in equal parts together with a dash of loam. Place the tubers 2in. below the surface and make the soil fairly firm.

Anemone palmata alba (S.W. Europe).

This variety requires quite different treatment from the type. Plant in a sunny, well-drained position in ordinary loam. In February, or before the leaf appears, top-dress with loam and sand in equal parts.

Anemone patens lutea (N. Europe, etc.).

Treat like *Anemone Pulsatilla*.

Anemone polyanthes (Himalayas).

Plant on the edge of a bog in partial shade where the roots and crowns will be dry in winter, in a compost of two parts of good strong loam, one of fibrous peat and one of leaf-mould, but without any sand. In wet weather the plants should be occasionally inspected, as, owing to their woolly character, the leaves and crown are very liable to rot under any accumulation of fallen leaves.

Anemone pratensis (N. Europe, etc.).

Valuable in the rock-garden, as it is quite as easy to grow as *Anemone Pulsatilla* and follows it in bloom. Plant on a sunny bank, sheltered from the north, in deep sandy loam, as in an exposed situation the flowers are often dried up by the late frosts and cold winds.

Anemone Pulsatilla (England, etc.).

This plant does best in places with a dry elevation facing east, in deep sandy loam, but if in a low-lying district should be planted full south in the same soil. The best time for planting is either in early spring, when the leaves are just beginning to show, or else directly after flowering, as the plant should not be disturbed during its dormant state in autumn and winter. If too luxuriant in growth, in early spring before the leaves are developed, fill in amongst the flower-stems with coarse grit to prevent excessive moisture, otherwise the plant often rots off at the collar.

Anemone sulphurea (Pyrenees).

Unlike *Anemone alpina*, *A. sulphurea* requires to be planted in a well-drained position in full sun, facing due south, in deep sandy loam, and does not make off-sets like it, but grows from a crown, which should be very carefully protected, from any chance of being hoed off during its dormant season, by a few sticks marking the place where it is. In autumn after the foliage has fallen, top-dress with equal parts of loam and leaf-mould, taking care to cover the crown out of sight.

Anemone vernalis (Europe).

This species should be planted, facing south, in deep sandy loam. After flowering, it should be promptly top-dressed, to make provision for the surface roots which it will then emit, or it will grow out of the ground and eventually perish.

Anemonopsis macrophylla (Japan).

A striking foliage plant, which should be planted on the flat by the side of a bog, in shade, in equal parts of strong loam, leaf-mould, and peat. In winter mark the site, as the crowns are very easily displaced.

Anomatheca cruenta (Cape of Good Hope).

Plant about 2in. deep in masses, on a well-drained sunny slope, where the bulbs will get thoroughly ripened in summer, in equal parts of sand and of poor loam.

Anthemis Aizoon, *see* **Achillea ageratifolia**.

Anthemis Biebersteiniana (Caucasus).

A plant of very easy culture ; growing well in almost any position, in deep sandy loam and leaf-mould with a little gritstone added.

Anthyllis montana and **A. m. rubra** (Alps.).

Two very useful plants for dry sunny banks or in the clefts of rocks. Plant in limestone and good rough loam ; sandstone will do if limestone cannot be obtained. An occasional top-dressing should be given.

Antirrhinum Asarina (Italy).

This is a useful species, as it will grow in any dry part of the rockwork or rock-garden. If a little seed is put into small holes in the stone, or sown in the crannies on the south side of an old wall, it will germinate, take root and grow freely ; or the same result, in the same situations, may be attained by placing a single plant in a hole made for the purpose, and allowing it to seed itself.

Antirrhinum glutinosum, syn. **molle** (Pyrenees).

A most useful plant for dry crevices, or ledges where the rain cannot get, though more tender than *A. Asarina*. In such a position it does specially well, growing where nothing else will live.

Antirrhinum sempervirens (Pyrenees).

Treat like *Antirrhinum glutinosum*.

Aphyllanthes monspeliensis (S. France).

This is a most interesting rush-like plant, and a good addition to the edge of the bog-garden, where the roots can be comparatively dry in winter. A full south position is necessary, if on a damp bottom ; but if on the dry side a little shade is needed. Plant in a compost of peat, sand, and loam, in equal parts.

Aquilegia: Alpina Section (Europe, &c.).

Same treatment as *Aquilegia glandulosa*.

Aquilegia: Cærulea Section (N. W. America).

Same treatment as *Aquilegia glandulosa*.

Aquilegia glandulosa (Siberia).

Plant in a well-drained position on the flat in full sun, facing south, in good retentive loam, making the bed good to a depth of from 12in. to 15in. In autumn, top-dress with good loam to which a little leaf-mould has been added.

Aquilegia: Remaining kinds.

Same treatment as *Aquilegia glandulosa*, without the top-dressing.

Arabis androsace (Asia Minor).

This plant does well in the chinks of rockwork facing full south, where it will be fairly dry in winter ; in sandy loam.

Arabis Halleri (Carinthia).

This species requires a little limestone mixed with the loam.

Arabis: Remaining kinds.

These all do well in any sunny place in sandy loam.

Arctostaphylos alpina (Alps and Pyrenees).

This is a very useful plant for the edge of the small bog-garden. It likes shade, but no water must stand near the roots in winter. Plant firmly in equal parts of peat, leaf-mould and loam. Top-dress in autumn. Care should be taken to peg down the shoots, so as to prevent the wind from breaking them off, as they are very brittle.

Arctostaphylos: Other species.

Of much easier culture, doing well on the shady side of the rockery in sandy loam and peat. These do not require pegging down, as they root well from layers.

Arenaria aculeata (Alps.)

Plant on a dry, sunny part of the rockery, wedged tightly between two pieces of sandstone, as it must be dry in winter. With the necessary difference in the stone used, it does well in a similar position to *Acantholimon venustum*.

Arenaria biflora (Europe).

Treat like *Arenaria rosani*.

Arenaria grandiflora (France).

Treat like *Arenaria montana*.

Arenaria Huteri (Tyrol).

A most charming little Alpine, growing freely when given a south-west aspect on the level part of the rock-garden in sandy loam. A top-dressing of sand and leaf-mould twice a year is of great benefit, as it enables the young shoots to root freely.

Arenaria longifolia (Siberia).

This *Arenaria* resembles a fine grass, and requires a rather shaded position on the dry side of the bog-garden. It is almost evergreen, and looks well when out of flower.

Arenaria montana (France and Spain).

Plant in a sunny, well-drained position on a slope where it can hang over a rock, facing east, south-east, or south-west, in equal parts of poor loam and either limestone or sandstone grit, leaving sufficient depth for the tap-root. When once the plant has become well-established it should be cut well back each year after flowering, in the month of August.

Arenaria rosani (S. Europe).

This plant requires a sunny position in the crevices of rockwork or on a dry bank, in light, sandy, gritty soil. The compost should be made as poor as possible, in order not to encourage a growth

so free that it becomes insufficiently ripened to withstand the damp of winter.

Arenaria stricta (S.W. Europe).

This species, unlike the other *Arenarias*, requires a damp, peaty soil, and does well on the shady side of a bog.

Arenaria tenuifolia (Alps).

Treat like *Arenaria rosani*.

Aretia Vitaliana, *see* **Douglasia Vitaliana**.

Armeria cæspitosa (Spain and Portugal).

A rare little plant, but of very easy culture, doing equally well on the flat part of the rockery, or wedged tightly between stones in full sun, in a deep bed of two parts grit and sand to one of loam. If this plant is put on the level, it is wisest to place a stone immediately behind it, so that it may be kept firm until established. Should the foliage become brown at any time, feel whether the cushion is firm or not, and if it seems at all loose, take the plant out at once and examine the tap-root; should a small white grub then be found in the heart of the root, the plant must be removed to some other part of the rockery, or if put back in the same place the grubs must be destroyed, the old loam taken out, and fresh loam substituted in its place.

Armeria juncea, *syn.* **setacea** (S. France).

This species make a nice companion for the above, and does well in a south aspect, in any poor loam, thriving best, however, on sandstone.

Arnebia echioides, *see* **Macrotomia echioides**.

***Artemisia Baumgarteni* (S.E. Europe).**

This is chiefly a foliage plant, its bright silvery leafage contrasting well with dark limestone. Plant between chinks of stone, facing full south, where it can be perfectly dry in winter, in limestone and loam.

***Artemisia glacialis* (Europe).**

This *Artemesia*, like the other smaller species from high latitudes, requires special care. Plant in a warm sunny place, on the high part of the rockery, in a mixture of limestone and rough loam. An overhanging stone will serve to protect this species and the other kinds like it from the winter damp that is so injurious to them.

***Artemisia lanata*, v. *pedemontana* (S. Europe).**

Treat like *Artemisia glacialis*.

***Artemisia spicata* (Switzerland).**

Treat like *Artemisia glacialis*.

***Asparagus acutifolius* (S. Europe).**

This plant is an evergreen, somewhat resembling a graceful little Pine. It looks exceedingly pleasing hanging from high up on rocks. Plant, if possible, where protected from north and east winds, in a site previously excavated to a depth of 18in. and filled in with a mixture of good loam, sand and leaf-mould, so that the roots may get well down. No manure must be used with the soil.

***Asperula hirta* (Pyrenees).**

Treat like *Asperula suberosa*.

Asperula suberosa (Greece).

Plant, facing full south, in sandy loam. In spring, and again in autumn, top-dress with sand and loam.

Aster alpinus and its varieties (Europe and N. Asia).

These plants are all of very easy culture in any ordinary garden soil, but care should be taken to top-dress them once or twice in the year, early spring being the most suitable time. If this is not done the plants will grow right out of the ground, the stems becoming quite bare, and, in most cases, eventually breaking off under the stress of wind. By using the top-dressing this is prevented and they will keep satisfactory for years.

Astragalus alpinus (Northern and Arctic Regions).

This species requires a very hot sunny place with plenty of stones and poor soil, in the proportion of two parts of stones to one of soil.

Astragalus argenteus (Pyrenees).

Plant in a well-drained position, facing full south, where it will be as dry as possible in winter, in deep loam and limestone.

Astragalus Tragacantha, syn. **Massiliensis** (Mediterranean Region).

This plant does well planted high up among rocks, wedged tightly, and kept as dry as possible, taking care to leave plenty of room behind for the tap-root to get well down.

Atragene alpina, see **Clematis alpina**.

Aubrietia deltoidea, in var. (S. Europe).

These well-known plants like a south aspect, and form pretty hanging draperies down rock-

clefts. They thrive in any ordinary garden soil, provided it is not too rich. If the old growths become straggly, they should be cut away, as the plant will spring afresh from the base every year.

***Azalea procumbens*, see *Loiseleuria procumbens*.**

***Bryanthus erectus* (Siberia).**

To ensure success with this rare little shrub, it should be grown in partial shade, facing southwest and sheltered from the north by a rock. It must be planted in a mixture of hard fibrous peat and white sand. When the plant becomes strong, peg it down to the ground and fill in among the shoots with the same compost as was used at first, taking care not to bury any of the young growths, but to leave the ends of each shoot 2 in. or 3 in. above the top-dressing; the plant will then root freely and form a nice compact bush. In spring and early summer plenty of water should be given, to ensure good wood for the following year. In hard weather a little protection, either by a branch or some bracken, is essential.

***Calandrinia umbellata* (Chili).**

This plant should be grown on every rockery for the sake of the profusion of crimson flowers which it bears during the summer months. It requires a very dry bank, in poor gritty soil, and should be grown from a little seed scattered among the rocks in spring.

***Callianthemum anemonoides* (Styria).**

The flowers of this plant are very pretty and early, often appearing before the leaves. Plant on

the flat facing full south, or on a sunny bank of the rockery, in equal parts of deep strong loam and limestone. It is most essential to keep this plant firmly pressed back in its place, as it is very apt to become bare of soil around the collar. As it is so sure to work out of the ground, top-dress immediately after flowering; or if top-dressing is impracticable, it is possible to replant the plant instead, as it flowers so early that this can be done before the hot weather begins. If these precautions are not taken the plant will shrivel up with the sun, as the roots will be entirely exposed. After flowering, again top-dress.

Callirhoe involucrata (N. America).

This plant cannot be over-estimated as a late summer flowerer. Plant in a hot, dry, sunny position on a sloping bank facing full south, where a stone behind will protect from the north in winter, in a well-drained, deep soil composed of equal parts of sand and loam.

Campanula Allioni (Piedmontese Alps).

This plant requires a south-west aspect, in a well-drained place, in three parts sand to one part of loam. The large proportion of sand is necessary, as the roots run freely under ground and require something light and easy to penetrate; moreover, the sand keeps the plant dry in winter and helps to maintain moisture in summer. Gradually, as the plant gains strength, it will begin to occupy other soil near by. Directly this escape from the original place is perceived, care should be taken to add

more sand to the soil where the young shoots are seen to be coming through, for in this way the plant can be kept in good health for many years without much trouble.

***Campanula cenisia* (Alps).**

This rare little Alpine needs special care until it is established, and should be planted as near the walk as possible, so that it can be easily seen. Plant in an elevated position, on a well-drained mound with a south aspect, in a mixture of equal parts of sand, leaf-mould, and loam, with a little grit added as an additional aid against undue moisture. A top-dressing should be given, both in spring and autumn. The autumn top-dressing should be composed of grit only, so that it may serve to absorb any moisture that may rest upon it during winter, and also prevent snails from becoming too well acquainted with the young shoots of the plant in spring.

***Campanula mirabilis* (Caucasus).**

This species is suitable for the back part of the rockery. Plant in an elevated position facing southwest, in deep loam and sand. Space should be left for the leaves to extend, for if small Alpines are too near it they will be smothered by the leaves of the *Campanula*, which expand over 1ft. in length in the season.

***Campanula mollis* (Hab.?).**

Plant with a tilt, in a crevice beneath an overhanging stone, facing full south, where the plant will be comparatively dry in winter, in poor sandy

soil. This plant sometimes comes up some inches from its original site. After flowering, top-dress right up to the collar of the plant with gritty loam, and in autumn top-dress with fine limestone. In spring this plant should be examined, as its collar is apt to become barred during winter. If, in the course of growth, the collar of the plant becomes pushed too far forward, it should be supported by a stone packed in with a little loam.

Campanula pulla (E. Europe).

Does well treated like *Campanula pulloides*, of which it is one parent.

Campanula × **pulloides** (Gar. Hyb.).

Treat like *Campanula rupestris*, except that a little limestone added along with the gritstone is beneficial, and that the top-dressing required should consist of fine leaf-mould and fine grit clear of dust.

Campanula rupestris (Hab.?).

Plant this rare species between stones in a sloping crevice, or on a bank over which it can hang, in a well-drained, sunny position, facing full south, in equal parts of loam and sand, or of loam, grit, and leaf-mould. In spring, and again in autumn, top-dress with a little fine grit freed from dust worked well among the shoots, as the foliage is very woolly. If the autumn top-dressing is made with fine carboniferous limestone, the foliage will be more farinose in the following spring.

Campanula Tommasiniana (Istria).

Treat like *Campanula Waldsteiniana*.

Campanula Waldsteiniana (Croatia).

Plant in a well-drained, sunny position on the flat, facing full south, in two parts of poor loam to one of grit and one of leaf-mould, thoroughly intermingled. In late autumn, when the plants die down after flowering, top-dress slightly, covering the whole surface where the plant is with equal parts of somewhat fine grit, without dust, and sandy loam. In spring, at the end of March or the beginning of April, top-dress again.

Campanula Zoysii (Austrian Alps).

A rare Alpine species not often seen on rockeries. This plant is of much easier culture than *Campanula cenisia*, though it requires almost the same position and treatment. It should be planted in a fully exposed position where no drops from overhanging branches can fall upon the place, for if a drip is allowed to fall near the plant it will die off at once.

Carlina acanthifolia (Mediterranean Region).

Plant in an arid position burnt up by the sun, in a deep pocket on the flat, filled with exceedingly sandy loam, together with a little fine chopped limestone, as this whitens the foliage and improves the flower, or in sand alone to a depth of 6in. over sandy loam beneath.

Carlina acaulis (S. Europe).

Treat like *Carlina acanthifolia*.

Cassiope fastigiata (Himalayas).

A plant worthy of a place on every rockery devoted to the cultivation of rare Alpines. In planting, a place should be made, 18in. deep and efficiently

drained, in a partially shaded spot, and filled with a thoroughly mixed compost of leaf-mould, white sand, and peat in equal proportions. The plant should be made perfectly firm in the prepared soil, which should then be covered all over its surface with fine white sand, afterwards well watered to settle it thoroughly down among the shoots. In spring, and again in autumn, great care must be taken to top-dress the plant properly with sand, leaf-mould, and a little peat. The young shoots should first be spread out and pegged down, then covered to within 2in. or 3in. of their tips with the top-dressing, and finally well watered. The young roots will soon make headway among the newly-added soil, and provide for the following season's flower.

Cassiope tetragona (Lapland).

Treat like *Cassiope fastigiata*.

Cathcartia villosa (Sikkim Himalaya).

Plant in a shady position where it is moist but not wet, facing west, on a slight slope, so that the rain does not lodge in the axils of the leaves in winter, in a well-mixed compost of one part loam to one of leaf-mould, together with a little rough peat and coarse sharp sand. In autumn, a little sharp sandstone grit should be strewn beneath the leaves around the collar of the plant, as a protection against winter wet and against snails. This plant must always be kept perfectly firm.

Celmisia spectabilis (New Zealand).

Plant in a well-drained place, as hot and sunny as possible, completely sheltered from the north

Directions for Specific Culture.

and east and from all winds, in a rocky cove with a rock-face behind and a rock in front, but with a sufficient area southwards and at least 12in. depth of a compost made with equal parts of rather retentive loam, leaf-mould, and sand, sieved free from dust and intermixed with a few pieces of charcoal and of hard peat. In a very hard winter tie up the plant and cover it with bracken or with the straw cover of a wine bottle. Should the hard weather be followed by much wet, this covering must then be removed, lest the centre of the plant should rot. If in a very dry season artificial watering is necessary, it must not be given over the foliage, or the centre of the plant will rot.

***Cerastium grandiflorum* (Eastern Europe).**

This plant is very useful to enliven and adorn any dark, dry corner of the rockery, for the bright silvery foliage and large pure white flowers are extremely effective when hanging down a crevice in such a situation. If given a north aspect the plant should occupy a well-elevated position, so that it may remain fairly dry during the winter. It requires poor, gritty soil.

***Ceratostigma plumbaginoides* (Shanghai, China).**

This plant does best in a sunny position, backed by a large rock or wall, either on a sloping bank or on the flat, with a full south aspect, sheltered from the north wind, in deep, poor loam, sufficiently sandy to permit of the plant running in it. In March or April dead foliage may be removed.

Ceratostigma Polhillii (Hab. ?).

This shrubby species does best on a well-drained, sunny slope facing south-west, and well sheltered from the north, in a deep soil of loam and sand in equal proportions. The position indicated is chosen so that the woolly stems may be well ripened in summer.

Chimæphylla maculata (N. America).

Plant on a well-drained slope facing south-west, and well sheltered from the north, in equal parts of peat, leaf-mould, and loam. In autumn top-dress among the twigs with a little sand and leaf-mould.

Chrysanthemum alpinum (Europe).

Of very easy culture, and useful for the Alpine garden. It likes a well-drained south position on a sloping bank, in a compost of sand and loam in equal proportions. This is a plant which often gets lost, though a little care in top-dressing once a year in the early spring would save it. Like *Aster alpinus*, it grows out of the ground, and when the dry winds come all the young roots perish. When the top-dressing is put on, the plant should be pressed well back into the earth, so as to make it firm.

Claytonia sibirica (N. Asia and America).

A plant suitable to be grown in a half-wild place among ferns, by the edges of paths through the rockery, where its running habit and profuse seeding will not matter, requiring, under any circumstances, a half-shady place either on a bank or on the flat, in any aspect and in ordinary garden loam.

Clematis alpina (Mts. of Europe).

This plant and its varieties are all valuable on account of their dwarf, compact habit and early summer flowering. Plant on a sunny bank, having an open north-west aspect, in equal parts of coarse sandstone, grit, loam, and leaf-mould.

Clematis × coccinea (Texas).

A useful plant on large rockeries, where it can ramble over rocks, being very effective in autumn with its long Lapageria-like flowers. Plant in any aspect in good loam.

Codonopsis ovata (W. Himalaya).

Plant on an elevated part of the rockery, in a well-drained place, behind a stone, in deep sandy loam. As the chief beauty of the flower lies inside its hanging bell and is missed if this is unseen, the plant itself should be given such a position that it may hang over the front of the stone when it is in bloom and permit the flowers to be seen into from below.

Colchicum libanoticum (Syria).

This little bulb should on no account be omitted from the rock-garden, on account of its early and continuous flowering from February to the end of March. It grows about 2in. high, and throws up four to five blooms varying from soft pink to pure white. Plant full south, in well-drained sandy loam. The very minute foliage never becomes unsightly.

Colchicum Sibthorpii (Greece and Armenia).

This is about the first bulbous flower to make its appearance in the autumn when the rockery is

dull and otherwise void of bloom. Treat like *Colchicum speciosum*.

***Colchicum speciosum* : in var.** (Caucasus).

Colchicum speciosum atrorubens follows *Colchicum Sibthorpii* in succession of flower and is desirable for the same reasons. There is also a most beautiful large white form of *Colchicum speciosum* to be obtained, which is one of the choicest ornaments displayed upon the rockery at any time and therefore particularly welcome at this time. All these *Colchicums* should be planted with a south exposure in good deep rich loam, so that the bulbs may become well ripened during the summer.

Conandron ramondioides (Japan).

This plant requires rather careful handling, especially in the resting season, which is from October to February. It does best in a north aspect, but, in any case, must be planted where the sun does not reach its very succulent and glossy leaves, or they will quickly turn brown. In such a position, a site must be chosen on the ledge of a rock where water can get at the roots only and then run clear away; or, if this is not available, on a sloping bank with stones behind so placed that they will both carry away water from the crowns of the plant and divert its course to the roots, placing the plant in a previously prepared compost of peat and loam from which all the fine has first been removed and a little sand afterwards added. In October or November all dead leaves must be removed as they fall, for they must not be broken away from the plant. As soon

as all the dead leaves are taken away from the crowns these should be covered with a stone to prevent any snow resting upon them during the winter. This stone should be allowed to remain in position until February. Before placing the stone in position a little dry fibrous peat should be placed about the plant, but not in contact with the collar of it, for this material will not only assist to prevent the crowns from damping off in the cold wet season, but will also be found highly beneficial in the early spring when the plants begin to put forth surface roots. This plant makes a good companion for *Ramondia pyrenaica*, and can also be flowered very freely in pots.

Coprosma acerosa (New Zealand).

A very curious straggling, almost evergreen, plant, with beautiful blue transparent oval berries, which hang on the plant nearly all the year; it is of very easy culture. If planted high up among rocks it affords a very fine effect. It is a strong-rooting plant, and room must be left among the stones so that it can establish itself. Plant in a full south aspect, sheltered from north winds, using a compost of gritty sand and leaf-mould.

Coronilla cappadocica (Iberia).

The best of the genus. An excellent plant where quick cover is desired in the rock-garden. It will do well in any aspect, if planted between stones, in a mixture of rough loam and sand together with a little broken limestone or sandstone.

***Coronilla iberica*, see *Coronilla cappadocica*.**

Coronilla minima (S.W. Europe).

This plant requires a sunny place, more than the above, in a warm sandy soil.

Coronilla vaginalis (Europe, etc.).

This species will do in a similar position and soil to *Coronilla minima*, but a little grit should be added when planting.

Cortusa Matthioli and **C. M. grandiflora** (N. Europe and Asia).

Plant on the edge of the bog-garden, or in any fairly damp place where a little shade can be obtained, in peat, loam, and leaf-mould.

Cortusa pubens (Transylvania).

This species requires a little more care; it is well suited for a small rock-garden close to the edge of a path, where it will be dry during winter. In early spring it will be found that the crowns have risen out of the ground in the course of the preceding winter; they must, therefore, be pressed firmly back into their places, and a little top-dressing of peaty loam added.

Cortusa villosa (Hab. ?).

Treat like *Cortusa pubens*.

Corydalis tuberosa (syn. *cava*) **albiflora** (Europe).

This comparatively little-grown plant is very useful on account of its early flowering, delicately graceful habit, and refined colour. It is of the easiest culture, thriving in almost any soil or position. The plant dies down after flowering, and is easily increased by breaking the hollow tubers into small pieces in the months of June or November.

Crocus (chiefly Mediterranean Region and Asia Minor).

There are a number of dainty Crocus species, which are very pleasing on the rockery during its bare season, and the foliage of which is not unsightly, as it either disappears soon after flowering, or may be pulled off at once without injury to the bulb. Mice are very fond of the bulbs, but their ravages may be largely prevented by the judicious use of a sprinkling of common paraffin oil over the surface under which the bulbs lie. The bulbs should be planted from 1 in. to $1\frac{1}{2}$ in. below the surface, and be lifted and replanted every third year.

Cyananthus inflatus (Sikkim).

Treat like *Cyananthus lobatus*.

Cyananthus lobatus (Himalaya).

Like *Cyananthus inflatus*, this is a beautiful plant when well grown, but neither is often seen in rock-gardens, in many cases, probably, being lost during winter. Plant in a dry situation, having a south-east aspect, in a compost of leaf-mould and sand, with a little grit and rough loam added, the loam being put through a sieve and all the fine taken out before what remains in the riddle is used.

Cyclamen Coum (Greece and Asia Minor).

Plant in a well-drained place in partial shade on a sloping bank with a south-west aspect, if possible with a rock behind to keep off the north wind—which is especially undesirable in the flowering season—using a compost of loam, leaf-mould, and sand in equal parts. The corms should be planted as near the surface as is consistent with their being made

perfectly firm: Although requiring partial shade, the corms must yet be sufficiently exposed to sun for them to become thoroughly ripened after flowering. In a wet season, care should be taken to remove the decaying leaves from the corms as they go to rest, as otherwise their centres are liable to become rotten under the influence of stagnant moisture. Before the flowering season top-dress around the corms, but not over them, with two parts of leaf-mould to one of loam, and make thoroughly firm. To prevent an unsightly blank in summer, a little *Menth: Requienia* may be planted between the corms, care being taken that it does not spread over them in its aftergrowth.

Cyclamen Coum vernum, *see Cyclamen ibericum*.

Cyclamen europæum (Central and Southern Europe).

This species requires different treatment, as it makes off-sets and runs in the ground. It is not partial to any aspect if properly treated. To plant, make a hole in the flat, 1ft. deep, and fill in with a mixture of limestone in $\frac{1}{2}$ in. to 1in. cubes, or old mortar rubbish, and an equal portion of loam, planting the *Cyclamen* 2in. below the surface and from 6in. to 8in. apart. After flowering, top-dress with lime rubbish and a little loam.

Cyclamen hederifolium album, *see Cyclamen neapolitanum album*.

Cyclamen ibericum (Caucasus).

Treat like *Cyclamen Coum*.

Cyclamen neapolitanum album (Central and Southern Europe).

Treat like *Cyclamen Coum*.

Cyclamen repandum (S. Europe).

Treat like *Cyclamen Coum*, adding a little dusted limestone to the compost used.

Cypripedium Calceolus (Europe, England).

This is purely a limestone plant. It will grow in any aspect. The best time for planting is the beginning of March. To plant, prepare a hole on the flat 1ft. deep and place 2in. of drainage in the bottom of it; next, mix well together a compost of one part of broken limestone in from $\frac{1}{2}$ in. to 1in. cubes and two parts of strong clayey loam; then, before planting, set a thin flag or slate vertically across the middle of the hole, sinking it so that its upper edge is 1in. below the level of the ground around the hole; now place a little compost against both sides of this set-on-edge slab, so that the crowns themselves may not actually touch the bare slate as they are taken and pressed firmly sideways against the compost near its top, being held there until more compost is pressed against them in turn, to keep them in position until all the rest of the hole is filled, when all should be made perfectly firm and the whole surface top-dressed with fine broken limestone. In autumn a top-dressing of fine broken limestone should again be given.

Cypripedium macranthum (Siberia).

Treat like *Cypripedium Calceolus*.

Cypripedium montanum (Oregon).

Plant the crown upright about $1\frac{1}{2}$ in. below the surface, in a moderately dry position on the

level with a south aspect, a stone being placed beside the plant in such a position as to secure partial shade for it, the compost consisting of fibrous loam, river sand, and fine peat in equal proportions. In spring, and again in autumn, top-dress with the same compost as that in which it was planted.

Cypripedium pubescens (N. America).

Treat like *Cypripedium spectabile*.

Cypripedium spectabile (Northern United States).

This species does well on the flat in partial shade with any aspect, even under trees. It should be given a site made $1\frac{1}{2}$ ft. to 2 ft. deep, preferably with a clay or peaty subsoil, with a drainage layer 2 in. deep of broken clinkers or brick-bats, the compost used being composed of equal parts of rough loam, peat, leaf-mould, and well-decayed horse manure mixed intimately together. Fill the hole to within 5 in. of the top, make fairly solid with the foot, spread out the roots on this, working the compost well amongst them, then fill in and raise to 6 in. above the ground level, and finally make fairly firm once more. Each autumn, when the leaves and stems have subsided, top-dress the whole surface with 1 in. of well-decayed horse manure.

Daphne Blagayana (Carniola).

This beautiful prostrate species requires very little care. Plant in any rather shady place, on a border of the rockery, or on the side of the bog-garden above the water-line, using a compost of

leaf-mould, sand, and peat in equal parts. In the month of August the young growths must be pegged down and top-dressed with the same compost that was used at first in planting, just leaving out the ends of the shoots; the layers will root freely into the compost and form a nice compact bush.

Daphne Cneorum (S. Europe).

This species does well on the south-east side of the rockery, in a slightly elevated sloping position, good loam and sand being used for it, and a little peat added if the soil is very heavy.

Daphne fioniana, syn. **oleoides** (S.W. Europe).

A species suitable for use in the background of large rockeries. Plant in a partially shaded place in good loam and peat. Like all the Daphnes, *Daphne fioniana* requires a well-drained position.

Daphne petræa, syn. **rupestris** (Tyrol).

A rare little Alpine which is a little difficult to grow; and this is perhaps the reason why it is not often seen in gardens. It is a beautiful little plant, and well worth cultivation. Great care should be taken in planting. A position should be chosen having a south-west aspect, with midday shade, but free from the drip of overhanging trees. Plant very firmly, in hard, fibrous peat and white sand, the peat being torn in pieces with the hand and the fine taken out before the sand is added; and after planting, work sand and peat among the shoots. Every autumn a top-dressing should be given, as the soil gradually washes away from the stems, leaving them bare. Personal experience proves that if the above

treatment is carried out no one will have much difficulty in growing it.

Dianthus alpinus (Alps of Austria, etc.).

Plant in a south aspect sheltered from the mid-day sun, using two parts of good fibrous loam to one of grit and one of leaf-mould. A top-dressing of leaf-mould and sand should be worked among the young growths once or twice a year, as the young growths do not root into the ground like some of the other species of *Dianthus*; they should be carefully lifted up, and the top-dressing be then carefully put under each shoot, taking care to leave out the tips; if this is done, the plant will greatly benefit, and soon become a fine clump.

Dianthus Atkinsoni (Garden Origin).

Plant near the eye, so that a watch may be kept against slugs, in a well-drained, sunny position on the flat, facing south, using a compost of two parts of fibrous loam, clear of all wireworm, to one of leaf-mould, and a little coarse, sharp sand. Top-dress several times a year with the same compost. This plant is very apt to over-flower itself; should it appear to be doing so, the number of flowers permitted must be reduced. Cuttings should be taken from this plant each year to ensure maintenance of stock.

Dianthus atrorubens (S. Europe).

Treat like *Dianthus cinnabarinus*.

Dianthus callizonus (Transylvania).

Plant on the flat part of the rockery, facing full south, using a light, sandy soil, as the plant forms

suckers and runs in the ground. In spring, top-dress carefully.

Dianthus cinnabarinus (Greece).

As this plant throws up long-stemmed, compact flower-heads to a height of from 12in. to 18in. it should be planted well back on the rockery, although the foliage keeps close to the ground. Plant in a well-drained, sunny position, on the flat or on a slope, in any aspect, in equal parts of poor loam and fine grit.

Dianthus cruentus (Greece, etc.).

Treat like *Dianthus cinnabarinus*.

Dianthus Freynii (Hungary).

This is probably the smallest *Dianthus* known, but still interesting on account of its bright little flowers and neat, compact habit. Plant on a well-drained and dry bank, in fine, sandy loam. Like the other kinds of *Dianthus*, this plant should be top-dressed once or twice in the year. Spring is the best time for dividing or replanting it.

Dianthus glacialis (Alps of Europe).

This is perhaps the rarest and certainly the most difficult to grow of all the Pinks; indeed, a really good clump of it is probably extremely uncommon. Plant on a sloping bank with a south-west aspect, in a mixture of loam, leaf-mould, and as much sand as is necessary to keep the compost open. The plant should be top-dressed once or twice a year, or as often as the soil gets washed away from it, the top-dressing being put carefully among the young

growths. In autumn, use a top-dressing composed almost altogether of grit with the fine sifted out, so that any moisture may be absorbed which would otherwise rest on or near the plant during the damp season, and especially in the months of November and December, when the risk of injury from this cause is greatest. In spring a sharp look-out must be kept for snails, as they are particularly fond of this plant.

Dianthus neglectus (S.W. Europe).

Plant this species in a well-drained place on the flat, facing full south, in equal parts of grit or limestone and of loam, but without any sand. In early spring, and again after flowering, top-dress carefully. Immediately after flowering, the flower-stems should either be pulled clean out or else be cut close off, as by doing this ripening for the next year's flower is promoted.

Dianthus Seguieri (S. and E. Europe, and Asia).

This species is valuable for its late-flowering qualities. Treat like *Dianthus cinnabarinus*, with the exception that this species may be partially cut back in spring.

Diapensia lapponica (Northern Regions).

Plant in partial shade, in a well-drained place on the flat, facing south-west, in fibrous loam, leaf-mould, and sand in equal proportions. In spring and autumn a top-dressing of the same constituents, worked among the individual twigs, is most essential. The autumn top-dressing should have a large

proportion of sand, in order to absorb moisture more freely.

Douglasia Vitaliana (Pyrenees).

Treat like *Androsace carnea*.

Draba dediana (Spain).

Treat like *Draba Mawii*, which it resembles : it is, however, a better grower than that species.

Draba Mawii (Spain).

The most difficult species of *Draba* to grow and flower. Plant tightly between chinks of rock on the south side of the rockery where it will get full sun, as it requires to be dry during winter : a little limestone added to the soil is very beneficial.

Draba pyrenaica (Mts. of S. Europe).

This is purely a rock plant, and likes similar treatment to *Draba Mawii*, but requires gritstone in the place of limestone. Once or twice a year it should be top-dressed with fine grit worked well amongst the foliage. In autumn this top-dressing is especially useful and important, as a safeguard against that wintry damp by which the plant is so liable to be injured. Before application, all dust must be taken out of the grit, lest any moisture should be encouraged by it to stand among the foliage of the plant. With such a top-dressing the plant may be maintained in a satisfactory condition throughout the resting season.

Draba : Remaining kinds.

All the other species of this genus thrive on any well-drained part of the rockery, or on a sandy bank.

Dryas Drummondii (N. America).

Plant on the edge of the bog, in moist peaty loam. This species will grow well in full sun, if on a damp bottom ; if on the dry side of the bog, a little shade is required.

Dryas octopetala (Europe, Britain).

A more sun-loving plant than the preceding, doing well on the south side of rockwork in gritty loam and sand.

Dryas tenella (Hab.?).

This species is suitable for small rockeries, and should be planted close to the path in shade, using a mixture of peat, loam, and grit in equal parts.

Edrianthus serpyllifolius (Dalmatia).

A species of somewhat creeping habit and procumbent growth. Plant at the bottom of a rock, on a dry south bank, over the surface of which it can spread. *Edrianthus serpyllifolius* does not require to be planted between stones unless the part is on a level with the walks and in a damp situation ; but if this is the case, it should be planted between stones, filling in with grit and loam in equal parts, and placing the stones so as to allow the plant to creep over their surface. In spring, use a little leaf-mould and sand as a top-dressing, to enable the young shoots to work into the soil.

Eomecon chionantha (China).

Plant in partial shade on the flat in the bog, facing north, in equal parts of peat, leaf-mould, and loam, the site being prepared to a depth of from

12in. to 18in. In spring top-dress with the same compost. This plant tends to grow very freely, and should be restrained from overrunning weaker plants.

Epigæa repens (Northern United States).

A plant seldom found in the Alpine garden, although it would do well in many places there. As it does not require sun it should be grown on the shady side of rockwork or on a bog, in a place which is not too damp in winter, and where it will be sheltered from the north wind by a rock or shrub. Plant in a compost of hard, fibrous peat, leaf-mould, and loam in equal parts, and surface with a small portion of silver sand, worked through the whole plant. Firmly peg down all the shoots, so as to enable it to root from the growths. In early spring cover with a top-dressing of leaf-mould, taking care not to bury the leaves. The pegging down and top-dressing must not be neglected or the plant will soon die out. In summer, water freely.

Epimedium colchicum (Hab. ?).

Plant in a well-drained, sunny position, facing full south, in light, sandy loam, as it runs, and the leaves colour better in autumn in poor soil. In November, or in early spring, the old foliage may be removed and a little top-dressing of fibrous loam applied.

Epimediums: Other species.

Treat like *Epimedium colchicum*.

Epipactis californicum (California).

Plant in partial shade by the side of a rock on the flat, facing west, south-west, or even north. Make

a hole 12in. deep, with 2in. of drainage at the bottom. Prepare a compost consisting of retentive loam, leaf-mould, and broken limestone, in equal parts, together with a few pieces of hard peat in 2in. cubes. Fill in the hole to a depth of 8in. with the prepared compost, and then plant close to the rock, so that the root almost touches it ; level up with compost, and finally surface with a little fine limestone. In March top-dress with a little loam and limestone.

Erigeron trifidus (N. America).

Plant in a well-drained, sunny place on the flat, facing south-east, in equal parts of loam, leaf-mould, and grit. In spring, and again in autumn, top-dress with the same compost.

Eritrichium nanum (Alps).

The great difficulty experienced in growing this Alpine gem may be much reduced if the following instructions are carefully observed. A nice, sunny fissure should be selected on the rockery, not too high up, and yet where the plant will be close under the eye, in such a position that moisture can be given to the plant during the growing season without the foliage or face of it being damped at all, and where it can be kept perfectly dry from September until January. During these months it is quite dormant, not beginning to grow until towards the end of January, and even then no water must be given for fully a month after signs of life begin to appear, as there will be quite enough moisture for the roots without any artificial supply. To plant, prepare a

compost of hard fibrous peat, leaf-mould, and grit, in equal parts ; this should be broken up fine, and put through a $\frac{1}{4}$ in. sieve, a fine sieve being then used to take out the dust. Add a little sand to what remains in the sieve, and mix well together. This makes an admirable compost for the roots, which are almost like silk and require something fine to work into. Having prepared this compost, place a stone in a slanting position on the site selected, inclined backwards and downwards towards the bank, put a layer of compost on the stone, lay the plant on this and add more compost, so that the roots may be well covered up ; then lay another stone upon the compost and press it firmly down, taking care not to bring the stone right over the plant, but to leave just enough room for the soil to show between the stone and the plant, so as to ensure that the neck itself of the plant is left free, afterwards filling in the whole space behind the stones, and finally setting another flat stone on the top of all, so placed and inclined that it will hang a few inches over the plant at a distance of 6in. above it, and at the same time prevent any water from ever falling on the face of the plant, and direct any water which may fall upon itself straight to the roots of the plant. In this way a dry atmosphere for the foliage will be secured, while the root will have ample moisture from behind. In autumn a stone should be placed over the whole plant, and be left over it until towards the end of January, when it should be removed, as the plant will then begin to require water again. In spring a little top-dressing should be given.

Erodium chamædryoides (Balearic Islands).

Treat like *Erodium chrysanthum*.

Erodium chrysanthum (Greece).

Plant in a well-drained, sunny place between rocks on a slope facing full south, where there is plenty of depth for the tap-root to descend, in equal parts of poor loam and grit. In spring examine lest frost should have loosened the plants held amongst the rocks, and if so, re-wedge, under any circumstances top-dressing with the original compost.

Erodium guttatum (Mediterranean Region).

Treat like *Erodium chrysanthum*, except that a little limestone should be added to the compost in which this species is planted.

Erodium Reichardi (Majorca).

This species is only partially hardy, and requires a sheltered place where it is both shaded from the midday sun and fairly dry in winter.

Erodium Sibthorpiatum (Orient).

Treat like *Erodium chrysanthum*

Erodium trichomanefolium (Spain).

Treat like *Erodium chrysanthum*.

Erpetion reniforme (Australia).

Plant in a shady place with cool bottom, on the flat facing north, in equal parts of peat and leaf-mould. In spring, and again in autumn, top-dress with original compost, worked well among the foliage.

Erysimum Kotschyannum (Asia Minor).

This species requires the same treatment as *Erysimum pumilum*, but is a better grower.

Erysimum pumilum (Switzerland).

The true form of this interesting little Alpine is very rare and requires special care. Plant, tightly wedged between pieces of limestone, in a hot dry place, in limestone and strong loam, without any sand or leaf-mould.

Erysimum ; Remaining species.

All the other *Erysimums* grow well in any sunny place in ordinary loam.

Erythræa aggregata (Hab.?).

Treat like *Erythræa Massoni*.

Erythræa Massoni (Azores).

Plant in a moist, shady place on the flat, facing either east or south-east, in equal parts of leaf-mould and loam, together with a little fine peat and sand, as this is a plant which runs and roots. In spring, before growth begins, in the month of March, and again after flowering in autumn, top-dress with original compost, worked well in. After flowering, remove all old flowering shoots, as they are liable to be twisted by the wind.

Erythronium giganteum (Washington Territory).

Plant in partial shade facing west, or even north if the site is a dry one, in a compost of loam and leaf-mould in equal parts, together with a little sand. The *Erythronium* should be planted 6in. deep, in a bed of the prepared compost made 9in. deep, so

that it can be over-planted with a surface-rooting plant, such as *Mimulus cupræus*.

Erythronium grandiflorum (N.W. America).

Treat like *Erythronium giganteum*.

Euphorbia pilulifera, syn. **capitata** (Tropics).

Plant in a dry, sunny position on the flat, facing full south, in equal parts of poor loam and sand. In March, or earlier if weather permits, top-dress with a little sand.

Eurybia gunniana, see **Olearia gunniana**.

Eurybia ilicifolia, see **Olearia ilicifolia**.

Fritillaria armena (Armenia).

Plant 1in. deep, in a well-drained, sunny place, on the flat or on a sloping bank, with a little sand about each bulb, making the surface perfectly firm with the hand after planting.

Fritillaria delphinensis Moggridgei (Maritime Alps).

Treat like *Fritillaria armena*, except that the bulbs of this species should be planted $1\frac{1}{2}$ in. below the surface. This species may be dibbled in among *Gentiana acaulis*, *Epimediums*, *Sedum lydium*, or other carpeting plant.

Fritillaria recurva (California).

This species needs a special place. Plant in a well-drained position, facing full south and well sheltered from winds, making a hole 8in. deep, and planting the bulb, entirely covered with white sand, 3in. below the surface, in a compost of peat, leaf-mould, and white sand in equal proportions,

making firm after filling in the hole. *Gaultheria procumbens* forms a nice carpet for this plant.

Fritillaria ruthenica (Caucasus).

Treat like *Fritillaria delphinensis* Moggridgei.

Galax aphylla (North America.).

This little bog-plant requires a shady position, in equal parts of peat, leaf-mould, and loam. Top-dress in autumn.

Gaultheria nummularioides (New Zealand).

A shade- and moisture-loving plant. Plant on the north side of the rockery, where it can hang down or creep over a rocky bank close to the edge of water, in equal parts of peat, loam, and grit. In spring this plant must be top-dressed, working the compost well among the young growths, which will then root freely and soon form nice cushions. The foliage is much nicer if the sun cannot reach it, as otherwise it turns quite brown.

Gaura coccinea (Colorado).

A useful plant at the back of the rockery in late summer, having slender, gracefully-arching flower-spikes and pretty flowers. Plant, in a well-drained sunny place, facing full south and sheltered from winds, in deep fibrous loam.

Gentiana acaulis (Alps and Pyrenees).

This species likes a little limestone mixed with the soil. In any damp place it is well to drain the spot where *Gentiana acaulis* is planted, as then the roots will be warmer and the crowns more likely to ripen for flowering.

Gentiana arvernensis (Europe).

Treat like *Gentiana Pneumonanthe*.

Gentiana bavarica (Central Europe).

Treat like *Gentiana verna*.

Gentiana frigida (Europe, etc.)

The site chosen for this plant must either have or be provided with a clay subsoil, 6in. below the surface. Plant on the flat, facing north, on a bed with a concave surface, placing 2in. of drainage at the bottom of the hole and filling in with a compost of loam, peat, and leaf-mould in equal parts, the whole compost being well mixed. After planting, make firm and surface with white sand, finally watering well. In early spring, as soon as the leaves appear, begin to water, and continue to do so two or three times a day, until the flower-buds are seen, when watering should be discontinued. After flowering the plant should be top-dressed.

Gentiana Frœlichii (Carinthia).

Treat like *Gentiana Pneumonanthe*.

Gentiana imbricata (Europe).

Treat like *Gentiana verna*.

Gentiana Pneumonanthe (Europe, Britain).

This Gentian requires a little shade and does well on the edge of the bog-garden in rather peaty soil.

Gentiana pyrenaica (Pyrenees).

Treat like *Gentiana verna*.

Gentiana septemfida cordifolia (Asia Minor).

This Gentian prefers a little shade and also rather peaty soil.

Gentiana verna (Europe, England).

Gentiana verna, like the others of its section, requires rather special treatment to ensure success. A great many people complain of losing their Gentians, especially *Gentiana verna* and *Gentiana bavarica*, after they have seen them flower once. The reason of this is very easily explained. When the plants are sent from a nursery they are generally set with flower-buds, and therefore will probably develop under almost any circumstances. After the plants have been received they are planted in some unfavourable position, indeed often in hopelessly unsuitable situations. The first year they flower because they cannot do anything else; but they have no chance to root, since place and soil are not what they require. After they have done flowering, the stems are all that are left to be seen, for the leaves will all have dried up, and finally the plant dies. The position which suits them best is full south, but care must be taken in this instance to have a moist, sandy, loamy bottom, in a place where they can be watered every day during the summer months. If this watering cannot be done, then a more shady place must be chosen and the bed must be made level or concave, so that the water does not run off too quickly; but although they like this moisture, the bed must be well drained. Use a mixture of two parts of rich loam and one of fine white sand mixed well together. After about 3in. of drainage has been put into the bed, fill in with the mixed compost to a depth of 4in. to 6in., tread firmly down, then add 1in. of white sand spread

evenly over the surface of the bed, and again tread all over to make as firm as possible ; then level the surface and begin to plant, taking care that in planting the sand goes well down to the roots. As each plant is put in its place, it must be pressed as firm as possible and almost covered out of sight. After the plants are all in, dress the surface again with a thin covering of sand, water with a fine rose, and then leave for a few days to settle. If very hot, in order to keep the sun from drying the soil too soon, a few branches may be laid over the bed and left on for a week, by which time the plants will have got over their check and the branches may be removed with safety. During the hot weather, a good watering will be needed every third morning. After the plants have flowered they should be top-dressed, first nipping off the old flower-stems, for these are very fine and the wind has great power over them and will soon twist and break them off, as in cultivation they are without that support which the grass of their native meadows and wild pastures affords. Besides being indispensable to renewed growth, a top-dressing of sand and leaf-mould in equal parts is also of great value to stay the wiry shoots from blowing about and becoming broken off. If leaf-mould cannot be obtained for this purpose, a mixture of one part loam to three parts sand should be used instead. Before use the loam or leaf-mould should be put through a $\frac{1}{2}$ in. riddle, and only the part which comes through employed to top-dress with. In top-dressing, fill the plants well up to the shoulder, merely leaving out the tips. This

top-dressing must be done with the hand, so that the material may be well worked into the plant, and not spread on with a trowel or spade as is sometimes done. All the time the top-dressing is proceeding, continue to press the plant firmly into the ground, and the results will be all the better the following flowering season, for the shoots will at once start to root into the fresh compost, and in the course of a year or so make fine healthy clumps full of flower.

Geranium argenteum (N. Italy).

A plant of very easy culture which gives a fine effect when planted between the crevices of rocks in equal parts of limestone and loam, plenty of room being left for the roots to get well down.

Geranium cinereum (Pyrenees, etc.).

Treat like *Geranium argenteum*, but this species, being a less vigorous grower, is better fitted than that plant for small rockeries; the colouring of its flowers is also more refined.

Gerbera Jamesoni (Transvaal).

This plant will grow planted at the base of a large rock facing due south in a position completely sheltered from the north and east, in a deep soil consisting of two parts of leaf-mould and somewhat more than one part of sand. Planting should be done in early spring, so that the plant may get well established before called upon to face the severity of an English winter. If winter promises to be very severe, a little bunch of bracken should be placed over the crown and pegged firmly into position.

Geum reptans (Switzerland, Germany, etc.).

A very interesting Alpine, of quite easy growth on sunny, sandy banks, and indeed doing well in pure sand, in which it makes runners like a Strawberry; these should be pegged down to enable them to root more freely.

Geum Rossi (N. America).

A useful rock plant, which does well in a sunny place, in ordinary loam.

Geum Roylei (Himalaya).

Treat like *Geum Rossi*.

Glaucium Fischeri (Gar. Hyb.).

Treat like *Glaucium flavum tricolor*.

Glaucium flavum tricolor (Europe, N. Africa, and W. Asia).

A somewhat strong-growing plant, but beautiful in foliage and flower from June until frost, and very suitable for a place at the back of rockeries. Plant in a dry open position on the flat, facing full south, in poor sandy loam with some lime rubble. In late autumn cut down within a few inches of its base, and the plant will probably form another rosette or young growth for the next year. As the plant is most often biennial, it is wise to gather a little seed annually.

Globularia Alypum (S. Europe).

An interesting and rare Alpine. This species grows bush-like and bears comparatively large flowers on long stalks. It requires a rather sheltered place in full sun. Plant in a well-drained part, in two parts of rough loam to one part of sandy grit and one part of hard peat. If the climate is at all a

damp one, peat should not be used, but a little limestone instead.

Globularia nana (S. Europe).

This little Alpine should have a full south aspect either on the flat or behind a rock, so that the roots can get well down and the foliage hang over its face, in equal parts of poor sandy loam and grit. Planted in this way it forms quite a compact carpet. A top-dressing of sand and leaf-mould once or twice a year is very beneficial to the young roots. There is a white form of this species, which is very rare; it requires similar treatment, but is not quite so hardy and must be sheltered from wet during winter and also from north winds.

Globularia : Other kinds.

There are other species worth growing, but they are of easy culture in any sunny place and ordinary garden loam and sand.

Gnaphalium grandiceps (Alps).

This plant is not so easy to grow as the Edelweiss, a more sheltered place being required. It is only fitted for the rock-garden, and should be given a nice sunny nook, facing south and protected from the north, where it will be dry in winter.

Gunnera magellanica (Southern Chili).

On account of its dwarf creeping habit and bright evergreen foliage this species is well adapted to be grown in shady places on the side of a bog or near the edge of water. Peaty soil suits it best, although it will grow fairly well in ordinary garden loam.

Gypsophila cerastioides (Himalaya).

This plant requires a little more attention than the other species, and appreciates a full south aspect in gritty and poor loam.

Haberlea rhodopensis (Roumelia).

Plant with a slight tilt in a sheltered shady position between stones in a funnel-shaped cavity on a sloping bank facing either east, north-east, or north-west, but not wind-swept, in equal parts of rough peat and pieces of loam both from 2½ in. to 4 in. square. No sand nor leaf-mould is needed for this plant, and no limestone must be used on any consideration whatever. Prepare the inset between the stones to a depth of 8 in. or 10 in., taking care to wedge well at the back, so that no cavity is left, with 2 in. of good loam; make this firm, and insert the plant against its surface, filling around with the mixed compost and again make all perfectly firm. A little fresh compost carefully placed under the leaves and made firm once or twice a year is very necessary.

Helianthemum lavandulæfolium (Mediterranean Region).

This species is not quite so hardy as some of the others, and requires to be planted between stones in a more sheltered nook facing full south. A little limestone added improves the appearance of the foliage.

Helianthemum lunulatum (Alps.)

This plant will do well under the same conditions as *Helianthemum lavandulæfolium* if protected from the north-east wind.

Helonias bullata (N. America).

A plant which requires a rather shady place on the side of a bog or on the damp part of rockwork in any ordinary peaty loam. In autumn care must be taken to clear away the old leaves and to place a little dry peat around the crowns of the plant; this will prevent its damping off in case of a very wet winter. The peat need not be removed in spring, as the crown will soon push through, and the peat makes a nice dry bed for the new leaves to rest upon.

Hesperochiron pumilus (Idaho to Oregon).

This plant requires a sheltered position in partial shade from ten to twelve o'clock, on the flat, facing south-west, in equal parts of leaf-mould and loam together with a little fine peat and sand. In spring, and again in autumn, top-dress well among the shoots with the original compost.

Houstonia cærulea and **c. alba** (Virginia).

These two plants look well together and should be grown on every rockery. They require similar treatment to *Myosotis rupicola*. Plant in a mixture of leaf-mould, sand, and good loam in equal parts. The plants must not be disturbed or watered after the month of September, when a stone should be placed so that it may overhang them and thus afford protection from the rains of winter, which are very liable to cause the loss of the plants unless they are carefully guarded in this way. In spring a little top-dressing is required, with similar compost to that used in planting.

Hutchinsia petraea (Central and Southern Europe, Britain).

Treat like *Nocca alpina*, except that, being a less robust grower, it may be planted in a more confined place between stones.

Hypericum ægypticum (Egypt).

Treat like *Hypericum Coris*.

Hypericum Coris (Levant).

This plant requires to be planted in a dry sunny situation between stones or just behind a stone, so that as its foliage grows it will hang down over the rock-face, in equal parts of rough loam, sand, and grit.

Hypericum crenulatum (Cilicia).

Treat like *Hypericum Coris*.

Hypericum cuneatum (Hab. ?).

This species should be given a very choice position near the eye, with a little stone in front of it to keep the soil from washing away from it, in a dry, sunny place on a bank, facing full south, in equal parts of loam, leaf-mould, sand, and grit. In early spring a vigilant watch must be kept against slugs. In autumn top-dress around the collar of the plant with fine grit.

Hypericum empetrifolium (Greece and Asia Minor).

Treat like *Hypericum Coris*.

Hypericum nummularium (Pyrenees).

This species does well on a sunny bank, clear of stones, where it can run in the soil, which must therefore be more sandy than for most of the *Hypericums*.

Hypericum olympicum (Mt. Olympus).

This species requires a somewhat sheltered spot on the border or rockwork in good loam. It may be cut down directly after flowering.

Hypericum olympicum gracile (Asia Minor).

Treat like *Hypericum olympicum*, although this variety deserves a choicer position than the type on account of its finer and more beautiful foliage.

Hypericum repens (E. Europe).

Treat like *Hypericum Coris*.

Hypericum reptans (Himalaya).

Treat like *Hypericum Coris*.

Hypericum tomentosum (Mediterranean Region).

This *Hypericum* is not quite hardy, and should be planted where a little protection will be had in winter, as its woolly foliage holds moisture.

Hypericum: Other kinds.

There are several smaller species which all do equally well, in a full south aspect, in ordinary gritty loam.

Incarvillea compacta (N.W. China).

Plant, in a well-drained, sunny position, on the flat facing south, in fibrous loam from 15in. to 18in. deep, the crown being placed 1½in. below the surface. In spring, top-dress with fibrous loam.

Incarvillea grandiflora (China).

Treat like *Incarvillea compacta*, except that this species, being a smaller plant, should have a position nearer the eye.

Iris cristata (S.E. United States).

This, like the other little bog Irises, *lacustris* and *verna*, requires to be well looked after. If planted near anything which grows to any size it will soon be lost. It should be planted in partial shade, on the edge of small bogs or near the path-sides, in dampish peaty soil. If planted on a damp bottom it should, however, be placed in full sun, so that its growth may ripen better for the following year's blooms. In early spring, and again in autumn, top-dress with a mixture of peat, leaf-mould, and loam, worked well among the roots.

Iris Douglasiana (California).

To grow and flower this Iris well it must be planted in an elevated position, pressed close to a stone facing south or south-west, and then filled in with a compost of leaf-mould and rough loam mixed with a little grit.

Iris lacustris (N. America).

Treat like *Iris cristata*.

Iris orchioides (Mts. of Turkestan).

A beautiful and early-flowering bulbous species, so easy to grow and increase that no garden should be without it. It requires a similar position to *Iris Douglasiana*. Plant in a well-drained place, close to a rock or under a south wall, where the bulbs can get properly ripened during the autumn, at a depth of 4in., in equal parts of limestone and good loam.

Iris paradoxa (Georgia and N. Persia).

This is a beautiful species, of comparatively easy culture. Plant where it will be dry in autumn and winter, in full sun, in sandy, gritty loam.

Iris verna (United States).

Treat like *Iris cristata*.

Isopyrum thalictroides (S. Europe).

Plant in a sunny position on the flat, facing south, where it will not be overrun by coarser plants or disturbed after it loses its foliage at the beginning of June, in sandy loam.

Jasione perennis (S.W. Europe).

Rather a strong grower, but effective for larger rockeries, as it flowers all through the summer. Plant on a bank facing south, in sandy loam. After flowering, top-dress with equal parts of grit and loam, taking care not to bury the little rosettes. After they have flowered, the old flowering-stems should be carefully clipped off, as if pulled away the young growth often comes with them.

Jeffersonia binata (Tennessee).

Plant in a shady position on the flat by the side of a bog, in any aspect, in equal parts of peat and loam. In autumn, after the foliage dies down, top-dress with a little peat.

Lathræa clandestina (Europe).

A curious parasitic plant, the flower of which lasts for weeks when out. Plant in autumn, in shade, on the surface roots of a Poplar, using a

compost of loam, leaf-mould, and sand, in equal parts. Should, however, no Poplar roots be near the surface in the required position, a portion of the soil there must be removed until they are exposed, and the compost added and well intermingled among the roots before planting. After the plant is put in position, a little sand should be added, and the plant completely covered with the sand and compost, a good watering being given last of all. Every spring top-dress with leaf-mould and sand.

Leontopodium alpinum (Alps).

Better known by the name of "Edelweiss." In many places this is found difficult to grow, chiefly owing to the mistaken impression that it will only do so on a very high place between rocks. Rightly cultivated, it will grow almost as freely as the common *Cerastium tomentosum*. It likes a dry sunny position and nice light sandy soil, and can be raised freely from seed. Sow in the autumn in a dry warm place, and transplant the young plants in the month of May. If the old plants are taken up to replant, this also should be done in April or May, and not in the autumn.

Leucojum autumnale (Portugal).

Plant 1 in. deep in a well-drained sunny position in light sandy soil. Where the soil is retentive the bulbs should be surrounded with 1 in. of sand.

Lewisia rediviva (California).

As this plant likes to be well ripened in summer, it will grow well in full sun if plenty of water is assured to its roots; plant, therefore, in a moist

place in full sun, in a compost of strong loam and leaf-mould, care being taken before planting to put a little clay at the bottom of the hole in which the plant is going to be placed, so that sufficient moisture may be retained by it during the resting-season without any overhead watering. Immediately before flowering, the plant loses all its leaves and looks as if dying; water must then be partially withheld until the flower makes its appearance, when the plant may again be watered freely until it has done flowering and goes to rest.

Lewisia Tweedyi (California).

Plant on a knoll or on a table-land behind a rock, on a dry sunny bank facing full south, in deep good loam and grit in equal proportions. In March, top-dress around the collar of the plant with grit to prevent slugs or snails eating the young growths.

Lilium japonicum, syn. **Krameri** (Japan).

A somewhat difficult Lily to grow, requiring both special soil and treatment to succeed well. It should be planted on the north side of a hedge or wall, and must be sheltered from the strong winds as much as possible. To plant, take out the soil to a depth of about 18in., put in 6in. of drainage consisting of broken stones or bricks, and cover this with 2in. of rough loam; then make a mixture of one part of rough loam to two parts of white sand, and a small portion of dried and well-decayed cow-dung, and turn the whole over two or three times so that it may become well mixed; spread a layer of this prepared material 3in. to 4in. deep and plant in the Lilies,

pressing them firmly down and covering their whole surface with fine white sand, finally filling in with the remainder of the compost and making all fairly firm with the foot. It is worthy of note that this Lily is most useful for cutting, the flowers being sweet-scented and not too large. The bulbs are of a better constitution than those of *Lilium auratum*, and will last much longer if proper compost is used.

Lilium Parryi (California).

This is a most difficult Lily to grow satisfactorily. It requires a dry, well-drained situation, in rough loam and white sand; after the bulb is put in, it should be covered with an inch deep of sand, and then surfaced with 3in. of loam and sand.

Lilium Washingtonianum (California).

This Lily must be planted in a dry, well-drained situation, such as may be found close to the north side of a Yew hedge, the bulb being inserted at a depth of 3in. in a compost of peat, white sand, and loam, in equal parts, taking care not to press down the compost over the bulb too hard upon it, as it should be left free to run in the soil. Under the above conditions success is almost certain.

Linaria alpina* and *a. rosea (Alps of Europe).

Useful for either limestone or sandstone rockeries. Plant on a dry, sunny bank, between the chinks of stone, facing full south, in poor sandy loam. After flowering, the flowering stems should be cut away, as if left on they often break down the crown. A little seed should be saved and strewn each year.

Linnaea borealis (Europe, etc.).

This plant likes a shady place, with a rather damp bottom on the side of a bog, or on the north side of rockwork near a pathside, where it can have attention, in peat, loam, and sand. Once or twice a year a top-dressing of leaf-mould and sand should be given so that the young tendrils may root freely. Should wind loosen the shoots, these must be carefully pegged down.

Linum alpinum (Europe).

Plant on a sunny bank, facing either south or south-west, in poor sandy loam. After flowering, cut away the old stems, as they are apt to loosen the tap-root under stress of wind and twist the plant off. At the same time top-dress with sand to assist the plant to run in the ground.

Linum arboreum (Crete, etc.).

A very handsome rock plant, far too little grown, and especially valuable for its flowering in late summer. Plant in a sunny aspect on the flat, facing south or west, in deep, strong loam intermixed with an equal part of either grit or limestone. This plant may be prolonged in flower by nipping off the old flowers before they begin to seed. After flowering, cut back freely.

Linum flavum (Hab.?).

This species is valuable, as it is earlier and dwarfer than *Linum arboreum*. Treat like *Linum arboreum*.

Linum narbonense (S. Europe).

This plant is fine on a large rockery under similar treatment to the preceding species.

Linum salsoloides (S.W. Europe).

A useful plant for dry, sunny fissures of rock-work facing full south. Plant tightly between stones, in two parts of grit to one part of loam and one of sand. The plant should be so placed that sufficient room is left for it to hang freely over the stone in front of it.

Lippia nodiflora, syn. **repens** (Tropics).

Useful for covering a surface under-planted with bulbs. Plant in partial shade on the flat facing west, in loam, leaf-mould, and sand, in equal proportions. In early spring top-dress with a little fine leaf-mould and sand, as the rhizomes creep on the surface.

Lithospermum canescens (N.W. America).

Plant in a well-drained place in partial shade on the flat facing south-west, in a mixture of equal parts of strong, rough loam, leaf-mould, and sand at least 12in. deep. In spring, as soon as the young shoots begin to appear, these should be protected against snails and slugs by a sprinkling of fine steel-turnings around the collar of the plant. When active growth begins, give abundance of water until the plant has flowered.

Lithospermum Gastoni (W. Pyrenees).

Requires a similar place to *Moltkia graminifolia*, but does better if planted between stones. Limestone suits it best. It should have plenty of depth of earth, and the compost should be made as rough as possible.

Lithospermum hirtum (N. America).

Treat like *Lithospermum canescens*.

Lithospermum oleæfolium (S. Europe).

Plant on a sunny sloping bank, or on the level, facing south-west, in one part of peat to one part of sand, one part of loam, and one of grit, all well mixed together.

Lithospermum prostratum (S.W. Europe).

Plant this beautiful and well-known species in a site well drained to a depth of 12in. or 15in. on a sloping bank facing either north-east or north-west, but sheltered from the wind, in a compost of equal parts of rough loam, peat, leaf-mould, and grit or sand. In spring give a little top-dressing, as this improves the plant very much.

Loiseleurea procumbens (Europe).

This plant is often found to damp off during winter ; but if planted in a suitable place is quite easy to keep. It should be planted in a well-drained spot on a sloping bank facing south-east, where it will be sheltered from the midday sun either by a tree or stone, in a compost of two parts of hard peat to one of white sand, together with a little leaf-mould and a small portion of rough loam. Before use the compost should be put in a sieve and all the fine taken out. In planting, make very firm by pressing with the hand ; add a covering of white sand, and then give a good watering. Every spring and autumn a top-dressing of sand and fine peat should be given.

Lychnis Lagascæ (Pyrenees).

This plant requires a rocky ground, south position, loam, sand, and grit.

Lychnis pyrenaica (Pyrenees).

This is purely a rock Alpine, revelling in sunny niches of the rockery. It is one of those curious plants which gather the seed-vessels towards themselves before these ripen; when ripe the seed-lobe springs open, throwing the seed all amongst the rocks, where it takes root and grows. Hence, if planted high up, there should always be ledging below, so that when the plant ripens its seed it may throw it upon the shelves beneath, where it will germinate and cling to the least bit of rock or earth. In planting, wedge the plant tightly between two pieces of limestone, and use a compost of limestone and loam.

Macrotomia echioides, syn. **Arnebia echioides** (Armenia).

Plant in a position a little shaded from the midday sun, on a well-drained, sunny site, with a south aspect, in good, somewhat retentive, loam without sand. In planting, provide plenty of depth downwards for the roots, cramping the surface space as much as possible by stones half embedded around the plant, as then the foliage does not grow so rank and large, and the plant flowers more freely. In early spring, about the month of March, a top-dressing of half grit and half rough loam around the collar of the plant is very beneficial to retain moisture for it in the dry weather. As they die down after frost, all the débris of dead leaves should be removed to prevent

the crown from rotting ; at the same time, should the crown appear at all exposed, it must be slightly top-dressed.

Malvastrum coccineum (Missouri).

This plant should be placed on a sloping bank, over which it can hang down, with a south-west aspect—as it is somewhat tender, and must be dry in winter—in a poor, loamy soil, with plenty of depth for its tap-root to descend.

Margyricarpus setosus (Andes of Peru).

A shade-loving plant, adapted for the north side of a bog, or useful for creeping over banks on the shady side of the rockery, where its bright green foliage and pure white berries afford a pleasing contrast. Plant in loam, leaf-mould, and sand. In autumn top-dress, adding a little rough grit to the mixture previously used.

Mazus pumilio (New Zealand).

This small creeping plant does well on a sloping bank among rocks, either in shade or sun. If on the shady and damp side of the rockery, plant in gritty, sandy loam ; but if grown in sun, a little peat and leaf-mould should be added to the loam. In autumn top-dress with pure grit, to prevent damping-off during winter.

Mazus rugosus (Himalaya).

Not quite so hardy as *Mazus pumilio*, this species should be planted on a somewhat sheltered part of the rockery, facing full south, but using the same compost.

Meconopsis aculeata (N.W. India).

This most beautiful perennial species is a very dwarf plant, growing from 2in. to 3in. high when in flower, and must not be confused with the biennial species bearing the same name. Plant in a well-drained, sunny position, near the eye, on a table-land with a rock-face behind and a rock in front, facing full south, in a compost 6in. to 8in. deep of equal parts of leaf-mould, sand, and loam, together with a little limestone in $\frac{1}{4}$ in. to $\frac{1}{2}$ in. cubes. Make the compost firm in its place and set a small slab of stone edgeways in it 1in. below the surface-level, with its face slightly inclined forwards towards the south ; adpress the tuber firmly against the front side of this stone, with a thin layer of compost between, the top of the crown being just above the level of the upper edge of the stone, finally surfacing with a little sand and watering well. In autumn top-dress with a little sand. A little seed should be saved, when possible, as a safeguard against possible loss. Under the above culture, success may be confidently anticipated. Mr. Smith, of Newry, has grown it with great success.

Meconopsis integrifolia (Himalaya).

Treat like *Meconopsis Wallichii*.

Meconopsis nepalensis (Himalaya).

Treat like *Meconopsis Wallichii*.

Meconopsis paniculata (Himalaya).

Treat like *Meconopsis Wallichii*.

Meconopsis Wallichii (Sikkim-Himalaya).

This Himalayan Poppy-wort is a noble plant, worth growing were it only as a foliage plant, for a plant three years old, if properly treated, will make rosettes $2\frac{1}{2}$ ft. to 3ft. across. But it possesses also the enhanced attractiveness of striking and abundant flower, and, indeed, I have known a single plant with a diameter of $3\frac{1}{2}$ ft., a stem $5\frac{1}{2}$ ft. high, and as many as 238 buds and blossoms at once. This species, like *Meconopsis nepalensis*, which is also a very fine plant, requires a damp shady place, with abundance of water at the roots during the summer season, and a soil composed of strong loam and peat, with a little grit added to the compost to keep it open. The plant must be well sheltered from the north and east winds, as the leaves should never be without moisture standing on them. If the cold winds sweep across the plants the moisture soon goes, and the leaves become dried up and begin to decay round their edges. On account of both foliage and flower, this plant looks well by the side of a pool between two rocks, with plenty of soil for the roots.

Mertensia alpina (Rocky Mountains).

This plant is not very easy to grow, and requires a well-drained but partially-shaded place where it can have plenty of moisture during the growing season but will be dry during winter. Plant in a mixture of sandy peat and leaf-mould with a small portion of rough loam. In the early part of the year, when the plant is making its

young shoots, some attention must be given to guard it against the assaults of snails, which are very fond of the young growths.

Mertensia echioides (Himalaya).

Plant on the north-east side of the rockery, where there is shelter from both the south sun and north wind, but open to the morning sun up to ten o'clock, in a mixture of loam, peat, and sand in equal quantities. In spring, top-dress with leaf-mould and sand. Protect against slugs and snails with a zinc hoop or by a sprinkling of steel-turnings around the collar of the plant.

Mertensia primuloides (Himalaya).

Treat like *Mertensia echioides*.

Micromeria Piperella (Hab.?).

Plant in a well-drained, sunny position, between stones, on a slope facing full south, in equal parts of strong loam and limestone. In spring, top-dress with leaf-mould and sand.

Micromeria: Remaining species.

The other species of *Micromeria* do well, when similarly treated, either on a slope between stones or on the flat.

Mimulus cupræus, syn. **luteus alpinus** (N. America).

A plant which does well in any position and aspect, provided it has a cool subsoil, in ordinary loam. As it is of somewhat rampant growth, care should be taken that it does not over-run smaller subjects in summer. In late autumn remove the

old foliage and top-dress the surface of the soil with a little loam and leaf-mould mixed together in equal proportions.

Mitchella repens (N. America).

An interesting little creeper which loves deep shade on the side of a bog-garden, or on the north side of a rock where it is sheltered from the north wind, planted in peat, leaf-mould, and a little white sand. Once or twice in the year this plant (like *Linnæa borealis*) must be looked to and have the shoots pegged down and a top-dressing given of the same compost as was used in planting, care being taken to work the soil well among the shoots, which will start to root and keep close to the ground.

Moltkia (syn. **Lithospermum**) **graminifolia** (N. Italy, etc.).

This hard-wooded shrub requires a sunny, well-drained position, free from winter-damp, and should be planted in strong rough loam, with a little limestone in the soil if possible, or, if no limestone can be obtained, in rough grit, strong rough loam, and a little sand. Twice each year a good top-dressing of fine limestone and loam must be given, the top-dressing in July or August being the more important, as this enables free rooting to take place before winter. The compost must then be well worked amongst the branches until they are sufficiently covered to root freely from the old stems.

Moltkia (syn. **Lithospermum**) **petræa** (Dalmatia, etc.).

Requires a dry, sandy bank, with a full south aspect. Plant in a mixture of three parts sand

to one of rough loam. Twice a year top-dress in the manner described for *Moltkia graminifolia*, as the plant roots freely from the old wood, using, however, only sand and a little loam for the purpose.

Monardella macrantha (N.W. America).

Plant in a sunny position sheltered from the north, on the flat, with a south or south-west aspect, in moderately retentive loam. In spring and autumn top-dress the creeping rhizomes with the same compost, partially covering them, and make all firm with the foot.

Morisia hypogæa (Sardinia and Corsica).

As this little plant is of the easiest culture, and will grow in almost any position, its bright, early, and persistent flowering is of all the greater value. In a favourable situation it begins to flower in February, and continues in flower until June; while, on a south bank, it has been known to be in full flower as early as December. The place where it is planted should always be well drained, the drainage being kept well down, as it is a very deep-rooting plant; the average depth of compost above the drainage which it requires may be reckoned at about 1ft., but in damp climates this depth of soil will require to be somewhat diminished. In November, top-dress with a little gritty loam and leaf-mould which has been first put through a $\frac{1}{2}$ in. riddle; in this the plant will root and spread very freely, and soon form quite a large patch.

Myosotis alpestris rupicola (Mts. of Europe).

This plant almost resembles *Eritrichium nanum*, and requires nearly the same treatment as regards

dryness during the winter; but it has a better constitution, and grows freely from seed. Plant as near the path as possible, in some position where its beautiful flowers can be easily seen—tightly wedged in chinks of limestone or sandstone, with a little soil on either side to prevent the stones from crushing the roots too much—in strong loam. In autumn a flat stone should be laid over the plant, but not on it, and be left in position till signs of life appear in the month of February, as no water must stand near it during the resting season. When once it starts into growth, however, it will take no harm from moisture, the whole plant and flower being so very dwarf, and standing no more than 2 in. high.

Myosotis : Other species.

There are several other interesting species well worth growing, and all of easy culture.

Narcissus cyclamineus major (Portugal).

This, like the other species of *Narcissus* mentioned below, is very desirable for the rock-garden. It is best planted near a walk on a ledge or bank with a south aspect, where its bulbs will get well ripened in summer, in good sandy loam.

Narcissus juncifolius (Spain and S. France).**Narcissus minor, v. minimus** (Europe).**Narcissus triandrus albus** (Spain).

Treat all these just like *Narcissus cyclamineus major*.

Nierembergia frutescens (Hab.?).

Plant in a well-drained position, on the flat, facing full south, in sandy loam. Prune back in April.

Nierembergia rivularis (La Plata).

Although this is a plant that loves the water-side in its native place, it does not do well in this country in damp places. It succeeds best in a full south position, in good strong loam. Once a year top-dress with a little peat and leaf-mould, as it is a surface-rooting plant and requires a little addition of compost to assist the young growth.

Nocca (syn. **Hutchinsia**) **alpina** (Mts. of C. and S.E. Europe).

Plant on a dry, sunny bank facing full south, where it can grow over a rock immediately in front, in a compost of poor loam and grit in equal parts.

Nocca (syn. **Iberis**) **stylosa** (S. Europe).

This tiny plant does well on a sunny part of the rockery, wedged very tightly between pieces of limestone, together with a little loam and leaf-mould.

Oenothera acaulis (Chili).

This plant does well on the lower beds of the rockery, in a sunny, well-drained place on the flat, in deep, poor loam.

Oenothera caespitosa, syn. **eximia marginata** (N.W. America).

This plant loves a well-drained place over a warm bottom, either on limestone or deep sandy loam. As this plant runs freely in the ground, and the young growth will sometimes make its appearance quite 1ft. away from the original place, the young

shoots are very apt to get pulled off, and thus the whole plant is often destroyed. When planted out on the flat, where the subsoil is damp and clayey, a place should be specially prepared for it as follows :— First, make a hole 2ft. wide and 18in. deep ; put in 4in. of drainage, then add a few inches of rough loam, and fill up to the ground level with pure river sand, finally planting in the centre of the plot. When treated in this way, the plant will live for years, and increase and flower freely.

Oenothera missouriensis, syn. **macrocarpa** (N. America).

Plant in a well-elevated position, where the long shoots will hang over the face of a rock, in deep poor loam. As this species is of somewhat straggling as well as strong growth, it should be planted in a somewhat confined area where it is cramped in with stones. In late autumn a top-dressing of grit round the old stool prevents any decay through wet during the resting season. In winter the old growths may be entirely cut away, as the plant will spring anew from the base ; indeed, many of the shoots may be removed without detriment, even when in full vigour.

Oenothera rosea (N. America).

This affords a most desirable plant for a prominent place on the rockery in autumn if the true species be obtained. Plant on the flat in a well-drained position at the base of a rock-wall facing full south, where it will have plenty of room for its free growth and will be perfectly dry in winter, in deep loam and sand.

Olearia (syn. **Eurybia**) **gunniana** (New Zealand).

A rock plant covered with beautiful sheets of snow-white flowers in June and July. It is of easy culture, only requiring a very parched position and very poor soil. Plant facing full south, where well protected from north and east winds, in rubble between stones, using little or no other soil, as it is of the very first importance to keep this species as dry and as "hard" as possible. Immediately after flowering each year, knife the plant well back to keep it compact, and in very hard wintry weather throw a branch over it for protection.

Olearia (**Eurybia**) **illicifolia** (New Zealand).

Treat like *Olearia gunniana*. It flowers a little later and is a more hardy plant, but not quite so free-flowering.

Omphalodes Luciliæ (Mts. of Greece and Asia Minor).

A most interesting and rare Alpine, and a plant that most people find difficult to grow. It will not stand coddling, and, should this be attempted, soon dies. The most suitable place for it is on the north-east side of the rockery, where it will be sheltered from the south sun and north wind. Up to ten o'clock, the morning sun suits it. Plant in a mixture of loam, peat, and sand in equal quantities. Great care must be taken to keep the snails from it, as it is one of those plants to which slugs and snails are very partial, and the slightest neglect exposes it to great danger of being doomed in a single night when it is in a young state. A protection of zinc may be made in the shape of a hoop, say 3in. deep ; if this is

placed round the plant it will prevent any slugs or snails from getting near. Of course, this may be removed when the plant has gained strength. Every year a top-dressing of leaf-mould and sand should be given.

Omphalodes nitida (Portugal).

Treat like *Omphalodes Luciliæ*.

Ononis fruticosa (S.W. Europe).

Plant in a well-drained, sunny position, either on the flat or on a slope, in the open or between stones, facing full south, in equal parts of grit, loam, and sand. In autumn cut partially back.

Ononis: Remaining species.

Treat like *Ononis fruticosa*.

Onosma alba (Hab.?).

Treat like *Onosma albo-rosea*.

Onosma albo-rosea (Asia Minor).

A plant of recent introduction, not so hardy as *Onosma echioides*, but capable of withstanding 30deg. of frost if planted in a suitable place, wedged between stones, in an elevated position facing full south and protected from the north and east; in a hot dry corner it will do well. It must be perfectly dry during winter. It may lose part of its foliage, but will spring again from the old stems.

Onosma echioides, syn. *taurica* (Europe, etc.).

This species is of comparatively easy culture, being often grown along with Carnations during the summer and layered like them, but it is not at all an

easy plant to keep "in situ" through a damp winter. It succeeds well if planted in comparatively shallow soil, on the very dry bank of a knoll of rockwork, over which the branches are able to droop down and the wood get well burnt up in summer and so thoroughly ripened.

Opuntia bicolor (Hab.?).

Plant in a cleft between stones backed by a rock-face, which should, if possible, overhang the chosen site, in limestone and loam. In planting, first jam a little clay right to the back of the cleft, then plant the *Opuntia* in this, and finally wedge the plant tightly in position by means of stones plugged in above and below it. In spring and autumn, again make the plant firm if at all loosened by the leverage of its heavy growths. In autumn, limestone in from 1 in. to $\frac{1}{4}$ in. cubes, with the dust retained, should be thrown over the surface, so that it is washed down about the roots.

Opuntia brachyarthra flava (Hab.?).

Opuntia camancharica rubra and **c. salmonea** (Texas, Colorado, etc.).

Opuntia rhodantha (Colorado).

Opuntia Tuna (West Indies).

Treat all these like *Opuntia bicolor*.

Orchis foliosa (Madeira).

Plant in a well-drained, shady position on the flat facing north, in strong fibrous red limestone loam if this can be obtained, but, if not, the plant can be grown with fair success in good strong

ordinary loam with a little leaf-mould and sand added, and fine-chopped or marly limestone inter-mixed. The site should be prepared to a depth of from 9in. to 12in., and, if the ground is at all wet, it must be well drained with 2in. of drainage. In autumn, when the foliage disappears, it is essential to top-dress with strong loam, as when the off-set is made it is often formed almost on the top of the old tuber, and so gradually rises to the surface.

Orchis maculata superba (Europe, Asia Minor).

Everything similar to the preceding, except that this *Orchis* grows well in ordinary rough loam together with a little peat, leaf-mould, and sand.

Origanum hybridum (Asia Minor).

This pretty autumn flower should be planted in a sunny position on the flat or on a slope behind a stone or at the base of a stone facing south or south-west, in equal parts of loam and sand together with a little peat or leaf-mould. In autumn, after flowering, cut away the old foliage. In spring, top-dress with a little leaf-mould and loam. As this plant grows freely for its size, nothing should be planted within a foot or so of it.

Ourisia coccinea (Island of Chiloe).

A very accommodating plant, as it will grow either on a bank-side in full sun with its roots on the edge of a stream but its rhizomes fairly dry—in which case it will grow on limestone—or in a shady place on the flat with a moist soil. Plant in a compost of peat and strong loam in equal parts, but

without any sand. The rhizomes must be pressed firmly in the ground. In autumn, directly the foliage drops, top-dress with a mixture of two parts of strong loam to one of peat, both first sifted through a $\frac{1}{4}$ in. sieve, just covering the rhizomes with the compost and then making them firm. This plant sometimes delays to flower for a year after planting.

Oxalis enneaphylla (Falkland Islands).

Plant in a well-drained, sunny position on the flat, facing south, south-west, or south-east, in equal parts of somewhat strong loam, leaf-mould, and grit. In autumn, as soon as the foliage dies off, top-dress with a little fine grit. Should any of the little corms or crowns appear loose on the surface these should be pulled away and replanted, as if left in this condition the frost will raise them right up to the surface, where they will rot under the combined influence of cold and wet. In March a top-dressing with equal parts of leaf-mould and sand should be given.

Oxytropis Lamberti (N. America).

Plant in a well-drained, dry, sunny position, wedged tightly between stones, on a slope facing full south, in almost equal parts of fine broken limestone and loam, the limestone being somewhat in excess. In spring, and again in autumn, give a little top-dressing of limestone and loam worked tight about the collar of the plant.

Oxytropis pyrenaica (Central Pyrenees).

A compact little rock plant, of easy culture between stones or on the flat facing south or south-west, in equal parts of gritty sand and leaf-mould.

Oxytropis uralensis (Europe, Scotland).

Treat like *Oxytropis Lamberti*.

Papaver alpinum (Alps).

A useful plant for the small rockery, growing anywhere on it in sandy loam. A little seed scattered amongst the rocks will soon germinate and produce a good effect when the Poppies are in bloom.

Pelargonium Endlicherianum (Taurus).

The only hardy species known. Grow on the sunniest and driest part of the rockery, wedged tightly between stones, in a compost of limestone and strong loam. Through the winter a stone should be laid over the place where the plant is, as a protection against the cold rains.

Pentstemon glaber (Western United States).

Plant in a well-drained position, shaded from the midday sun if possible, on the flat, in loam, leaf-mould, and grit. In early spring the old foliage should be cut away before the young growth starts about its base, as otherwise the old shoots are apt to be twisted about by the wind and the tender young ones destroyed, and so the plant perishes.

Pentstemon Hallii (Rocky Mountains, Colorado).

Requires the same treatment as *Pentstemon glaber*, except that in consequence of its different habit it should receive a top-dressing each spring and autumn with a little grit and leaf-mould worked well among the foliage, as it is apt, like *Aster alpinus*, to form little hard stems and grow out of the ground unless this is done.

Pentstemon humilis (N.W. America).

Treat like *Pentstemon glaber*.

Petrocallis pyrenaica, *see* **Draba pyrenaica**.

Philesia buxifolia, syn. **magellanica** (Chili, etc.).

A shrubby plant suitable for the dry side of a bog-garden, where it will have the full benefit of the sun and be sheltered from the north. Plant in hard fibrous peat and white sand, with a small portion of rough loam mixed well with these. In winter a little protection with bracken is very beneficial to the buds. Every second year it is a good plan to layer the plant down, pegging each shoot close to the ground and covering over with peat and leaf-mould, as in this way it will be induced to root freely from the stems and soon form quite a nice bush.

Phlox amœna (Virginia to Florida).

Treat like *Phlox procumbens*.

Phlox divaricata, v. **canadensis** (N. America).

The true form of this beautiful variety grows upright to a height of about 9in., and flowers in a neat, compact truss. Plant on the flat with a south-west aspect, in deep, sandy loam. This plant must be well protected from slugs and snails, which are exceedingly fond of it. Nothing is so efficient for this purpose as a sprinkling of moderately fine steel filings, such as are produced by machine turning and boring, placed a little way from the collar of the plant.

Phlox procumbens (Gar. Hyb.?).

A pretty but not free-flowering plant, requiring a sunny position with cool bottom, on the flat or on

a slight slope, in a mixture of half grit and half poor loam. In spring and again in autumn, top-dress with the same compost as at first, adding, however, an equal proportion of leaf-mould to the constituents in the case of the spring top-dressing. The top-dressing should be worked well among the young shoots, and any loose ones should be pegged down. Immediately after flowering, if the plant appears to have become too aggressive, cut it back to within a few inches of the main stem.

Phlox reptans, syn. *stolonifera* (Alleghany Region).

Treat like *Phlox procumbens*.

Phlox subulata in var. (New York to Florida).

These all do well on the borders of rockwork, and indeed on the front of flower borders, in any ordinary soil and with but little drainage. They are also most useful for hanging down over the south side of stones or on dry slopes of the rockery. In wet, clayey ground they keep much longer in bloom. Phloxes "Vivid," "Nelsoni," "The Bride," "G. F. Wilson" are among the varieties best worth growing.

Phlox verna (Gar. Hyb.?).

Treat like *Phlox procumbens*.

Phyteuma comosum (Dalmatia, Carniola, etc.).

A very remarkable plant, which needs rather special treatment. Plant on a sunny part of the rockery, where it is fairly dry in winter, wedged tightly between pieces of limestone, in a mixture of two parts of fine broken limestone and one part of strong loam, but without any sand. Do the planting

“sandwich-fashion,” first placing a bottom stone, then putting a portion of the prepared compost upon it, next laying on the plant and taking care that plenty of room shall be left for the root to go down as it grows, since the plant forms a tap-root, and finally adding a little more compost about and upon the plant before placing a last stone above and making the whole as firm and tight as possible without injury to the roots or crowns of the plant. In spring the plant should be well looked after lest slugs eat all the crowns away, for if slugs get at the plant they will be sure to eat out the centre crowns, and so only a few leaves will appear the following year. In spring and again in autumn, top-dress with fine broken limestone, letting it run right in between the stones.

Phyteuma Scheuchzeri (Alps).

Requires the same treatment as *Phyteuma comosum*.

Phyteuma: Other species.

Most of the other species will do in ordinary loam and sand.

Polemonium confertum and *c. mellitum* (Rocky Mountains, etc.).

A handsome little plant, worth growing on the rockery and requiring a well-drained place, with a south-west aspect, in good loam, leaf-mould, and sand. This plant should be divided every second or third year and given a fresh place, otherwise it will die out.

Potentilla nitida and vars. (S. Europe).

These are purely rock plants, which should be planted on an elevated piece of ground with either a south or south-west aspect, on the flat or between stones, in equal proportions of grit, leaf-mould, and loam. While, however, an elevated position is chosen for these plants by preference, yet the site selected should not be so high above the path or so far from the path edge that the beauty of the flowers or of the dwarf plants which bear them is lost or obscured. Once or twice in the year, top-dress with a portion of fine grit run among the leaves and stems, as otherwise the plant will grow out of the ground and die.

Potentilla nivalis (Pyrenees).

Treat like *Potentilla nitida*.

Potentilla: Remaining species.

The other species of *Potentilla* are all of very easy culture in sunny places.

Pratia angulata (New Zealand).

This makes a beautiful carpet plant. It should be grown in a sunny position, on the flat, facing south or south-west, in sandy loam with a little leaf-mould. As the plant is of a creeping habit, it should be pressed down perfectly flat when planted. *Pratia angulata* will also grow well in shade, although it does not then flower so freely. Two or three times a year, top-dress with sand and a little fine leaf-mould, not covering the plant too thickly, on account of its very fine stems.

Primula Allioni (Alps of Dauphiny).

A delicately beautiful plant, well worth the special consideration it exacts. It will grow either fully exposed to sun or in a deep recess, but must have plenty of both light and moisture ; moreover, while the roots must never be suffered to become dry, the water they require should be conveyed directly to them and any wetting of the foliage avoided. A site being chosen, between stones, on the north side of the rockery, a hole should be made in the bank, sufficiently deep to allow a lining of clay to be placed at the bottom and sides ; then a flat piece of limestone or sandstone must be put on the edge of the clay at the front of the hole, and some of the mixed compost of three parts fine broken limestone to one part of loam be laid upon it ; the *Primula* should now be placed against this prepared soil, with its roots spreading down to the clay below, and more of the soil added, along with another stone to make the whole firm ; the remainder of the clayed hollow behind should next be filled in with compost ; and finally a large flat stone must have its base inserted at the back of all, in such a way that it shall slope diagonally downwards into the bank at its base, but have its free end projecting over the *Primula* and about a foot above it, so that any rain falling on its surface may pass directly into the little clay-pit, for in this way the plant will be prevented from ever becoming dry, since the clay will hold moisture for a long time, and the roots quickly take advantage of it and maintain them-

selves even in the driest weather. When artificial watering is necessary, it, also, should be given by way of the stone.

Primula Auricula marginata (Europe).

A valuable plant for dry fissures of rockwork facing south or east in strong loam and limestone. When planting in a long crevice, clay should be used instead of loam, to wedge the plants tightly between the stones, starting at the bottom of the crevice and working upwards. A piece of limestone should be placed between every two plants, and clay pressed close to the roots between the stones; thus a beautiful effect will be obtained all the year round.

Primula Balbisii (Baldo, Alps of S. Tyrol, etc.).

Treat like *Primula Clusiana*.

Primula calycina (Alps of Lombardy).

Plant in a well-drained position, having a north-east aspect, in half limestone and half rough loam.

Primula capitata (Himalaya).

Plant this species in a shady place on the flat facing north or north-west, in good loam. In early spring take hold of the plant, and if it comes away easily in the hand look for a small white grub in the collar of the plant. If this is present the plant should be cleansed and replanted in another position; should, however, there be no reason to suspect the presence of any such offender, simply press back the plant into position, and add a top-dressing of the original compost around it.

Primula carniolica (Alps of Carinthia, Carniola).

Treat like *Primula Clusiana*.

Primula ciliata purpurea (Europe).

Plant firmly, facing south, in strong clayey loam. Every spring a top-dressing must be given.

Primula Clusiana (Tyrol).

Requires a south-west aspect, in two parts of loam to one of peat and one of sand.

Primula denticulata and vars. **alba**, **pulcherrima**, and **purpurea** (Himalaya.)

These all do well in almost any aspect in good ordinary loam. They are also benefited by top-dressing and frequent division.

Primula frondosa (Thracia).

Plant in a south aspect, in good strong loam and a little sand.

Primula glaucescens (Alps).

Treat like *Primula Clusiana*.

Primula glutinosa (S. Europe).

Plant either in a shady place or in one having a north aspect, in peat, loam, and sand. If the position selected is a damp one, it should be drained before planting.

Primula × **Heerii** (Hab. ?).

Treat like *Primula Clusiana*.

Primula involucrata (N. India).

Plant in a north aspect in strong loam to which a little peat has been added. Every autumn top-dress,

as this species has a tendency to grow out of the ground. If top-dressed carefully it will increase fast, and soon make a fine clump.

Primula involucrata Munroi (N. India).

This is one of the most easily grown Primulas, and a very free bloomer. As sun destroys the delicacy of colouring in the flowers, plant in a north aspect, using good strong loam with a little leaf-mould, but no sand. In autumn, when the leaves go off, top-dress and press firmly down. This variety will grow on a limestone rockery, but not in limestone soil.

Primula japonica (Japan).

Treat like *Primula denticulata*.

Primula juribella (S. Tyrol).

Treat like *Primula Clusiana*.

Primula × Kernerii (Styria).

Treat like *Primula Clusiana*.

Primula (spectabilis) Kitaibeliana (Croatia).

Treat like *Primula Clusiana*.

Primula latifolia (Pyrenees).

Treat like *Primula involucrata*, adding, however a little more peat in the compost used.

Primula marginata and vars. (Alps of Dauphiny and Piedmont).

This species may be grown in a similar way to *Primula Auricula marginata*. As this plant has a tendency to grow out of its place it must be replanted every other year if in a position which renders top-dressing an impossibility. Planted on the level it should receive a top-dressing every year,

with a mixture of limestone and strong loam carefully filled in among the growths.

Primula megasæfolia (Rhazistan).

Plant in a sunny position on the edge of a bog, where it will be dry around the crown in winter but will have abundance of moisture to the roots in summer, in equal parts of peat, loam, and leaf-mould. In winter give a slight protection by a branch or a little bracken placed over the crown.

Primula minima (S. Europe).

This species does best in a sunny place if it can be well watered in summer ; in a partially shaded place it grows well, but does not flower so freely. Plant in gritty loam and leaf-mould. Top-dress every year.

Primula nivalis (Caucasus).

A partially shaded place with from 12in. to 18in. of peaty loam is needed to ensure success with this species.

Primula Reidii (Sikkim Himalaya).

A very dwarf species, not growing more than 1in. to 1½in. high when in flower. Plant, close to the eye, in a well-sheltered position on the flat facing west, in equal parts of rather fibrous loam and leaf-mould, together with a little sand. In spring, top-dress with a little fine leaf-mould, and cover the whole surface with a little white sand. In autumn repeat the process, mixing a little sand with the top-dressing of leaf-mould, taking care that the crown is made perfectly firm in the ground, and

again covering the surface with a little white sand. For winter protection a stone should be placed so as slightly to overhang the plant. During spring and summer, in the growing season, water freely but not over the foliage, as this is woolly.

***Primula rosea* and vars.** (Kashmir).

This species thrives on the shady side of the rockery or on the edge of a pond where the roots can reach the water, in good deep loamy, peaty soil.

Primula sikkimensis (Sikkim Himalaya).

Plant on the side of a bank with a north aspect, on the rockery, or in a slanting position on the side of a bog, so that rain or snow will not fall into the actual crown of the plant, for if stagnant water is allowed to rest upon this in winter-time it will rot away. The compost used should consist of good loam and leaf-mould, with a little grit added if the place selected to plant in is a damp one.

Primula Stuartii (Himalaya).

Plant firmly on the flat between stones in a north aspect, with plenty of room for the long roots to descend, in loam with a little limestone inter-mixed. Occasionally top-dress slightly between the stones.

Primula* × *Venzoi (Tyrol).

Treat like *Primula Clusiana*.

Primula Wulfeniana (Carinthia, etc.).

Treat like *Primula Clusiana*.

Alpine Plants.

Pyrola rotundifolia (Europe, Britain).

Plant on the flat in shade, preferably with a north aspect, as this plant does not like sun, in equal parts of peat, leaf-mould, and fibrous loam. After planting, surface with sand. Top-dress in autumn.

Pyrola: Remaining species.

The other species of *Pyrola* do well under similar treatment to *Pyrola rotundifolia*.

Ramondia pyrenaica and **p. alba** (Pyrenees).

These plants do best planted "sandwich fashion" between stones on a sloping bank facing north, in a compost of equal parts of peat and loam from which the fine has been sifted out before using, and with which a portion of broken limestone has been thoroughly incorporated. Although it seems strange to add limestone to peat, yet experience has proved that when this is done in this instance the peat and loam remain sweet for a much longer period of time. In planting, each plant should be laid nearly upon its side against the portion of compost already placed on the upper surface of the lower stone and made firm, and then more of the prepared soil added, a stone superimposed above and pressed tightly down so that both stone and compost are brought close up to the leaves of the plant, and finally the whole area around filled in with compost. *Ramondia pyrenaica* looks very fine in a crevice on the north side of a rockery close to, or overhanging, water, the moisture rising from which doubtless helps to keep the foliage green. It is also most useful for covering

a north wall in the garden where nothing else will grow, or against the north side of a greenhouse or dwelling-house. To grow it in such a position first place a few stones on the ground about 2ft. from the base of the wall, then prepare the proper compost turning it over two or three times to mix it thoroughly, and throw it among and behind the stones already placed in position as a groundwork; make all firm and plant again, rest stones in position to keep the plants in their places and prevent the soil which is to be added from washing down, and proceed as before until the slope impinges against the wall-face. Proceeding in this way a very beautiful and most flourishing bank of *Ramondia* may be obtained. *Ramondia pyrenaica* can also be grown on a south-east, or even full south, aspect, provided abundance of water is given to the roots, otherwise plants placed in this position soon perish. When thus planted in sun, all watering must be done in the evening, and never during the course of the day, otherwise the leaves will turn brown and shrivel up. Constant watering during the hot weather of summer is indeed the secret of keeping plants of *Ramondia* vigorous and their foliage perfect.

***Ramondia Nathaliæ* (Servia).**

Treat similarly to *Ramondia pyrenaica*, with the exception that no limestone must be added to the compost, as the plant strongly objects to it, and will soon lose all its foliage if limestone is used.

***Ramondia serbica* (Servia).**

Treat exactly like *Haberlea rhodopensis*.

Ranunculus alpestris (Europe).

This species has a good constitution. Plant on the flat, in a well-drained and somewhat shady place, using as compost peat, loam, and leaf-mould in equal parts, with a little grit added to keep the soil open. In early spring a sharp look-out for snails must be kept, as they often eat out the crowns before they are fairly above ground, and the flowers are lost for the season. A little rough grit will do much to prevent this occurring, care being taken that if it is placed over the actual crowns all the fine has been taken out and only the rough is used.

Ranunculus amplexicaulis (Pyrenees, W. Alps).

Plant in half shade, either on the flat or on a slope, preferably with an east aspect, in somewhat retentive fibrous loam, with a little leaf-mould and less sand. In March, before the plant shows, top-dress the place where it is with 1 in. of the same compost as was used in planting. If during winter the roots or corms have risen at all, they should not be pressed back with the finger, as the crowns are brittle and liable to be destroyed, but should be taken up, and replanted with the crowns 1 in. to 1½ in. below the surface.

Ranunculus crenatus (Hungary).

This species requires similar treatment to *Ranunculus alpestris*.

Ranunculus glacialis (Northern and Arctic Regions).

A rare little Alpine from a high elevation, not often seen on rockeries, although of easy culture. A well-drained place must be chosen, facing the south or

south-west, either on a sloping bank or on a level. Make a compost of leaf-mould, sand, and good loam in equal parts. Take out the existing soil, drain the part well, fill in with the prepared compost to a depth of 6in., and then plant. If planted when dormant, the crown should be buried 2in. below the surface. Make firm on the top. In the month of March, if the weather is very dry, watering should be commenced as soon as the little crown begins to push through the ground. After March, water must be given daily until the plant is in flower, then watering should gradually stop. By this time the plant will have made little runners. These should be carefully pegged down, and a little top-dressing put over the surface of the bed, to enable the runners to form eyes and take root, which they will soon do in the fresh soil. As soon as the leaves are all gone, watering may cease altogether until the following spring, when the same treatment will again be required.

***Ranunculus parnassifolius* (Alps and Pyrenees).**

One of the finest of this family. This species loves a little more shade than the species already mentioned. Plant in a well-drained position on the flat with a north aspect, in deep, strong, rich loam, sandstone grit, and peat in equal parts, without any sand. If grown on limestone, use compost without the grit. In spring or autumn this plant is much benefited by a top-dressing. Like all the *Ranunculi*, this species should be divided and replanted every third year.

Ranunculus pyrenæus (Alps and Pyrenees).

Treat like *Callianthemum anemonoides*.

Rhododendron lapponicum (Arctic Regions).

This requires a somewhat shady position, and will do on the north side of a rockery, in peat, rough loam, and sand. The plant must be made perfectly firm, or it will soon die away when dry weather comes.

Rhododendron setosum (Arctic Regions).

Treat like *Rhododendron lapponicum*.

Rhodothamnus (syn. **Rhododendron**) **Chamæcistus** (Alps of E. Europe).

Where lime is absent, this miniature *Rhododendron* is most useful for the rock-garden. A partially shady place suits it best, although it will grow in full sun. To succeed with it in sun, the plant must either be well established before it is planted out, or else it must be shaded from the sun by artificial means for some time after it is planted, until it has become fairly established. Under such treatment the plant will bloom much more freely in the sunny than in the shady place, as it is able to get the wood well ripened annually, and its buds set for the following year, whereas this is less assured in the shade. Plant in hard peat and sand, which should be pressed firmly against the roots, and top-dress twice a year with the same compost.

Romneya Coulteri (California).

This plant can scarcely be called an Alpine, but it resembles them in requiring special treatment. Plant in a well-drained, sheltered place, free from the

drip of trees and facing full south, such as may be found against the wall of a dwelling-house, in good deep rough loam and sand. Before planting, a hole should be made 3ft. deep, and 4in. or so of broken stones or bricks placed at the bottom of it as drainage; then fill up to the surrounding surface with prepared compost, make firm, and plant. In planting, care must be taken to get the base of the plant about 2in. below the level of the soil. The compost must be trodden firmly all round the plant, though not on the actual base of it, so that the young roots may be enabled to reach the new soil readily. For it may be remarked as a point of general and great importance in planting that, especially in planting material previously grown in pots, the soil is apt to shrink away from the ball in drying and leave a space so that the young roots succumb before reaching the new soil, and thus the plant ultimately dies or is permanently weakened, unless care is taken to ensure intimate cohesion and union by firm, uniform, and thorough pressure at the time of planting. *Romneya Coulteri* is a strong-feeding plant, and will require plenty of water during the growing season.

Rubus arcticus (Arctic Regions).

Plant on a sunny bank on the rockery where it has room to spread, in gritty loam and sand.

Salix reticulata (Northern and Arctic Regions).

This, like the rest of the dwarf Willows, is useful to creep over stones in shady places where other plants will not grow well.

Sanguinaria canadensis, and *c. major* (N. America).

A useful rock plant, preferring a south or south-east aspect, in warm sandy loam. It will, however, do equally well facing north, if planted in a well-drained position, and in a compost to which a little more sand has been added. *Sanguinaria canadensis grandiflora* is a very fine variety, and quite as easy to grow as the type.

Saponarias.

All the species are of fairly easy culture between stones in sunny positions having a south aspect, in gritty loam and sand. In spring partially cut back the old plants, as this keeps them more compact and makes them flower better.

Saponaria cæspitosa (Pyrenees).

Plant on the flat facing full south, wedged between stones, or, if without stones, entirely surrounded with grit, in half poor loam and half grit.

Saponaria lutea (Alps).

Treat like *Saponaria cæspitosa*.

Saponaria ocymoides alba (Switzerland, Italy, etc.).

It is better to grow this plant on the north side of the rockery, on account of its white flowers, which then maintain their pure whiteness much longer and have an extended period in bloom.

Sarracenia purpurea (N. America).

A very useful and striking plant for the bog or pond-side. If it is planted on a bog, the north side suits it best; but if on the side of a pond it should have a full south position where the roots can just

get down to the water's edge. In winter, the water should if possible be partially drawn away, so that when the heavy rains and snow come they will not flood the part where the *Sarracenia* is planted. In planting, use a compost of two parts peat to one of sphagnum and one of white sand with a little charcoal, all well intermixed. After the plants are put in their place, surface with a layer of fine white sand 1 in. thick, and then give a good watering; this settles the sand thoroughly in and prevents the air from having direct access to the roots for a few days. In spring a top-dressing is very beneficial in case the frosts should have lifted the plants at all out of the ground. Before the onset of winter a little bracken may be thrown over the crowns to enable them to withstand very severe frost.

Saxifraga aretioides (Pyrenees).

Plant this small species near the eye, wedged tightly between pieces of limestone, on a sloping bank in a sunny position, using a well-mixed compost of half strong loam and half fine limestone grit in pieces to $\frac{1}{4}$ in. cube; no sand must be used. If planted on the flat the compost needs to be almost altogether small limestone in order to get the plants well ripened. In spring make firm if at all loosened, and top-dress well around the plant and up to the collar between the two bounding stones with fine limestone.

Saxifraga biternata (Mts. of Spain).

This plant requires special care in one respect. It goes to rest almost directly after flowering, and

then appears as if dying. Watering, under the erroneous impression that this is the case, is highly injurious, as the plant at this time should be kept as dry as possible.

Saxifraga × **Boydii** and **B. alba** (Gard. Hyb.).

Treat like *Saxifraga Burseriana*.

Saxifraga Burseriana and **B. major** (Alps).

These need, like *Saxifraga Boydii*, *Saxifraga Elizabethæ*, and *Saxifraga luteo-purpurea*, rather more care than the ordinary Aizoon section, and should be planted either between stones or on the level in a partially shaded place on the higher part of the rockery, though on no account in one liable to drip from overhanging trees or branches, using a compost of half loam and half grit, out of which the fine has been sieved before use. Of these, *Burseriana major* is the more difficult to keep during the winter season, requiring to be especially guarded against any drip or excessive moisture in the winter months, or it will be sure to damp off. In the latter part of the summer also it must not be allowed to become dry, for summer is a most critical time in the case of all the sunny varieties, as in their native homes they are then getting a large supply of moisture from the melting snows, a natural supply which must be imitated in cultivation by artificial watering at that season. In autumn top-dress with gritty loam. In spring see that the frost has not lifted any of the plants out of the ground, and, if it has, press them firmly back into position again.

Saxifraga cæsia (Alps).

Treat like *Saxifraga aretioides*.

Saxifraga citrina (Switzerland).

Plant in a well-drained place in partial shade on the flat, facing west or south-west, in equal parts of poor loam and sand. In spring and autumn surface with leaf-mould and sand.

Saxifraga diapensioides (Alps).

Treat like *Saxifraga aretioides*.

Saxifraga × Elizabethæ (Gar. Hyb.).

Treat like *Saxifraga Burseriana*.

Saxifraga Fergusoni (Gar. Hyb.).

Treat like *Saxifraga citrina*.

Saxifraga Griesbachii (Pyrenees).

Treat like *Saxifraga aretioides*.

Saxifraga Kotschyi (Asia Minor).

Treat like *Saxifraga aretioides*.

Saxifraga longifolia (Pyrenees).

This species does well wedged tightly in chinks on the north side of the rockery, in a compost of equal parts of limestone and strong loam, care being taken to secure room behind for the roots to work down among the rocks; a little clay pressed in between the stones in planting helps to keep the plants in place.

Saxifraga luteo-purpurea (Pyrenees).

Treat like *Saxifraga Burseriana*.

Saxifraga Maweana (Tetuan).

Treat like *Saxifraga biternata*.

Saxifraga media (Pyrenees).

Treat like *Saxifraga aretioides*.

Saxifraga mutata (Switzerland).

Treat like *Saxifraga citrina*.

Saxifraga oppositifolia section (Northern and Arctic Regions).

11 Grit, sand, and loam in equal parts suit this section best. Nearly all the *oppositifolia* section die away in the course of a year or two. They should be taken up and pulled to pieces as soon as this decay commences, which it does generally in the centre of a large clump. When decay begins in this way it is of no use to leave the clump in the hope of arresting the spread of the mischief by top-dressing, for the condition of the plant will get worse and worse season by season, and it will gradually but surely die away. Directly after flowering any clump which shows symptoms of the beginning of such a state should be taken up, pulled into little bits, and replanted in fresh compost or in some other portion of the rockery; it will then soon take hold and grow as vigorously as before. Either directly flowering is over or at the end of August a little grit and leaf-mould worked well amongst the shoots should be used as a top-dressing. River sand must not be used for top-dressing, as it will cause a rust to come on the foliage

Saxifraga × patens (Gar. Hyb.).

Treat like *Saxifraga Rocheliana*.

Saxifraga Rocheliana and **R. coriophylla** (E. Alps).

This species requires similar treatment to *Saxifraga aretioides*, but is somewhat freer in growth and will thrive on sandstone rockeries if a little limestone is added to the actual compost. *Saxifraga Rocheliana* is especially desirable on account of its very early flowering.

Saxifraga × **Salomoni** (Gar. Hyb.).

Treat like *Saxifraga Rocheliana*.

Saxifraga squarrosa (Alps).

Treat like *Saxifraga aretioides*.

Saxifraga tombeanensis (Tyrol).

Treat like *Saxifraga aretioides*.

Saxifraga × **tyrolensis** (Tyrol).

Treat like *Saxifraga aretioides*.

Saxifraga valdensis (Alps of Lyons, etc.).

Treat like *Saxifraga aretioides*.

Saxifraga Vandellii (Tyrol, etc.).

Treat like *Saxifraga aretioides*.

Saxifraga Wulfeniana (Pyrenees).

A very rare plant, forming compact rounded cushions bearing rosy-pink flowers close to the foliage, very distinct from *Saxifraga retusa*, which is often wrongly identified with it. Plant wedged between stones, in a hot, dry situation facing full south, in equal parts of poor loam and sandstone. In early spring, at midsummer, after flowering, and

again in October, the plant should be top-dressed with gritty sandstone and pressed firmly into place.

Schizocodon soldanelloides (Mts. of Japan).

A plant with poor constitution. Plant in shade on the flat in equal parts of peat and leaf-mould with a little loam added, and, if possible, a little chopped sphagnum. After planting, surface around the plant with white sand, and give a good watering. It is most essential to top-dress several times a year.

Schizostylis coccinea (S. Africa).

Valuable as supplying bright red flowers late in the year. Plant 2in. deep on a dry, sunny bank, facing south, in equal parts of fibrous loam and grit. This plant does well and looks well when under-planted among such shrubs as *Genista* or *Cistus*. After flowering the foliage may be removed.

Sedum brevifolium and **b. major** (Western Mediterranean Region).

These require special culture, being of smaller growth than many other of the *Sedums*. They are suitable for the south side of a rockery on little ledges or crevices, where they will be fairly dry in winter and sheltered from north and east winds, in a compost of equal parts of gritty loam and sand.

Sedum cyaneum (Eastern Siberia).

Treat like *Sedum brevifolium*.

Sedum farinosum (Madeira).

Treat like *Sedum brevifolium*.

Sedum Michauxii (Hab.?).

Treat like *Sedum brevifolium*.

Sedum obtusifolium (Orient).

This species should be planted in a sunny place in any poor loam mixed with plenty of grit or fine broken crocks. In spring, and again in autumn, it requires to be top-dressed with more poor loam, as, on account of the very succulent nature of the plant, the wind soon breaks it off.

Sedum Pittoni (Hab.?).

Treat like *Sedum brevifolium*.

Sedum populifolium (Siberia).

This *Sedum* is exceptional for its shade-loving character and in requiring to be planted in good deep loam.

Sedum sempervivoides (Asia Minor).

The off-sets of this plant should be encouraged as much as possible, as the individual rosettes die after flowering like those of *Sempervivum*. Plant on a well-drained, sunny bank, facing full south, a stone or two being used to keep the rosettes firm against wind, in a mixture of equal parts of poor loam and grit, the soil being kept as poor as possible. In spring and autumn, top-dress with the same compost as before.

Sedum spathulifolium (N.W. America).

Treat like *Sedum obtusifolium*, with the addition of a little limestone to the loam, as this brings out the beautiful white colouring of the plant.

Sempervivum (Mediterranean Region to Western Himalaya).

A very interesting group, which may be grown on any rockery stone. They grow best when planted on a patch of clay, which should first be made fairly moist, then be laid on the stone and the *Sempervivum* dibbled in. They will soon take hold and make a good clump. No cow manure must be added—though it is sometimes used for mixing with the clay—for it is liable to be infested with grubs, to get at which in summer the birds pull out all the *Sempervivum* and consequently the plants are all destroyed. By using pure clay this is avoided.

Senecio abrotanifolius (Europe).

Treat like *Senecio tyrolensis*.

Senecio adonidifolius (S. Europe).

Treat like *Senecio tyrolensis*.

Senecio carniolicus (Alps).

Treat like *Senecio incanus*.

Senecio incanus (Alps).

Plant, near the eye, on a little table-land at the base of a rock, on a well-drained, sunny bank, facing south or south-west, in equal parts of loam and leaf-mould together with a little fine limestone. In spring, top-dress with a little leaf-mould and sand. In autumn, top-dress round the collar of the plant with a little fine broken limestone.

Senecio leucophyllus (Pyrenees, Sierra Nevada).

Treat like *Senecio incanus*, except that this species must be kept a little dryer, on account of

its woolly foliage. If possible, plant under a slightly overhanging rock.

Senecio tyrolensis (Tyrol).

This green-foliaged species requires to be planted on a well-drained, sunny slope facing full south, in equal parts of loam, sand, and leaf-mould. In autumn top-dress with the same compost.

Shortia galacifolia (North Carolina).

A plant for partial shade, requiring abundant moisture during the summer; it must not, however, be planted in a stagnant place, but in one from which the water escapes freely. It does well on the north-east side of the rockery in strong, fibrous loam (from which the fine has been sifted out), sand, and leaf-mould, the latter taking the place of peat. Twice a year it is most essential to top-dress with leaf-mould and loam in a finer state of division than was used for planting. In top-dressing, the compost must be worked well up to the crowns of the plants with the hand, and then pressed firmly down, so as not to leave any of the root uncovered, as this is purely a surface-rooting plant. After the spring top-dressing it must be well watered to settle the soil down among the foliage, so that the dry winds do not blow it away. During dry weather in summer, if watering is possible a good soaking should be given every morning, but no mere surface sprinkling, as this mode of watering is detrimental to all plant life; if watering cannot be done thoroughly, do not water at all.

Silene acaulis and vars. (Europe, Britain, etc.).

All sun-loving plants, which do well wedged tightly between stones in crevices facing full south, and which require a very poor soil, as otherwise they make too much soft growth in the summer, and this gets cut off when the winter comes.

Silene Elizabethæ (Tyrol).

This species requires to be wedged tightly between stones in a sunny place, with plenty of depth behind for the descent of the tap-root.

Silene Hookeri (California).

Treat like *Silene quadridentata*.

Silene Pumilio (Tyrol, etc.).

Treat like *Silene Elizabethæ*.

Silene quadridentata (Hab. ?).

Plant on a dry, sunny bank, wedged between stones facing full south, in equal parts of poor loam and grit, with a little leaf-mould. In spring a little top-dressing about the plant between the stones is beneficial.

Silene Requiæni (Greece).

Treat like *Silene quadridentata*.

Silene virginica (N. America).

This differs from the above-mentioned kinds. It will do well on the lower part of the rockery in a well-drained place, in good deep loam, attaining, when so treated, a height of 18in., and forming quite a bush with abundance of flower.

Sisyrinchium grandiflorum and **g. album** (N.W. America).

Plant in a shady place by the side of a bog or on the flat of the rockery, in peat or leaf-mould, together with a little loam. By planting in shade, the delicate beauty of the flower is preserved much longer.

Soldanella alpina (Alps).

A very interesting and pleasing little Alpine, of quite easy culture. Plant in a partially-shaded place with a damp surface, just on the edge of a bog. A stone should be placed on the side towards the bog to keep the plants from washing too low into it and becoming lost. In spring and autumn top-dress with leaf-mould and sand in equal parts, or the plant will soon dry up and perish.

Soldanella montana (E. Europe, etc.).

Treat like *Soldanella alpina*.

Spiræa bullata (Japan).

This small shrub is very useful towards the back of rockeries. Plant in a fairly dry, sunny position facing full south, in equal parts of poor loam and grit. In spring, should the plant have become too big for its position, the shoots should be partially cut back.

Spiræa cæspitosa (N. Mexico, Nevada, etc.).

This plant forms silvery tufts, not more than $1\frac{1}{2}$ in. to 2 in. high when in flower. It is not an easy plant to grow. Plant in a well-drained, sunny position on a bank wedged tightly between stones, so that the neck of the plant is kept perfectly dry on account of

the tomentose foliage, in equal parts of loam, fine limestone, and leaf-mould. In spring and in autumn top-dress with the same compost between the stones, working in the dressing well around the collar of the plant. In winter it is best to place a stone so as to overhang the plant, as a protection. After the winter, as the plant is very small-rooting, care must be taken to see that it has not been at all lifted by frost ; should this have happened, the plant must be pressed firmly back again into its place.

Spiræa decumbens (Tyrol).

A small tufted species. Plant near the eye in a dry, sunny position, on a bank facing south, in equal parts of loam, grit, and leaf-mould.

Spiræa digitata (Eastern Siberia).

The dwarf form of this species requires the same treatment as *Spiræa decumbens*.

Spiræa pectinata (N.W. America).

Plant in a dry, sunny position behind a stone, over which it may hang, on a bank with south aspect, in equal parts of loam, grit, and leaf-mould. In spring top-dress with the original compost, and cut away any straggling growth.

Statice cosyrensis (S. Europe).

Plant on a dry, sunny slope facing full south, in equal parts of poor loam, sand, and leaf-mould.

Statice gongetiana (Spain).

Treat like *Statice cosyrensis*.

Statice incana hybrida (Tauria, Siberia, etc.).

Treat like *Statice cosyrensis*, but as this is a larger plant it must be given more room. After flowering, cut away the old stems.

Statice minuta (Mediterranean).

Treat like *Statice cosyrensis*.

Synthyris reniformis (N.W. America).

Plant in partial shade, either on the flat or on a bank, in half peat and half loam, without the use of any sand or leaf-mould. This plant does not object to limestone, although a peat-loving subject. In late autumn or very early spring, top-dress with loam and fine peat. *Synthyris reniformis* does well along with *Primula farinosa*, and will grow by the damp side of a stream.

Tecophilæa cyanoerocus (Chili).

This charming little bulbous plant is perfectly hardy, and will do well either in a well-drained place on a north or south border, or in the same position on rockwork. Where it can be planted in both positions, a succession of flowers will be obtained from early March until May, the bulbs on the south flowering fully a month before those on the north. Use as compost a mixture of two parts of good strong fibrous loam to one of white sand. Plant the bulbs $1\frac{1}{2}$ in. deep, then cover them with white sand, fill up with more compost and make firm. No more attention will be needed for two or three years beyond care to keep clear from other plants, and the patch will bloom freely every year.

Townsendia Wilcoxiana (Colorado).

Where early flowers are required this plant is very useful. It is of quite easy growth, and should be planted in a well-drained place on the south side of a rock, in any ordinary loam. The site selected for this plant should be near the edge of a path, as it is so dwarf and flowers so close to the ground that the flower is never seen at all if planted high up.

Trientalis europæa (Northern Hemisphere).

Plant in shade on the flat with a west or north-west aspect, making a bed 9in. deep and filling it with a compost of equal parts of leaf-mould, peat, sand, and sphagnum, all made fine and well intermingled. Mix the little roots with the compost, burying them 2in. deep. Make the whole bed perfectly firm, yet so as to preserve a spongy consistence.

Trilliums (N. America).

These are all useful shade-loving plants which do well on the north side of a bog, and grow very freely in a mixture of loam, leaf-mould, and peat.

Tropæolum polyphyllum (Chili).

This will grow in any well-drained position if the tubers are set 1ft. deep in poor sandy loam.

Tropæolum speciosum (Chili).

Plant on the flat. Prepare a hole 18in. deep and 2ft. square, on the shady side of a Yew hedge or evergreen bush in any aspect. If the position selected is a very damp one, place 3in. of rubble in the bottom of the hole. Fill in with 9in. of *rough*

peat, loam, and leaf-mould, in pieces the size of the fist, and above this place 3in. more of the same compost in a finer state. Make the whole fairly firm with the foot. Drop in the roots and spread them over the surface. Fill in the remainder of the hole with the same compost as the preceding 3in., and again make firm with the foot, and then leave the prepared and planted plot and all around it to the distance of a yard radius absolutely undisturbed, as in many cases the young shoots appear so far away from the original situation of the plant. Although *Tropæolum speciosum* requires to be planted in shade in the first instance, when fully established it flowers and grows most freely in full sun. The above cultural notes apply to most English gardens. The best time for planting is between the middle of September and the end of October.

Tulipa triphylla (Turkestan).

Plant the bulbs 3in. deep on a dry, sunny bank with a south aspect, in poor sandy loam.

Vancouveria hexandra (N.W. America).

Plant in shade on the flat or on a bank facing north, in loam with a little peat intermixed. In spring, top-dress with equal parts of leaf-mould and loam.

Veronica Bidwilli (New Zealand).

A pretty little shrubby species which does well between stones, in a sunny position well protected from the north, in a compost of sandy loam.

Veronica caespitosa (Greece and Asia Minor).

Plant on the flat facing full south, wedged between stones, or, if without stone, entirely surrounded with grit, in half grit and half poor loam. In spring top-dress with original compost, and in autumn with plain grit.

Veronica canescens (New Zealand).

Plant on the flat in a position near the eye, with a south aspect, but shaded from the sun until the dew is gone and at midday. The foliage is so minute that the place where the plant is should be marked lest it be disturbed unwittingly in winter. In autumn top-dress with white sand.

Veronica salicornioides (New Zealand).

A plant of very easy culture and perfectly hardy. Plant on a well-drained bed in sandy loam. In early autumn top-dress with sandy loam worked well among the shoots ; it will then root freely, and form a perfect carpet close to the ground. The plant requires no other attention whatever.

Viola calcarata (Austria).

Useful for early spring. Plant in a sunny position on the flat, facing south, in very sandy loam or even pure sand. Two or three times in the year top-dress with a little sandy loam. In early spring, when the plant is making its young growths, a watch must be kept against snails.

Viola pedata (N. America).

This plant makes a very good companion for *Ranunculus glacialis*, growing and thriving in the

same compost. A compost of leaf-mould and loam in equal parts suits it best. If planted on the side of a bog it should be close under the eye, where it can be seen to after flowering, as, being so small, it often gets overrun by stronger plants and is lost.

Viola pyrolæfolia (Patagonia).

Treat like *Viola calcarata*.

Wahlenbergia Pumilio (Dalmatia).

This is a rock plant of exceptional beauty. It should be planted very firmly in fissures between stones facing full south, in equal parts of grit, loam, and sand, care being taken to leave an ample space behind filled in with grit and a little loam, so that the tender silky roots may be well protected from the first, and afterwards, as they grow, cling to the sides of their rocky nook and gather there all the moisture they require. Care must also be taken to see that the soil does not get washed away from the plants and leave the roots loose.

Wahlenbergia pumilorum (Dalmatia).

Treat like *Wahlenbergia Pumilio*.

Xerophyllum asphodeloides and **a. tenax** (N. America).

Two very effective rock plants which look well overlooking water. Plant immediately behind a rock, in a rather shady but well-drained place, in deep peat and loam out of which the fine has been taken together with a little sand. *Xerophyllum asphodeloides* is the hardier, and may be placed in more exposed situations than *X. tenax*.

THE SMALL ROCK-GARDEN.

MANY a small garden might, with great advantage, be entirely converted into a rock-garden, with Alpines as its prevalent feature ; but in the majority of cases only part of a garden can be devoted to this object, and this part should not be out of proportion to the rest which is given up to lawn, pleasure, alley, rose-garden, herbaceous border, or fine-foliage bed.

The small rock-garden contemplated in this essay is such a one as is limited alike by the smallness of area available, by a desired or necessary economy in construction, and by consideration for the personal attention which its care will afterwards require.

Unlike its larger and more ambitious forms, the small rockery need not necessarily occupy a position with unconventional surroundings ; since, in its case, there can be no attempt at allusion as to its real character. Indeed, it is not least effective when made a frankly outstanding feature, where either more natural or more formal arrangements prevail. But under such circumstances it must always be isolated and led up to, forming, in a word, the Rock-Garden.

No more valuable means of transition is possessed than that afforded by the many varieties of China Rose and allied forms.

Should, however, the need of shelter or the desire for an unbroken vista suggest it, Alpines may be grown well and absolutely unobtrusively by means of the entirely sunk rockery. Whatever its surroundings, it is essential that the rockery should be secured from strong winds and from the north. Exposure to cold by itself alone is little harmful to the majority of Alpines, and such as need protection from it can be easily provided for by means of sheltering stones, but a wind-swept exposure is speedily injurious and frequently fatal, especially when to the effects of mechanical violence is added the more searching evil of chilling or parching blasts and currents over a soil sodden and a vegetation enfeebled by the clinging damp and persistent rains of our long wintry season; nor are partial and variable draughts less surely, if more insidiously, hurtful.

Such shelter as must be given, need not be extensive, but it must be efficient, as well for the appearance and enjoyment of the rockery as for its welfare; and it should be complete enough to secure freedom from draught without confinement, for the prevailing wind and the north must be shut off, but the rockery must not be shut in. The amount of shelter required will vary greatly according to situation, whether on high land or hill-side, in undulating country or in the midst of wide, low levels, well planted or treeless, inland or by the sea. All

that is needed is shelter against the force of strong winds, and their drying or cutting influence. The means of shelter may be either environmental or integral to the rock-garden, gained from existing screens of trees or shrubs, boundary walls or fences, or the side of a dwelling-house, supplied by natural advantages of slope or inequalities of level in the actual site, whether untouched or accentuated, or by special provision made close to the rockery itself, with its benefit alone in view. It need hardly be said that opportunities to turn bank sides or inequalities of ground to advantage should be seized most keenly and used to the full. But comparatively few small rockeries can have a site so freely chosen or so favourably disposed as to dispense with direct provision for their need of shelter. This may be given in either of two ways : by screens of shrubbery or by barriers, whether of hedge, fence, or wall.

Screens of shrubs and trees or of shrubs alone, grown upon the outer sides of banks around the rockery, except on the south, are the most natural, pleasing, and easily treated as well as effective cover, but, apart from the initial expense and labour involved in their formation, demand more space than can often be given ; for the rockery must not only be perfectly open, it must also be entirely free from drip, and from intrusive roots which drain and impoverish the soil. Screens of the same nature, on low mounds or on the level, take up less space but are less efficient, often permitting draught. In any case, adjacent screens of this character should be severed from the rockery itself by a considerable

trench or by a well-made and broad walk. Hedges take up less room than either of the above, but are open to similar objections, and are liable to prove snug harbour for innumerable snails. Moreover, they are also apt to look too much like nursery partitions, unless cut formally and embayed, and even then they dictate peremptorily very careful arrangement of the rockery both in plan and elevation to harmonise successfully with themselves, and thus hamper a freedom which it is of the first importance to preserve.

When it is unavoidable to set hedges or shrubs closely adjacent to the rockery or in unbroken connection with its mounds, it will be found convenient to use the old-fashioned thick Cumberland slates that can often be obtained from their disuse on buildings, or other similar flags or slabs, to form a barrier throughout the depth of the intervening soil against the encroaching and hungry roots that are sure to seek entrance.

In the small rockery limitations of space more frequently than not enforce a falling back upon the more artificial barriers of wood, brick, or stone. Half-trellised wood fences may sometimes be utilised in the provision for shelter, but they are not well adapted for use in connection with rockwork, are expensive to erect and lacking in permanence, besides affording only partial protection.

Boarded wood fences have much greater usefulness and are much cheaper to put up, if not much more permanent; but they are far from sightly, and can only be regarded as makeshifts, however

inevitable and indispensable their use often is. On the whole it remains then that the chief shelter to the small raised rockery is found most practically in walling, and any site sheltered by house or boundary walls should be turned to account if possessing the right aspect and otherwise suitable and available.

In many cases, if the expense is not too great, economy of space, suitable position, and efficiency of shelter combined can be best and most simply secured by building a wall on the north or west, as the case may be, at the back of the main bed of the rockery and parallel with its principal axis, utilising it as a retaining wall against which the final terraces of rockwork may be buttressed, the part of the wall which remains in sight being always built of similar stone to that of which the rockery is itself composed. A wall thus incorporated in the rockery can easily be masked on its exposed side by a belt of shrubs, or by creepers or wall-shrubs grown against it. The base of the rock-garden should always lie back to the north, and protected from it by a screen. The character of this screen and the necessity of additional screens depend upon further considerations.

The vast majority of Alpines flourish upon a rockery facing full south, and when the site is naturally sheltered, or no winds are troublesome, or the east wind is at all bitter or strong, the position of the rockery should be such that its long axis runs east and west: in this case, a screen or wall on the north, together with a little shelter at the east end of the rockery if necessary, will prove admirably

suited to the situation ; or the screen or wall may itself be slightly curved into an arc, to provide any necessary shelter at its extremities. The chief difficulty arises in exposed situations where space is limited, where there is no room for banks of shrubs and trees, or where the expense of their provision is too great, and, above all, where powerful west winds have to be provided against as well as the north.

In these instances, or where with free drainage a shallow soil is liable to become parched or a retentive soil baked by unlimited exposure to the prolonged ardour of the sun, a south-east or even east aspect is more favourable than one facing full south, and therefore the main axis of the rockery should then be set due north and south, and fullest protection be extended towards the west, advantage being taken, in such cases, of any screen existing on the north ; where space is limited, it is best to build a covering wall on the west, and incorporate it in the rockery.

If the west wind is very powerful and the whole site dips towards the west, a trench of fair width and from 3ft. to 5ft. in depth, or as deep as is practicable consistently with due regard to steepness of slope, thickness of soil, adequacy of light, and fitting nature of subsoil drainage, should be dug due north and south, the material obtained from it being banked up on the west side with a covering wall behind if possible.

The same expedient of making a rockery by means of "cuttings" may be adopted on sloping ground wherever it seems for any reason desirable ; and, indeed, a corresponding system of "banks and

dykes" may be followed on the level in all cases where there is a sufficiency of soil, a firm, dry subsoil, and an adequate fall and outlet for surface drainage available.

When space is limited and the rockery is backed by a wall not actually incorporated in its structure, by a planked fence, or by a hedge, it is well to provide a narrow path between the two, as this serves to reduce the effect of reflected heat from the adjacent barrier, and, in the case of a hedge, also assists in checking the passage of roots into the soil of the rockery.

In the case of rockeries that consist chiefly of an elevated plateau, too small for track-ways over it, such an arrangement is of especial value, as it also greatly increases the facilities both for convenient access to every part and for the close inspection of those small plants which are most appropriately placed in such a situation.

In all cases narrow paths should render every portion of the rockery easily accessible at any season, and the main path through it and any which may outline the rock-garden should be wide enough and smooth enough to admit of the easy passage of a wheelbarrow, the remaining tracks being quite informal in character and not more than from $1\frac{1}{2}$ ft. to 2 ft. wide.

In planning such a rockery as is in view, it will probably be found desirable to form several beds, of which one predominates over the rest by size and importance.

This chief mound should have its main bulk

accumulated towards the north, or west and north, according to situation, and should rise chiefly towards the north or north-west as the case may be under the exigencies of position. Where there is room, and the rockery does not directly abut upon any constructional wall, or immediately adjoin any adjacent wall or fence, it may die down gradually to the ground-line on the north, larger stones being then employed there than in most of its construction in order to ensure strong support to steeper slopes. The same treatment should be adopted on the west when that aspect is unfavourable to cultivation.

If, however, the rockery top is comparatively flat, while little space is available, and therefore all space is valuable, the west and north sides may very suitably be sustained by rough dry-walling, inclined sufficiently to allow of the insertion in its open interstices and joints of shade-loving plants, such as *Ramondias*, and of the smaller ferns, such as *Asplenium ruta-muraria* and *A. trichomanes*, *Ceterach officinarum*, and *Cystopteris fragilis*.

More or less vertical dry-walling is also useful when the rockery directly ranges along any wood-fence, trellis, or house wall. On no side of the rockery open to approach must the slope be so slight or the batter so great as to remove the higher surface of the adjacent soil far from the eye or hand, since these positions afford the most fitting situation for very minute or early-flowering plants.

The great aim in forming such a piled-up mass of earth as has been indicated is to provide a central reservoir for the receipt and storage of water under

the varying conditions of humidity or drought that prevail at the extremes of winter and summer, and to secure a deep root-run that shall remain equable in its conditions of moisture and temperature at all times; indeed, the construction as well as the planning of a rockery are as much indicated by the necessity to provide against temporal changes of climatic condition as against the steady sway of its extremes of dryness or moisture.

To further these objects the mound should rise in successive, more or less rounded, terraces until the main broad, elevated plateau of the rockery is reached. These terraces should descend in successive planes towards the south or south and east until they cease about 6in. from the ground, forming there the outlines of the bed, the main aspect of the whole being towards the south or towards the south-east, which is on the whole the better aspect in most cases, provided it is available without difficulty. The surface of each terrace should dip slightly down towards the base of the next terrace above. It is best to keep a fairly wide terrace round the margins at the base of the rockery for smaller stuff, devoting portions of this here and there to a shelf-like disposition of the rockwork—after the fashion of the steps in a tilted-back step-ladder—filled with earth.

The steep and contracted ledges thus obtained form an admirable site for such dwarf and choice species as *Potentilla nitida*, *Armeria cæspitosa*, etc. In planning the rockery it is best to provide a more or less extensive low and long mound in front of the chief area on which to grow sheets or cushions of such

strong-growing and showy-flowering plants as the varieties of *Aubrietia* and *Phlox subulata*, together with the Mossy Saxifrages, *Antennaria tomentosa*, *Armeria lauchiana*, *Campanula carpatica pelviformis* and *c. turbinata* "Isabel," *C. portenschlagiana bavarica*, *Helianthemum vulgare* vars. "Ball of Fire," *Croftianum*, and *tomentosum*, *Iberis correæfolia*, etc. A separate bed for partial shade should also be provided on the south, but with its declivity towards the north.

Indeed, when the natural drainage is good, or artificial drainage can be arranged for, and where stone is sufficiently plentiful, a considerable hollow may be sunk in some part of the rock-garden, preferably on the south, which will both afford a large supply of soil towards the mounds to be constructed, and will also take the surface drainage of any rockery walks or tracks made to trend down towards it, and thus assist to provide a fitting home for shade- and moisture-loving plants even on the driest soils, especially if its deepest pits or basin be filled with peat.

When they can be obtained, the large Cumberland slates already mentioned, or other similar material, may be employed as deep retaining slabs around the sides of this sunk portion, the earth being terraced against them or not, as any particular effect requires.

The stones employed in making the rockery should always, as far as possible, be already hardened by exposure to the weather before use. In contrast with the soil, their geological character is comparatively unimportant, and any local stone easily obtained is

suitable, provided it is not of a soft, crumbling nature, liable to be split or to moulder away under stress of frost and weather. While rounded, characterless lumps or pyramidal masses are to be avoided, grotesque or unusual forms are to be eschewed even more severely, as unserviceable and out of place on any rockery erected with the object of cultivating Alpines. Pointed stones shaped like a canine tooth, stones irregularly jagged, or flat triangular or rhomboidal pieces, are also of little use.

The most serviceable stones are not too slab-like pieces, with little thickness compared to their length, or even depth, having as nearly vertical sides as may be, and either a flat or sharply-bevelled top, while ranging in size up to 2ft. or 3ft. long by $1\frac{1}{2}$ ft. to 2ft. high by 9in. to 12in. thick. Substantial, irregular-fronted blocks, with firm, flat bases, are also very useful. Although care to keep all to scale is always necessary, there should not be too much timidity in respect to the use of large stones on the small rockery, if they can be had.

Comparatively large stones, although not actual boulders, are very valuable for use on all but insignificant pieces of rockwork, whether to wall up steep slopes, to obtain bold features in the low levels, or to form bluffs, over which sheets of flower and foliage may hang at the back of its top. A judicious use of big stones gives a surprising vigour and increase of scale to the rock-garden, although it is undoubtedly easy to bring about exactly the opposite result if they are employed without careful judgment and a prudent parsimony in their use.

The general rule for the building up of any bed or portion of a bed, whatever its form, may be stated thus: Every mound, or portion of a mound, should be terraced in rising stages towards the place of its greatest mass.

The planning of the rockery and the disposition of its rockwork should always be kept simple.

The contour-lines in a good map of hilly country will suggest suitable arrangements; miniature precipices, prolonged escarpments, fissured pavements, isolated summits and gentle slopes on the top, shallow V-shaped gullies running into the sides, should all have a place.

Special care should be taken to avoid gaps and clefts between adjacent stones through which the rain can wash down soil from above; such openings may be stopped with small stones, rough peat, or clay.

The height of the mounds above the general ground-level, should not on the whole be greater in proportion to the breadth than from 3ft. to $3\frac{1}{2}$ ft. in 15ft.

Should it be desired to obtain greater apparent height in any portion, this may be gained with good effect by excavation of the pathway there, using large stones as a basement for the sides.

The case of mounds abutting on a retaining wall is exceptional for the increase in proportion of height to breadth which it permits, but even in this instance the rule above given should not be unduly or recklessly disregarded.

It is well to insert a fair number of good-sized

pieces of stone into each mound in the course of construction, to form a skeleton or hidden structural framework. The placing of one stone vertically upon another in direct contact is to be avoided, as they do not then "bind" with the settlement of the mass, but remain unstable.

Should such an arrangement be unavoidable, as it is sometimes, a layer of earth should be interposed between the stones. It ought to be possible to step anywhere on the rockery without displacing the stones in the slightest degree.

Unless precautions are taken to ensure this, the loosening of soil about the roots of the plants, even apart from their possible exposure, is very injurious. No less care should be taken in making the rockery to avoid leaving any cavities or lightly-packed spaces between stones, behind or below them, as this is sure to involve a serious amount of after-sinkage of the soil. Such care is especially necessary when the rockery is planted immediately or soon after erection, and is not left fallow for a while to settle, which is much the wiser and preferable course.

Before beginning the rockery, the bed of its shallower portions, if it is of any size, or the whole of its bed if it is very small, should be excavated to a depth of from 1ft. to $1\frac{1}{2}$ ft. below the ground-level, and the bottom 4in. or 6in. filled in with any kind of rough drainage. The soil of which a small rockery is to be composed should consist in the main of about one-third loam, one-third well-rotted leaf-mould, and one-third sand, the loam being slightly in excess.

It is only small rockeries, or those which are to remain untouched for a long time, that need to be made of such good soil throughout. In other cases it is sufficient to provide a covering of good soil to a depth of from 1ft. to $1\frac{1}{2}$ ft. only, over a core of inferior and almost indifferent material, provided it is loam and well drained. The smaller the depth of good soil, the better must be its quality. It is better to use a poorer quality of loam in making the rockery itself, reserving really good and even rich loam for use in planting, if this is then used along with plenty of grit and sand or other diluting material. The same principle applies to the leaf-mould or peat used.

In all these cases the better soil assists in stimulating initial growth, and the establishment of the plant in a vigorous state in its new quarters, while the limited supply prevents too rank growth, and hence retarded or scanty flowering. In making the rockery, the rougher material should be thrown in at the bottom, the top $1\frac{1}{2}$ ft. being carefully prepared by passage through a sieve with $\frac{1}{4}$ in. mesh. An abundance of broken-up chips and fragments of grit should be mixed, during the progress of the work, with the soil throughout; the pieces, at first large, decreasing in size, but increasing in number with decrease of depth. In some bed or part of a bed the loam should be replaced by peat, together with a larger proportion of sand; while another portion should form a sand-bed, consisting in one place of pure sand alone and, for the rest, of half sand and half leaf-mould, the whole being, in all

these cases, surfaced with a thin top-dressing of loam.

During the making of the mounds, and before planting them, the soil should be well trodden down to ensure its being firm and to reduce after-shrinkage. When a plant especially requires or benefits by frequent top-dressing this may be provided for, contrary to the general rule already enunciated, by planting it at the base of a gap or cleft intentionally retained, care being taken to avoid placing any plant above that would be injured by the consequent denudation.

Many little plants like *Myosotis rupicola* may be grown most satisfactorily and effectively in narrow clefts and crevices, obtained by splitting large stones already forming part of the rockery with sledgehammer and wedges, the wedges being allowed to remain in place until the plants have been inserted into the cracks thus provided for them, along with any packing which may be necessary to regulate the compression of soil about their roots consequent upon the withdrawal of the wedges.

Woolly-leaved plants, such as *Androsace sarmen-tosa*, liable to damp off through wet in winter, are often better placed on a slope with a pavement of flat slabs by their sides and on their lower verges. Plants such as *Onosma taurica*, the collars and lower leafage of which require to be kept dry without depriving the roots of an abundance of moisture, are most suitably catered for by planting them between stones, buried in the soil to their upper edges, and arranged in the shape of an inverted and truncated V

An occasional top-dressing with silver sand, in spring or autumn or both, is very helpful in keeping the surface soil of the rockery open and sweet.

The kind of soil used for a rockery and the nature of the subsoil underneath have the greatest influence upon the aspect under which different species will thrive upon it; thus in a district with a retentive loam, a marly subsoil, and free drainage, and hence where the soil is liable to suffer from drought and to become baked in summer, many plants which usually do best in full sun facing due south can only be grown satisfactorily and with ease when planted on northern slopes or among stones with a northern aspect, though they must then be fully exposed to the early morning sun, and entirely protected from the winds and cold of the north.

The relation between calcareous and non-calcareous geological formations, and the welfare of plants grown upon them, is also chiefly dependent upon physical considerations, subject to intelligent provision and appropriate adjustment; and even when this is not the case there are few instances in which the need of specific chemical elements peculiar to the one class of formation or the other cannot be satisfied by the incorporation of that particular material into the alien soil. Plants which are rather "tender" or only partly hardy, and which therefore require to be parched in summer in order that their growth may be firm and their wood become hard and well ripened to face an English winter and to ensure the next year's flower, and which must besides be as dry as possible in winter, have their needs

best met by the natural properties of a limestone soil, and this is also true of the great majority of plants which are hairy or downy on leaf or stem.

If such kinds are to be grown successfully on sandstone, it is therefore necessary to simulate these favourable conditions as closely as possible, by the choice of elevated, sun-burnt positions and a poor soil, rough in texture and full of grit. On the other hand, another wide range of plants, such as is exemplified by many of the *Primulas*, that only thrive when never permitted to become dry during their period of active growth, flourish naturally upon sandstone or gritstone sites, and if they are to be cultivated upon limestone must have partially shaded positions and a somewhat retentive but sweet soil upon a cool bottom, along with a plentiful artificial supply of water throughout the dryer months should the natural water supply be at all deficient or irregular, or should the soluble salts readily taken up from limestone or dissolved from it by the rain be injurious.

From this last cause, the cultivation upon a limestone soil of plants which are actually limestone-hating is rendered so difficult as practically to debar from the attempt even when every other circumstance can be rendered favourable. This consideration finds its most important application in the case of plants requiring a vegetable soil, the differing relation of which towards the two classes of geological formation already mentioned is far more rigid and incapable of adaptation in its bearing upon plant-cultivation than is that of the characteristics of the one formation to those of the other.

Most peat-loving plants are also limestone-hating ones ; but not averse to sandstone, granite, or the like rock. With few exceptions, therefore, the cultivation of peat plants upon limestone involves the fostering of an alien population amid hostile surroundings, ever apt to work mischief, against which even the most scrupulous guard may prove of no avail.

Such a venture seems hardly worth while, when the great range of more available and equally desirable subjects, that present no such difficulties, is borne in mind. The influence of the kind of soil upon foliage is the most intimately marked of all. Many silvery- and white-leaved plants and shrubs colour best on limestone. Plants the leaves of which are golden and variegated, on the other hand, develop their beauty best on grit, sandstone, or micaceous rock. The majority of plants the leaves of which redden in autumn are no less characteristic of peat or other vegetable soil.

Restraint should be exercised in the selection of plants peculiarly characteristic to the formation of which any particular small rockery is made, as their very freedom of growth, under the circumstances, often renders them less suitable to such positions than others more indifferent to the soil. Although the three Orders, the Caryophyllaceæ, the Compositæ, and the Cruciferae, are prominent in the Swiss Alpine flora, and very useful in rock-gardening on a large scale, they should be used with extreme reserve on the small rockery, and one Order, the Leguminosæ, is best confined to one representative, viz., *Anthyllis montana rubra*.

The genera *Saxifragæ* and *Sempervivum*, together with the Order *Primulaceæ*, should form the prevalent background of the rockery, and be most variously represented on it, for in this way the characteristic mountain note will be struck ; and this note should be emphasised and enriched by an accompanying prominence of the Orders *Boraginaceæ* and *Polemoniaceæ*, of the genera *Gentiana* and *Edrianthus*, and of the species *Anemone vernalis*, *Dianthus neglectus*, *Dryas octopetala*. and *Ramondia pyrenaica*, care being taken in the rest of the Alpines chosen to have as varied a selection of Orders represented as possible.

A selection of plants embodying these principles and made with great care will be found at the close of this essay.

Bulbs and tubers in quantity are even more indispensable on the rockery than on the border. The value of the *Alliums* and of the species of *Crocus* in this connection is not sufficiently recognised ; they are invaluable for prolonged and successional flowering. The place where bulbs and tubers are planted should be surfaced by carpeting plants to prevent bare patches when they die down after flowering.

So many rockeries have arid tracks and crannies where it is difficult to get anything else to grow, and the *Sedums* and *Sempervivums* adorn these with so much interest and beauty, that it seems worth while to emphasise their value and especially to mention that certain somewhat tender *Sedums* deserve a place on the choicest rockeries.

Special care should be taken to place plants which

flower after the end of June in well-considered positions, as the floral display is then so much reduced, and every plant that flowers should be made to tell, even by its isolation. A store of young material should always be maintained to replace inevitable annual loss and overgrown subjects; and no hesitation should be shown in the remorseless reduction or removal of all straggling and too aggressive specimens each autumn.

Just as it is false economy to stint expenditure on labour and material too closely while making the rockery, so it is false economy afterwards not to provide all that may be needed for potting and planting in connection with it, for, in both instances, the lessened outlay on plants after the first stocking will speedily begin to do more than compensate for the initial cost involved in provision for their successful cultivation and propagation. Hence, care should be taken to have in stock from the first all the materials required in this connection; a sufficient supply of fibrous loam from the top spit of a pasture as well as more retentive loam such as is available in unrivalled quality in the red soil of a limestone district; peat both of a hard, fibrous and of a sandy, heathy nature, together with a plentiful supply of clean river sand, coarse Bedfordshire sand, and last, but not least, an abundance of sandstone grit in broken cubes and finer siftings, together with some limestone grit, a little old mortar-rubbish, sphagnum, charcoal, and burnt earth. Road-scrappings, although often used and indeed often useful, are yet material to be very wary about, being so often infested with

wireworm. It is hardly necessary to specify the need for clean pots and pans of various sizes, broken crocks and rubble for drainage, and efficient labels. A sunk sand-bed in which to bed pots of stock is almost indispensable, and cold frames are little less useful in which to raise it.

When it is possible, the ground in which planting is to be done should be watered the day before, if at all dry. Before planting, each ball of earth or mass of roots should be dipped into a bucket of water until well soaked through; and on planting each insertion should be pressed and "built" against the side of the cavity made for its reception, before filling in the hole with soil and pressing downwards, both operations being performed firmly but gently. Roots, especially when exposed, should never be cramped or forced in planting, but always humoured. In planting it is desirable to use coarse silver sand, if it can be procured, in preference to the ordinary sand previously used. It is a golden rule to study the "natural history" of plants as regards their native home and normal experience, their favourable soil and favourite aspect, for their own sake, no less carefully than their height, colour, habit, and season of flowering, for our own pleasure. Such labour is certain to be rewarded. On the rockery, at any rate, every plant and each kind of plant needs individual thought, individual care, and individual provision if its culture is to yield the most successful results possible.

LISTS FOR THE SELECT SMALL ROCK-GARDEN.

A Select List of 100 Plants for the Small Rock-Garden.

<p>Acantholimon venustum.</p> <p>Androsace lanuginosa & v. Leichtlini.</p> <p> ,, sarmentosa & x Chumbyi.</p> <p>Anemone Pulsatilla (the amethyst col- oured and silky- petalled kind).</p> <p> ,, vernalis.</p> <p>Armeria cæspitosa.</p> <p>Arnebia echioides.</p> <p>Asperula hirta.</p> <p> ,, suberosa.</p> <p>Campanula mollis.</p> <p> ,, pulla.</p> <p>Cistus algarvensis.</p> <p>Daphne Cneorum.</p> <p>Dianthus neglectus.</p> <p>Draba brunifolia.</p> <p> ,, olympica.</p> <p>Dryas octopetala.</p> <p>Edrianthus serpyllifolius.</p>	<p>Erythræa Massoni.</p> <p>Eurybia gunniana.</p> <p>Gentiana acaulis, v. angus- tifolia.</p> <p> ,, septemfida, v. cor- difolia.</p> <p> ,, verna.</p> <p>Geranium cinereum.</p> <p>Houstonia cærulea & c. alba.</p> <p>Hutchinsia alpina.</p> <p>Hypericum ægypticum.</p> <p> ,, crenulatum.</p> <p> ,, cuneatum.</p> <p> ,, nummularium.</p> <p> ,, reptans.</p> <p>Linaria alpina & a. rosea.</p> <p>Linum arboreum.</p> <p>Lithospermum hirtum.</p> <p> ,, prostratum.</p> <p>Myosotis rupicola.</p> <p>Oenothera rosea (true species).</p> <p>Onosma albo-rosea.</p>
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Onosma taurica.	Saxifraga muscoides Rhei,
Papaver alpinus, in var.	v. " Guildford
Phlox amoena.	Seedling."
„ canadensis (true erect	„ oppositifolia, v.
form).	"W. A. Clark."
Potentilla nitida atrorubens.	„ valdensis (true).
„ nivalis.	Sedum corsicum.
Primula Allioni.	„ cyaneum.
„ Auricula marginata.	„ farinosum.
„ capitata (quasi-	„ Nevii.
biennial).	„ obtusatum.
„ denticulata alba &	„ obtusifolium.
d. pulcherrima.	„ oreganum.
„ frondosa.	„ populifolium.
„ involucrata.	„ sempervivoides
„ marginata, v.	(quasi-biennial).
" Linda Pope."	„ spathulifolium.
„ pubescens alba.	Sempervivum arachnoideum,
„ rosea grandiflora.	vars. sub-al-
„ sikkimensis.	pinium and
Pyrola rotundifolia.	Laggeri.
Ramondia pyrenaica & p.	„ arenarium.
alba.	„ Braunii.
Saxifraga apiculata.	„ Comollii.
„ × Boydii.	„ cornutum.
„ burseriana.	„ Hookeri.
„ Cotyledon, v.	„ Thompsoni.
nepalense.	„ triste & t.
„ glacialis.	bicolor.
„ Griesbachii.	„ Verloti.
„ lingulata lanto-	„ verescens.
scana.	Shortia galacifolia.
„ longifolia.	Silene quadrifolia.
Saxifraga maweana.	Sisyrrinchium anceps.

<i>Spiræa bullata.</i>	<i>Veronica glauco-cærulea</i>
„ <i>digitata</i> (dwarf form).	„ <i>nana.</i>
<i>Trientalis europæa.</i>	„ <i>loganioides.</i>
<i>Thymus carnosus.</i>	„ <i>salicornioides.</i>
<i>Veronica Bidwilli.</i>	<i>Wahlenbergia pumilio.</i>

30 Bulbs and Tubers for the Small Rock-Garden.

<i>Allium cæruleum.</i>	<i>Crocus biflorus argenteus.</i>
„ <i>cyaneum.</i>	„ <i>chrysanthus,</i> vars.
„ <i>grandiflorum.</i>	„ “ <i>albus</i> ” a n d
„ <i>Kolpakowskianum.</i>	„ “ <i>Canary Bird.</i> ”
„ <i>Ostrowskianum.</i>	„ <i>etruscus.</i>
„ <i>senescens glaucum.</i>	„ <i>Imperati & I. albidus.</i>
„ <i>triquetrum.</i>	„ <i>Sieberi.</i>
<i>Anemone nemerosa,</i> v.	„ <i>speciosus.</i>
„ “ <i>robinsoniana.</i> ”	<i>Erythronium giganteum.</i>
„ <i>palmata alba.</i>	<i>Iris histrioides.</i>
<i>Anomatheca cruenta.</i>	„ <i>reticulata.</i>
<i>Colchicum libanoticum.</i>	<i>Narcissus cyclamineus major.</i>
<i>Corydalis tuberosa albiflora.</i>	„ <i>minimus.</i>
<i>Cyclamen Coum.</i>	<i>Oxalis Boweii.</i>
„ <i>europæum.</i>	„ <i>enneaphylla.</i>
„ <i>neapolitanum</i>	„ <i>floribunda rosea.</i>
„ <i>album.</i>	<i>Tulipa triphylla.</i>

10 Useful Carpeting Plants for the Rock-Garden.

<i>Acæna Buchanani</i> (de-	<i>Mentha Requièni.</i>
„ <i>cidedly strong grower).</i>	<i>Pratia angulosa.</i>
<i>Arenaria balearica.</i>	<i>Sedum cæruleum</i> (self-sow-
<i>Cotula squalida.</i>	„ <i>ing annual).</i>
<i>Ionopsidium acaule</i> (self-	<i>Veronica repens.</i>
„ <i>sowing annual).</i>	„ <i>telephifolia.</i>
<i>Lippia nodiflora.</i>	

25 Plants for Rougher Places in the Small Rock-Garden.

<i>Achillea rupestris.</i>	<i>Sedum kamtschaticum</i> & k.
„ <i>tomentosa.</i>	<i>variegatum.</i>
<i>Æthionema grandiflorum.</i>	„ <i>middendorffianum.</i>
<i>Arenaria montana.</i>	„ <i>pulchellum.</i>
<i>Aster alpinus.</i>	„ <i>reflexum</i> , v. <i>cristatum.</i>
<i>Campanula</i> × “G. F. Wilson.”	„ <i>rupestre</i> , v. <i>grandiflorum.</i>
<i>Codonopsis ovata.</i>	„ <i>spurium</i> (or “ <i>pallidum</i> ”)
<i>Dianthus cæsius arvernensis.</i>	<i>astrosanguineum.</i>
<i>Potentilla</i> × <i>Tonguei.</i>	„ <i>sexangulare.</i>
<i>Ranunculus montana.</i>	<i>Thymus Serpyllum</i> , vars.
<i>Saponaria ocymoides alba</i> & o. <i>splendidissima.</i>	<i>coccineus</i> and <i>lanuginosus.</i>
<i>Scabiosa Parnassi.</i>	<i>Tunica Saxifraga.</i>
<i>Sedum album.</i>	<i>Veronica prostrata.</i>
„ <i>Ewersii turkestanicum.</i>	<i>Viola lutea</i> , v. “ <i>Gem.</i> ”

10 Very Strong-Growing Plants to Form Large Sheets, or Curtains over Stones.

<i>Acæna sanguisorbæ.</i>	<i>Saxifraga ceratophylla.</i>
<i>Aubrietia</i> { “ <i>Dr. Mules.</i> ”	„ <i>Hugueninii.</i>
<i>deltoidea</i> , { “ <i>Fire King.</i> ”	„ <i>muscoides atro-</i>
vars. { “ <i>Moerheimi.</i> ”	<i>purpurea.</i>
<i>Coronilla iberica.</i>	<i>Phlox</i> { “ <i>Vivid.</i> ”
<i>Saxifraga affinis.</i>	<i>subulata</i> , { “ <i>G. F. Wilson.</i> ”
„ <i>Camposii.</i>	vars. { “ <i>Nelsoni.</i> ”
„ <i>capillaris.</i>	

25 Accessory Plants for the Small Rock-Garden.

The following list is of the utmost importance to the appearance of the small rock-garden, in which the uniformity of levels and of type cannot be diversified by the free employment of shrubs and the larger herbaceous forms. It provides chiefly stronger-growing subjects, some of which (even when not themselves strictly speaking "Alpines") afford a character and variety to the rock-garden that greatly enhance the effect of its more proper denizens, while they themselves attain increased value and distinction from their special surroundings; and others greatly assist to prevent bareness on the rockery, out of the main flowering season, particularly in the latter half of the year.

Arundinaria nitida.	Mimulus cupræus.
Campanula Mariesii and M. alba.	Montbretia (the less rampant sorts).
Carlina longifolia.	Oenothera fruticosa, v. Pilgrimi.
Cypripedium spectabile.	„ speciosa.
Delphinium nudicaule.	Origanum hybridum.
Dicentra formosa.	Ourisia coccinea.
Epimediums, such as E. colchicum or E. niveum.	Polygala chamæbuxus purpurea.
Gaultheria procumbens.	Silene virginica.
Linum monogynum.	Synthyris reniformis.
„ narbonense.	Thalictrum minus.
Lychnis Haageana.	Vancouveria hexandra.
Malvastrum coccineum.	Zauschneria californica.
Meconopsis cambrica fl.-pl.	



SELECTIONS.

- I. PLANTS SUITABLE FOR THE ROCK-GARDEN, AND EASILY GROWN IN ANY ASPECT OR SOIL.
- II. BORDER-PLANTS, ALSO AVAILABLE FOR THE LARGE ROCK-GARDEN, AND EASILY GROWN IN ANY ASPECT OR SOIL.
- III. PLANTS WHICH DO WELL MOST READILY ON LIMESTONE.
- IV. PLANTS WHICH ONLY DO WELL ON SANDSTONE.
- V. PLANTS WHICH ONLY DO WELL IN PEAT.
- VI. SHRUBS $\left\{ \begin{array}{l} (a) \text{ FOR SMALL ROCKERIES.} \\ (b) \text{ FOR LARGE ROCKERIES.} \end{array} \right.$
- VII. PLANTS WHICH WILL GROW IN DEEP SHADE.
- VIII. PLANTS WHICH WILL GROW UNDER TREES.

I.—Plants Suitable for the Rock-Garden, and easily grown in any Aspect or Soil.

* Strong growers requiring plenty of room.

Acæna Buchanani.*	Arenaria balearica.
,, microphylla.	,, biflora.
Acantholimon androsaceum.	,, grandiflora.*
,, glumaceum.	,, montana.*
,, libanoticum.	,, verna.
Achillea argentea.	Armeria alpina.
,, Clavennæ.	Astragalus danicus & d.
,, rupestris.	albus.
,, tomentosa.*	Aubrietia deltoidea, in var.*
,, umbellata.	Calamintha alpina.
Æthionema coridifolium.	Campanula cæspitosa.
,, grandiflorum.	,, garganica.
,, saxatile.	,, × "G. F.
Alliums : nearly all.	Wilson."
Alyssum alpestre.	,, portenschla-
,, podolicum.	giana.*
,, serpyllifolium.	Cardamine trifolia.
Androsace coronopifolia	Centaurea stricta.*
(biennial).	Coronilla iberica.*
,, sarmentosa & ×	Crucianella stylosa.*
Chumbyi.	Dianthus cæsius.
Anemone palmata alba.	,, deltoides & d.
Antennaria alpina.	albus.*
,, dioica, in var.	,, fimbriatus.
Antirrhinum Asarina.	,, plumarius annula-
Arabis carduchorum.	tus.*
,, procurrens.	,, sylvestris & s.
,, rosea.	albus.

- Dryas octopetala*.
Erigeron mucronatus.
Erinus alpinus, in var.
Erodium Manescavi.
Fragaria lucida.*
Galium boreale.*
Geum montanum.*
Globularia vulgaris.
Gypsophila repens.*
Hedysarum obscurum.*
Helianthemum polifolium.*
 ,, *vulgare*, in
 var.*
Herniaria glabra.
Hutchinsia alpina.
Iberis saxatilis.
 ,, *stylosa*.
Jasione montana.
 ,, *perenne*.
Linaria Cymbalaria.*
 ,, *repens alba*.*
Lithospermum purpureo-
 cæruleum.*
Mentha Requiæni.
Micromeria croatica.
Mimulus cupræus.*
Myosotis alpestris.
Oenothera acaulis.
Origanum Dictamnus.*
 ,, *vulgare aureum*.*
Oxalis floribunda rosea.
Phlox (Alpine): all, except
 P. procumbens.
Phyteuma Balbisii.
- Phyteuma orbiculare*, in var.
Polemonium confertum mel-
 litum.
Polygala Chamæbuxus pur-
 purea.
Potentilla alba.
 ,, *Clusiana*.
 ,, *recta*.
 ,, *splendens*.*
Primula Balbisii.
 ,, *denticulata* & vars.
 d. alba, *d. cash-*
 meriana, & *d.*
 pulcherrima.
 ,, *japonica*, in var.
Ranunculus montanus.
Saponaria ocymoides, in
 var.
Saxifraga adscendens.
 ,, *affinis*.
 ,, *aizoides*, in var.
 ,, *Aizoon*: all.
 ,, *ajugifolia*.
 ,, × *Andrewsii* &
 A. Guthrieana.
 ,, *aphylla leptoph-*
 phylla.
 ,, × *apiculata*.
 ,, *canaliculata*.
 ,, *ceratophylla*.
 ,, *Cotyledon nepa-*
 lensis.
 ,, *cuneifolia subin-*
 tegrata.

- Saxifraga Cymbalaria* (annual).
 „ *Engleri*.
 „ \times *Fosteri*.
 „ *hypnoides*, in var.
 „ \times *McNabiana*.
 „ *muscoides*, in var.
 „ *oppositifolia*, in var.
 „ *planifolia*.
 „ *rotundifolia*.
 „ *sancta*.
Scabiosa graminifolia.
 „ *Pterocephala*.
Sedum album, in var.
 „ *alpestre*.
 „ *amplexicaule*.
 „ *Brownii*.
 „ *cruciatum*.
 „ *Ewersii turkestanicum*.
 „ *japonicum*.
 „ *lydium*.
 „ *middendorffianum*.
 „ *Nevii*.
 „ *obtusatum*.
 „ *obtusifolium*.
 „ *pallidum atrosanguineum*.
 „ *pruinatum Forsterianum*.
Sedum pulchellum.
 „ *reflexum*, in var.
 „ *rupestre grandiflorum*.
 „ *ternatum*.
Sempervivums : all.
Silene alpestris.
 „ *maritima fl.-pl.*
 „ *Schafta*.
 „ *vallesia*.
Statice incana hybrida, in var.
Thlaspi rotundifolia.
Thymus : all.
Tropæolum polyphyllum.
Tunica Saxifraga.
Valeriana alpestris.
 „ *supina*.
Veronica Allioni.*
 „ *bellidioides*.
 „ *pectinata* & *p. rosea*.
 „ *prostrata*.*
 „ *repens*.
 „ *rupestris*.*
 „ *saxatilis*.
Vesicaria utriculata.
Viola calcarata, in var.
 „ *lutea grandiflora*, var. "Gem."
Wahlenbergia dalmatica.
Waldsteinia fragarioides.*

**II.—Border Plants also Available for the Large
Rock-Garden and Easily Grown in any
Aspect or Soil.**

Ajuga genevensis Brock-	Corydalis: all, except C.
bankii.	thalictrifolia.
„ metallica crispa.	Cynoglossum apenninum.
Alyssum argenteum.	Dicentra formosa.
„ saxatile, in var.	Epimediums: all.
Anemone Hepatica, in var.	Erica carnea.
„ nemerosa, in var.	Euphorbia pilosa.
„ rivularis.	Fuchsia pumila.
„ sylvestris.	Geranium Endressi.
Arabis albida fl.-pl.	„ sanguineum, in
Armeria maritima, in var.	var.
Arum italicum.	Gnaphalium arenarium.
Aster alpinus, in var.	Gypsophila Steveni.
„ hybridus nanus.	Hypericum olympicum.
Campanula azurea.	Iberis correæfolia.
„ bavarica.	„ sempervirens.
„ carpatica, in	Lathyrus tuberosus.
var.	Libertia ixioides.
„ carpatica turbi-	Linaria italica.
nata.	Linum narbonense.
„ pusilla & p.	Meconopsis cambrica, in
alba.	var.
„ r o t u n d i f o l i a	Mertensia sibirica.
Hostii & r.	Myosotis dissitifolia.
H. alba.	Nepeta Mussini.
Cerastium tomentosum.	Oenothera macrocarpa.
Cheiranthus alpinus.	Omphalodes verna.
Chrysogonum virginianum.	Ononis Natrix.

Orobus vernus & O. v. albus.	Saxifraga Geum dentata. ,, umbrosa.
Papaver nudicaule, in var.	,, Wallacei.
Phyteuma spicatum.	Scutellaria alpina, in var.
Polygonum affine.	Sedum maximum.
Potentilla argentea.	,, Maximowiczii.
,, fruticosa & f. humilis.	Senecio adonidifolius.
,, Hopwoodiana.	Silene Armeria (biennial).
,, nepalensis.	Sisyrinchium bermudianum.
Prunella Webbiana & W. grandiflora.	Solidago virgaurea nana.
Pulmonaria arvernensis.	Statice spathulata.
Sanguinaria canadensis, & c. major.	Thalictrum minus.
	Veronica crassifolia.
	,, incisa pedatifolia.
	Viola cornuta & c. alba.



III.—Plants which Do Well Most Readily on Limestone.

<i>Allium angulosum.</i>	<i>Micromeria Piperella.</i>
„ <i>narcissiflorum.</i>	„ <i>rupestris.</i>
<i>Alyssum pyrenaicum.</i>	Opuntias : all.
<i>Androsace foliosa.</i>	<i>Oxytropis campestris.</i>
<i>Antirrhinum glutinosum.</i>	„ <i>Lamberti.</i>
<i>Arabis Halleri.</i>	„ <i>uralensis.</i>
<i>Artemesia</i> : high Alpine species.	<i>Pelargonium endlicherianum.</i>
<i>Cherianthus Allioni.</i>	<i>Phyteuma comosum.</i>
<i>Draba bryoides.</i>	<i>Potentilla valderia.</i>
„ <i>Mawii.</i>	<i>Spiræa cæspitosa.</i>
<i>Erodium guttatum.</i>	<i>Saxifraga aretioides</i>
<i>Erysimum pumilum.</i>	„ <i>cæsia.</i>
„ <i>rupestre.</i>	„ <i>diapensioides.</i>
<i>Helianthemum lavendulæ-</i>	„ <i>Griesbachii.</i>
<i>folium.</i>	„ <i>Kotschyi.</i>
„ <i>lunulatum.</i>	„ <i>mediæ.</i>
<i>Hypericum tomentosum.</i>	„ <i>squarrosa.</i>
<i>Lithospermum Gastoni.</i>	„ <i>tombeanensis.</i>
„ <i>gramini-</i>	„ <i>tyroliensis.</i>
<i>folium.</i>	„ <i>valdensis.</i>
<i>Lychnis pyrenaica.</i>	„ <i>Vandellei.</i>

IV.—Plants which Only Do Well on Sandstone.

Adonis : all.	Campanula Allioni.
Androsace carnea & c. exi- mea.	,, cenisia.
,, Chamæjasme.	,, Zoysii.
,, ciliata.	Chrysanthemum alpinum.
,, villosa.	Dianthus alpinus.
,, Vitaliana.	Dracocephalum grandiflorum.
,, Wulfeniana.	,, Ruyschianum, v. japonicum.
Anemone pratensis.	Geum × Eweni.
,, ranunculoides.	,, reptans.
,, vernalis.	Lithospermum prostratum.
Arabis petræa.	,, tinctorum.
,, procurrens, esp.	Nierembergia rivularis.
,, variegata.	Sanguinaria canadensis & c. major.
Arenaria biflora.	Saxifraga aspera.
,, cæspitosa aurea.	,, bronchialis.
,, longifolia.	,, recta.
,, pigrifolia.	,, stelleriana.
,, purpurascens.	,, sturmiana.
,, rosani.	Silene acaulis.
Armeria setacea.	
Astragalus alpinus.	
,, purpurascens.	

VI.—Rockery Shrubs.

* Somewhat tender—protect with fir branches in severe frost.

† Maintain stock by cuttings.

For Small Rockeries.

Abelia rupestris.*†	Moltkia petræa.†
Alyssum spinosum.	Nierembergia frutescens.†
Amphicome Emodi.*†	Olearia gunniana.
Berberis empetrifolia.	Ononis rotundifolia.
„ Thunbergii minor.	Othonnopsis cheirifolia.*†
Bigelowia tortifolia.†	Pentstemon Menziesii* &
Cistus formosus.†	M. Scouleri.†
„ lusitanicus.†	Potentilla Friedrichseni.
Convolvulus Cneorum.*†	„ fruticosa humilis.
Cotoneaster congesta.	Spiræa bullata.†
Cytisus kewensis.	Stachys lavendulæfolia.
„ purpureus, vars.	Thymus carnosus.
albus & incarna-	Veronica Armstrongii.
tus.	„ cataracta.
Helianthemum fumana.*†	„ diosmæfolia.
„ lævipes.*†	„ glauco cærulea
„ lavendulæ-	nana.†
folium.†	
„ umbellatum.†	Juniperinus echiniformis.
Hypericum ægypticum.†	Pinus pygmæa.
Lavendula dentata.*†	„ sylvestris beurronen-
Linum arboreum.†	sis.
„ tauricum.	Podocarpus alpinus.
	Retinospora Sanderi.

For Large Rockeries.

- Abelia floribunda*. *†
Amygdalus incana nana.
Ardisia japonica.
Berberis Incornii.
 „ *stenophylla coral-*
 lina & s. gracil-
 lis.
Cænothus azureus.
Cerasus acidia umbraculi-
 fera.
Cistus cyprius.
 „ *florentinus*. †
 „ *ladaniferus*.
 „ *purpureus*. †
 „ *salvifolius*. †
 „ *scarriosa*. †
Cotoneaster angustifolia. *†
Daphne fioniana.
Dorycnium suffruticosum.
Eleagnus aureo-marginata.
Escallonia philippiana.
Genista hispanica nana.
 „ *radiata*.
Hedysarum boreale multi-
 jugum.
Hypericum Kalmianum. *†
 „ *olympicum gra-*
 cile. †
Potentilla salsoviana.
Rhododendron ferrugineum
 „ „ *major*.
 „ *ovatum*.
Ribes lacustre.
Salvia ringens. *†
Teucrium frutescens. †
Veronica anomala.
 „ *cupressoides*.
Abies Clanbraziliana.
 „ *excelsa inverta*.
 „ *procumbens*.
 „ *pumila glauca*.
 „ *pygmæa*.
Cedrus libanus “ *Compte de*
 Dijon.”
Pinus viridis.

As Trailers.

- Clematis coccinea*.
Muehlenbeckia complexa.



VII.—Plants which will Grow in Deep Shade.

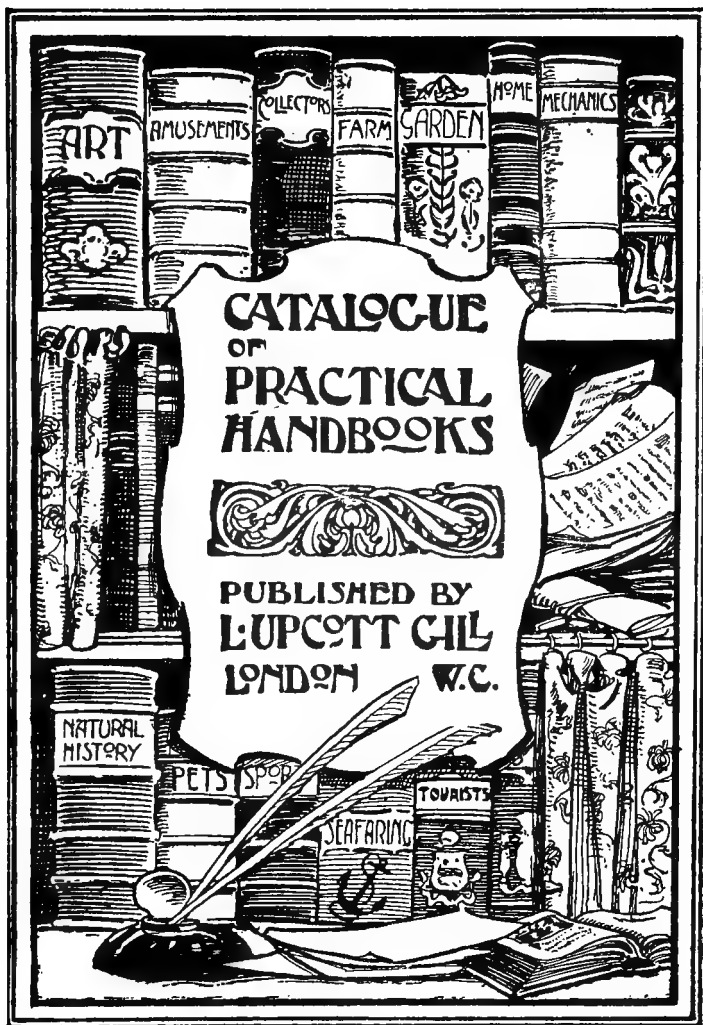
<i>Acæna sanguisorbæ.</i>	<i>Eriogonum compositum.</i>
<i>Acorus calamus variegatus.</i>	„ <i>longiflorum.</i>
„ <i>gramineus.</i>	„ <i>sericeum</i>
<i>Andromeda japonica & j.</i>	(<i>luteum</i>).
<i>variegata.</i>	<i>Eomecon chionantha.</i>
<i>Anemone angulosa.</i>	<i>Epigæa repens.</i>
„ <i>hepatica.</i>	<i>Epilobium Dodonæi</i>
„ <i>japonica alba.</i>	<i>Euphorbia cyparissias.</i>
<i>Astrantia Biebersteinii.</i>	<i>Fragaria lucida.</i>
„ <i>intermedia.</i>	<i>Funkia lancifolia & l. var.</i>
„ <i>minor.</i>	<i>albo-marginata.</i>
„ <i>pauciflora.</i>	„ <i>ovata & o. var.</i>
<i>Bambusa pygmæa.</i>	<i>marginata.</i>
<i>Boydkinia aconitifolia.</i>	„ <i>subcordata.</i>
<i>Cardamine bulbifera.</i>	<i>Gaultheria nummularoides.</i>
„ <i>latifolia.</i>	„ <i>procumbens.</i>
„ <i>pinnata.</i>	<i>Geranium striatum.</i>
„ <i>pratensis fl.-pl.</i>	<i>Geum rivale.</i>
„ <i>trifolia.</i>	<i>Gunnera magellanica.</i>
<i>Carex japonica variegata.</i>	<i>Hacquetia epipactis.</i>
<i>Chrysosplenium oppositi-</i>	<i>Hieraceum aurantiacum.</i>
<i>folium.</i>	<i>Helliborus niger altifolius</i>
„ <i>nepalense.</i>	& <i>n. a. maximus.</i>
<i>Corydalis lutea.</i>	<i>Horminum pyrenaicum.</i>
<i>Digitalis lutea.</i>	<i>Iris fœtidissima variegata.</i>
<i>Diphylleia cymosa.</i>	<i>Mertensia sibirica.</i>
<i>Epimedium luteum grandi-</i>	<i>Orobus alpestris.</i>
<i>florum.</i>	<i>Podophyllum Emodi.</i>
„ <i>pinnatum ele-</i>	„ <i>peltatum.</i>
<i>gans.</i>	<i>Polygonatum multiflorum.</i>

- | | |
|-------------------------|------------------------------|
| Polygonum affine. | Stylophorum diphyllum. |
| Pulmonaria latifolia. | Symphytum tauricum. |
| Saxifraga Geum, in var. | Symplocarpus fœtidus. |
| ,, megasea cordi- | Thalictrum aquilegiaefolium. |
| folia. | Tiarella cordifolia. |
| Sedum album. | Tradescantia virginica. |
| ,, pallidum. | Trillium grandiflorum. |
| ,, populifolium. | Vaccinium vitis-idæa. |
| ,, rupestre grandi- | Veronica anomala. |
| florum. | ,, buxifolia. |
| ,, sexangulare. | Waldsteinia trifoliata. |



VIII.—Plants which will Grow under Trees.

Asarum europæum.	Helliborus hybridus, in var.
Bambusa nana.	Hypericum calycinum.
„ pumila.	„ hirsutum.
Berberis Aquifolium.	Lythrum virgatum.
Campanula macrantha & m.	Nepeta Glechoma & G. var.
alba.	Polygonum compactum.
Carex pendula.	Sisyrinchium striatum.
Daphne Philippi.	Symphytum caucasicum.
Elymus glaucus.	Tussilago fragrans.
Epilobium rosmarinifolium.	Vinca, in var.
Ficaria grandiflora.	



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