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OF

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EDITED BY

KENNETH CHARLES CORSAR

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THE SCOTTISH ROCK GARDEN CLUB

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Editor's Notes

THE campaign to increase the membership of the Club has met with considerable success, and the number of members on the roll now stands at 500, the highest yet attained in the whole history of the S.R.G.C. While this total is very gratifying it must be borne in mind that unless the present membership is maintained, or better still, increased, the Club will not be in a financial position to fulfil its functions; therefore, with a view to making membership even more attractive, the Committee has planned and set in motion, a variety of activities additional to the customary shows in Edinburgh and Glasgow. The "Journal" will, of course, continue to be issued free to members, as also will the Year Book, but in addition it is intended to put out in the Summer of each year, a Review of our activities together with full reports on all the shows with lists of prize-winners thereat. In the past shows have been "written up" in the "Journal" for the year following, when memory of them has grown somewhat dim, and it is hoped that this new publication will be of the greatest interest to all members, but particularly to those who visited and exhibited at the Club's shows throughout the country.

Up to the present shows have been staged in the two principal cities only, but for the future it is hoped to arrange smaller, though none the less interesting, exhibitions in some of the more important local centres in various parts of Scotland. For a start, arrangements are now being made to hold one in Dumfries, and it is hoped to hold a joint meeting with the A.G.S. in Aberdeen during the coming Spring. Perth, Inverness and Oban are thought to be places where shows would be popular, and the possibilities of holding these in the not too distant future is being investigated.

Some of our local representatives are now at work arranging series of meetings in their respective areas. At these meetings lectures will be delivered, plants will be exhibited, and the discussion of problems affecting

Alpine gardeners will be encouraged. Visits to gardens of interest, arranged on a district basis, are also being planned, and it is hoped that full advantage will be taken by members of the permission which has been granted of inspecting the rock gardens and Alpine plants of their fellows. The seed exchange scheme projected last year is now in operation, and the Committee expects that it will be widely popular. All these activities, and other benefits still under consideration, should make the S.R.G.C. one of the most important and attractive horticultural societies in the country, and one wih which it is well worth being connected; it should be the object of each member to bring it to the notice of their gardening friends.

In the production of the "Journal" a high standard has always been aimed at, but this does not mean that contributions are accepted only from acknowledged authorities. Experts do, of course, contribute to our "Journal," but any member who has an interesting plant, or who has been fortunate enough to see Alpines in their natural homes, is invited to inform other members about it either in a full-scale article or in a short note. Such material wlll always be welcome. And here it might be mentioned that the Committee have decided to depart from past practice and from now onwards to make payment for all photographs reproduced in any of our publications; those who do so much to make our "Journal" attractive well deserve this recompence.

Once again I tender my sincere thanks to all those who have assisted in the making and preparation of this number; their help has made my task as Editor appreciably lighter.

K.C.C.

☛ *The S.R.G.C. is prepared to purchase from Members copies of Nos. 1, 2, and 3 of the "Journal." Full publication price will be paid. Offers should be sent to the Hon. Secretarry.*

Primulas : Petiolares Section

By David Livingstone.

THIS is the second largest of the various sections of Primulas, containing some 63 species in 1944 when Professor Sir William Wright Smith and Dr. H. R. Fletcher reviewed it before the Royal Society of Edinburgh. Unfortunately only a comparatively small number of these very desirable Primulas are in cultivation in Britain at the moment and with one or two exceptions those that are in cultivation are not widely grown. Our Scottish climate seems to suit these Petiolarids remarkably well, and I think their popularity might well be fostered by the Scottish Rock Garden Club. They grow well, of course, in certain areas in England and Wales where the climate is similar to our own.

For many years the only species continuously in cultivation was *Primula Winteri*, now known as P. *Edgeworthii*, which was introduced in 1911. In recent years, however, more species have become established, and there are perhaps six or seven that can now be obtained fairly readily. Now that nurserymen can devote more time to the raising of Alpine plants, we can hope for a greater number becoming available. In addition, Messrs Ludlow and Sherriff continue their good work in the Himalayas, and among plants sent home last winter (1947/48) by air mail from Tibet, there are two species, as yet unidentified, which are thought to be Petiolarids. Many attempts were made to introduce species from the Himalayas by seed, but with little success. It has now become obvious that the best results are obtained by sowing seed when it is still fresh, and air mail opens up the possibility of seed being got to this country with the minimum delay between gathering and sowing. There are fairly solid grounds for hoping that by this means more Primulas,

which have been known to scientists for so long, will soon become our intimate friends in gardens, cold frames or Alpine houses.

The cultivation of Petiolarid Primulas is not easy but they are, in my opinion, less difficult than most of those in the Nivales and Soldanelloides sections. Their main requirements, whether grown in the open ground or in pots, seem to be very sharp drainage and partial shade from summer suns. Compost, of course, is also important, but unless the drainage is right the plants will not survive, and for this reason I lay more emphasis on drainage than on compost. I emphasise partial shade, too, because it does make a good deal of difference to the growth of the plants, even in this country, where we all too infrequently see the sun. I have found a suitable compost to be one-third beech or oak leaf mould, one-third fibrous loam and one-third sand, made up of 50% Clyde river sand and 50% sharp Bedfordshire sand. At the moment I am experimenting with John Innes compost to which I have added a quantity of coarse sand in addition to that contained in the standard J.I. compost ; the plants are thriving in both mixtures. The former compost is tried and trustworthy for these Primulas, the latter looks as though it might be equally reliable.

I have had more experience of pot cultivation of these Primulas and I will deal with this aspect first. Adequate drainage is easily provided by covering the vent of the pot with a large " crock " and covering that in turn with various sizes of broken pot to a depth of about one inch, the larger pieces being put to the bottom. The broken pot should be covered over with a few old decayed leaves to prevent the compost working down into the drainage and choking the " filter." I find that the best time to pot the plants is soon after flowering, and the whole process of re-potting should be over by about the end of May. The pots should not be completely filled with compost but the last three-quarters of an inch or so left for the addition of a top dressing of the compost during June

or when it is noted that roots are beginning to develop from between the leaves. The addition of the top dressing encourages the production of these roots and, as some of a plant produces offsets in the axils of the leaves, around the main crown, it will be possible to remove them, with roots attached, by means of forceps. These offsets, or cuttings as I prefer to call them, should be inserted in a pot, perhaps six to a $3\frac{1}{2}''$ pot, in a mixture of 50% sand and 50% peat. Placed in a propagating box and kept slightly shaded they should be sufficiently well rooted to be potted up singly in a month. Thereafter they should be kept in the propagating box for a few days and then gradually hardened off before being exposed to the elements. These cuttings afford easy means of propagation, as it will be found possible, in the case of some species like *P. bracteosa* and *P. scapigera*, to take seven or eight, perhaps more, cuttings from one plant in a single season. I find that plants of *P. Edgeworthii* and *P. sessilis*, which have been potted in the Spring, sometimes require to be potted again in late August. By then they are completing their year's growth and normally flower buds will be showing in most of the species by the beginning of October. This year, as I write (12th August) some have come into bud especially early ; these are *PP. sessilis*, *bracteosa* and *scapigera*.

Plants grown in pots should, I think be kept out of doors in cold frames or plunge beds from the end of April to the beginning of October. Generally speaking it will be found that those kept in an Alpine house during the summer months lack the healthy growth of those kept outside. They are, too, more liable to attacks by red spider, and where it is not possible to put them out, great care should be taken about spraying with water to prevent this harmful pest from establishing itself. Where the plants are in frames or plunge beds, it is easy to provide shade by placing above them racks consisting of thin wooden straps about 3″ broad and nailed 3″ apart. By this means the sun does not rest for long on any particular

spot. This form of shading will be found quite adequate for all but the very hottest suns we get. When the shade temperature is likely to rise above 80° F. it is as well to cover the racks with newspaper or some similar material to afford extra protection. The racks, of course, should not be in position unless sunny weather is expected, as the plants are inclined to become a little drawn with continuous shade. If the plants are kept indoors there are various means of providing shade. Similar wooden racks on the roof of the house are suitable, or better still old Venetian blinds, which can be easily rolled up when they are not required. I do not think a permanent shading such as white wash is very satisfactory, but it is certainly better than none at all.

In warm sunny weather the greatest care is necessary to see that the plants do not dry out, and it may be found necessary to water every day. In addition the plants greatly appreciate overhead spraying in the early morning and again at night in warm weather.

Planted in the open ground it is not quite so easy to provide the drainage which these Primulas require, but they are grown satisfactorily at the Royal Botanic Garden, Edinburgh, on a gentle slope and in vertical positions where, of course, the surplus water drains away from them. My own are planted in a small raised bed which was specially prepared for them. Some of the surface soil was removed and broken bricks and clinkers laid down to a depth of about nine inches; these were covered over by thinly cut sods, grass down of course, to prevent the compost from washing into the drainage and clogging it. On top was put some six or eight inches of the compost which I mentioned earlier. The choice of site must be determined by the need of the plants for partial shade, and each individual must accordingly make up his mind what position in his garden will suit best. Draughty or windswept positions should be avoided. The little raised bed that I have made faces North-East, and the plants get the early morning sun up to

about 10 a.m. G.M.T. at the height of summer. Only four of the Petiolarid species have been tried here, but all have thrived and when I lift a plant I usually find that its roots have gone through the sod and are adhering to the clinkers and broken brick beneath—perhaps this indicates that I should have a greater depth of compost. Plants out of doors benefit from a top dressing in early summer. No matter how good the drainage is I feel that most of these Primulas, in permanent positions out of doors, require some form of overhead protection in winter, and where it is possible frame lights should be erected or, failing this, hand cloches should be used. This protection serves the double purpose of preventing the excessive winter moisture from lodging about the necks of the plants and so causing rot, and of keeping the flowers from being spoilt.

Propagation of Petiolarid Primulas is fairly easy to the careful cultivator. I have described already how stock may be increased from cuttings or offsets. Some such as *P.P. Calderiana, sonchifolia* and *tsariensis* do not lend themselves so readily to propagation by this method, but plants may be divided, as can all the others. Those that retain their leaves may safely be divided either in the spring or in the early autumn, but those that winter as resting buds should be divided immediately after flowering. As division of the root in spring may mean the possible loss of seeds, it is as well to divide only a proportion of one's plants and to leave the others to ripen seed.

Some species set seed quite readily, particularly if hand-pollinated, but great care must be exercised in collecting it or the seed will be lost. The skin over the seed capsule, in this type of Primula, is very thin and quickly cracks and crumbles away, allowing the seeds to be washed out by rain or to fall out under the action of the wind. As has been noted earlier, the seed of Petiolarid Primulas should be sown when fresh to obtain best results; freshly gathered seed may germinate in a matter of fourteen days. The seeds are

sown in the usual way and the little seedlings should be pricked off when two or three proper leaves have been formed. Seedlings of *P. Edgeworthii* and *P. bhutanica*, with care and attention, can be grown into really handsome flowering plants in some 18 months.

It is said that a number of these Primulas can be raised from leaf cuttings, but so far I have succeeded only with *P. scapigera*. The leaves to be tried should be pulled sharply away from the crown of the plant so that the entire base of the leaf comes away unbroken. They should then be set in a pot (containing the compost mentioned for cuttings) radiating from the centre with a little stone on top of the stalks to keep them in place and also conserve moisture. The pots should be treated in the same way as those containing cuttings. After several weeks the stone should be lifted periodically to see whether little green shoots are appearing through the soil. As soon as these are visible the stone should be removed entirely. When they have attained sufficient strength, the little plants should be potted up and gradually hardened off.

Like the rest of the inhabitants of our gardens, Primulas are subject to attacks by various pests. Slugs, woodlice, leather jackets, millipedes and greenfly may be troublesome whether the plants are grown in pots or in the open ground, and the usual remedies, which are so well known that I need not repeat them here, should be used to get rid of them. Caterpillars, too, attack them in their season, and I think hand-picking is the best cure. There is one caterpillar which I must mention specially. He is a large brown fellow who lives in the soil or in the plunging ashes during the day and comes out at night to feast upon the hearts of the Primulas. A sharp lookout must be kept for the first signs of his ravages, in the late summer or early autumn, because lack of vigilance will result in all the flower buds being eaten away. Search by night is, I think, the only way to catch this gentleman, and you should not rest until he is found if you have reason to suspect his presence. Root aphis, which

looks like a white woolly substance, is said to attack Asiatic Primulas but, although I have had attacks on Europeans and Americans, I have not yet seen any on my Asiatic species. Plants that have been attacked should be segregated from the others and, if the infestation has been detected in the spring, the plants should be washed free of soil and all traces of the aphis removed from the roots and plants. The affected soil should be burned. The plants should then be potted up, using rather an open sandy mixture, and kept in a closed frame or propagating box until it appears that the roots are working again. They should then be hardened off gradually and put out to their permanent quarters. If the aphis has been discovered at a season when the drastic treatment described above might prove fatal, the pots may be treated in a greenhouse or a shed with Paradichlorbenzene. Crystals of this chemical should be applied to the surface of the soil, taking care that the leaves do not come into contact with them. The chemical should be left to do its work for some three days before the plants are watered and put back into their quarters. A few crystals of Paradichlorbenzene placed under the vents of the pots will act as a preventative ; if the affected plants are in the open ground, crystals placed near the crowns would prevent the pest from spreading, or might kill it altogether, but I cannot speak of its effectiveness for use outside. Frequent renewal of the Paradichlorbenzene will be necessary as it is highly volatile.

Last year I was introduced unexpectedly to an enemy which is more difficult to detect because his work goes on underground ; this was the larva of the Vine Weevil, or as it is sometimes called the " Black Weevil." The weevil lays its eggs during the summer and the larva, which are fat white grubs rather more than $\frac{1}{4}$" long and which always appear to be half curled up, are hatched out in the soil, where they feed on the roots until they are fully grown, i.e. early in the following spring. The weevil itself is not unlike a black beetle, speckled with minute yellow markings,

and is almost half an inch in length. Its back is rough and corrugated. They eat leaves and stems and as they are nocturnal feeders search has to be made for them by torch. They stop dead in their tracks when subjected to a strong light and therefore there is no movement to aid in their detection. I am advised that crystals of Paradichlorbenzene placed under the vent of the pot acts as a preventative ; I cannot vouch for the truth of this but I am trying it this year. In any case, as I have already said, it will keep away root aphis. I have read that Arsenate of Lead mixed in the potting compost is a sure deterrent to the weevil but I cannot speak of this from first-hand knowledge. It is advised that 1—2 oz. of powdered Arsenate of Lead should be mixed with each bushel of compost. When the larvae of the weevil are present, the first indication may be the wilting of the plant in spring when the sun becomes stronger or it may be that the plant is found loose in the soil. The only thing to do then is to try to save the plant by putting it into a propagating box. All the soil and the grubs should be burned so that neither you nor your neighbours may be troubled further by the larvae or the weevils which would emerge from them.

There are other pests which attack Primulas but I think I have mentioned the main ones. Apart from the larvae of the Vine Weevil and root aphis they are fairly easily dealt with and who knows you may never see the weevil or its larvae, nor for that matter any of the others. Although we have much to say against pests, half the fun in growing plants would go if there were no difficulties to overcome.

The normal flowering season for Petiolarid Primulas is early in the New Year when some colour in the garden or green house is so welcome, but it is quite a common occurrence to find *P.P. Edgeworthii, sessilis* and others in bloom before Christmas. An individual plant's flowering season may last six or seven weeks and the plants I am about to mention will almost

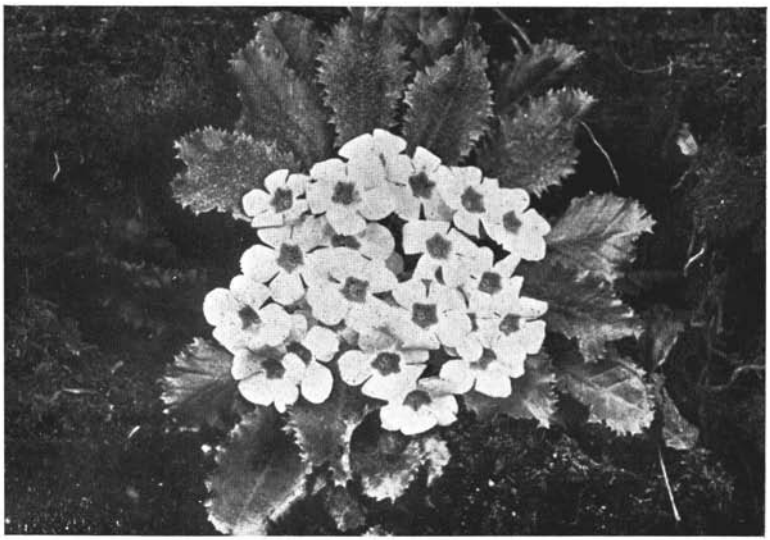

Fig. 1.—P. BRACTEOSA. [*D. Wilkie.*

Fig. 2.—P. CALDERIANA. [*D. Wilkie.*

Fig. 3.—P. BHUTANICA [*D. Wilkie.*

Fig. 4.—P. GRACILIPES. [*D. Wilkie.*

certainly ensure flowers well into May. I give some details below of the species I have in my garden at the present time.

P. aureata. I gave a description of this plant in last year's " Journal " and therefore limit myself on this occasion to saying that seed has set at last and I am waiting for it to ripen.

P. bhutanica. This species was found for the first time in 1935 by Kingdon Ward in Assam. It was also collected in the following year by Ludlow and Sheriff in Eastern Bhutan and South Tibet and plants sent by them were successfully established at the Royal Botanic Garden, Edinburgh. This is perhaps the most attractive of the whole section. Its flowers are usually pale blue, but sometimes are a darker blue, always with a white eye. They are just over one inch in diameter, and are borne on a short scape which elongates as the seeds set. The petals, which are finely serrated, overlap each other to give a beautifully symmetrical flower. The leaves, which may be up to eight inches long, are spoon-like and coarsely cut at the edges; at flowering time they are covered with meal which they lose during the summer when the midrib is clearly seen to be a deep red. By late August the meal has again appeared on the centre leaves and later the leaves die away, being replaced by yellow farinose bud scales so that the plant in its resting stage during the winter looks somewhat like a bantam's egg. This species sets seeds fairly readily and they germinate quite freely. *P. bhutanica* is related to *P. chamaethauma* and *P. sonchifolia* but it can be readily distinguished from both (see notes on those species). (*Fig.* 3).

P. Boothii. I grow a plant under this name which is of the same stock as that which received an Award of Merit from the Royal Horticultural Society in the spring of 1947. Plants have been introduced to cultivation on several occasions under this name but they have all proved to be *P. gracilipes,* and the general

appearance of my plant suggests that it, too, may prove to be *P. gracilipes*. The flowers, which I have not seen, are said to be deep mauve with a yellow eye.

P. bracteosa. This is one of the best of the section being good-tempered, free flowering and easily propagated. Introduced to this country about 1939 it has quickly become a favourite. Its leaves, which may be about six inches long, are retained throughout the year and at flowering time are thinly coated with meal on both sides. The flowering buds are also covered with meal. The flowers, pinkish lilac with a yellow eye surrounded by white, are about an inch in diameter and borne at first on a short scape which gradually elongates to about 10 or 12 inches. As the flowers fade, a vegetative bud begins to grow at the end of the scape and if this is pegged to the ground, in the fashion of a strawberry runner, the little plantlet will root in some three weeks and may then be severed from the parent plant. In another two weeks it should be well enough established to pot up separately. Of the Petiolarids in cultivation, *P. scapigera* is the nearest relative to *P. bracteosa* but they are easily distinguishable because the former is not mealy at any stage of its growth nor does it throw a vegetative bud. This species has not set seed with me. (*Fig.* 1).

P. Calderiana. The plant which is now grown under this name has been known to scientists for close on one hundred years, but during that time it has borne many others. It has been continuously in cultivation since 1936. The species has fairly large leaves, up to twelve inches long and some two inches broad. These are pale green and free from meal, but there are potentially farinose glands on the undersides of the leaves. The leaves die away in the late autumn, leaving the resting bud which is said to be covered with yellow meal, but I have not personally seen much meal in evidence. The flowers, which appear just after the leaves have started to grow in the spring, are carried on a stout scape up to about 12 inches. They may be as large as an inch in diameter and are usually

purple in colour, a shade darker in the centre, with a yellow eye. This species sets seeds in cultivation and can be raised in this way fairly easily. *P. Calderiana* is related to *P. sonchifolia*, but although I find it difficult to describe the difference between the two species, there is no difficulty in recognising them when they have been seen once. For one thing, the resting bud of *P. sonchifolia* which looks, for want of a better description, somewhat like an egg or a small potato, is much bigger than that of *P. Calderiana*. For another, the young leaves of *P. sonchifolia*, by late summer, are showing some meal on both sides and one can already detect the building up of the bulb-like structure of the resting bud. (*Fig.* 2).

P. chamaethauma. This one is rare in cultivation and though my plants have not yet reached flowering stage, I have seen it in flower in the Royal Botanic Garden, Edinburgh. The leaves, which are up to almost four inches long and about one inch wide, are nicely serrated, crinkled above, dark green in colour, except for the edges which are a lighter shade. The leaves sit evenly round the crown making a lovely little plant. They are usually free of meal but there are potential farinose glands on the undersides and occasionally there may be traces of meal. The flowers are large, being just over one inch in diameter and are carried on single stalks like our own Primrose. They are blue-violet with a large orange-yellow eye. This plant loses its leaves in late autumn and winters as a resting bud. As spring advances the leaves begin to unfold and with them come the flowers.

P. chamaethauma sets seeds and may be raised in this way with care. It is related botantically to *PP. sonchifolia* and *bhutanica* but it can be recognised by the nature of its leaves and by the fact that its flowers are solitary. I think that a non-botanist like myself is more likely to see an affinity between *P. chamaethauma* and *P. tsariensis* which is meantime found in another sub-section.

P. Edgeworthii. This is the best known of all the Petiolarid Primulas and hardly needs description here. It retains its leaves throughout the year although they vary in shape at different seasons. During the summer the leaves are devoid of meal but by August the young leaves in the heart of the plant are beginning to exhibit traces of meal and later they become very heavily coated as are the flower buds. *P. Edgeworthii* usually has a long flowering season and it is possible to have flowers before Christmas and well into the new year. The flowers are pale lavender with a white eye and yellow throat and are carried on very short scapes which are not visible until the leaves are parted. It sets seeds which germinate readily when sown fresh.

P. Edgeworthii alba. This is a white form of the plant described above and does not differ except in the colour of the flower.

I have a plant which was given to me as this variety but which appears to me to be quite different. The flower is very similar to that of the true *P. Edgeworthii alba* but the habit of the plant is quite different. It retains its meal throughout the year, even in the open ground, and at certain stages the midrib is stained almost blood-red. Its affinity appears to me to be with *P. aureata.* At the time of writing I have, side by side in a propagating box, cuttings of *P. aureata* and of this form of *P. Edgeworthii alba,* and I feel that even a botanist would find it difficult to tell which is which. Both the true *P. Edgeworthii alba* and the other plant I have under this name set seed, but while the former has germinated the latter has not.

P. gracilipes. This species, too, has been known to science for one hundred years but it was not established in gardens until 1936, although it had been in cultivation earlier. It makes a compact rosette with leaves up to about six inches long and two inches broad. Almost all the year it is free of meal but there is a little in evidence on the young leaves around the flowering buds and on the buds themselves. The

Fig. 5.—P. SCAPIGERA. [*D. Wilkie.*

Fig. 6.—P. SESSILIS. [*D. Wilkie.*

Fig. 7.—P. SONCHIFOLIA. [*D. Wilkie.*

Fig. 8.—WINTER RESTING BUD OF P. SONCHIFOLIA. [*D. Wilkie.*

flowers, which are not carried on a scape but on single stalks, are a bright pinky purple with an orange-yellow eye and are about an inch in diameter. This species has not so far prospered very well with me under pot cultivation, but grown in the open ground at the Royal Botanic Garden, Edinburgh, it appears to be one of the easiest and the " Rootery " in the spring is an amazing sight when covered with its flowers. Indeed, they are almost as prolific in this situation as our native Primrose. (*Fig.* 4)

P. scapigera. This is another species that has been known to scientists for a hundred years, yet it was not introduced to cultivation in this country until 1934. It is rather a dwarf tufted plant with leaves up to about six inches. These are retained throughout the year and at no time is meal visible. The younger leaves, during the summer, are a peculiar pale green and all the leaves are irregular and coarsely cut. The flower is pink with a yellow eye, surrounded by white, and is about one inch in diameter. They are borne on a very short scape which lengthens as the flowering season proceeds but rarely exceeds six inches. This species, too, sets seeds. It is perhaps worth noting that even plants raised by cuttings are very variable in flower. I have seen photographs of a batch of plants, raised from leaves taken from one plant, in which the flowers varied so considerably that it was difficult to believe they could have come originally from one parent. I have been informed by Mrs C. B. Saunders, Farnborough, Kent, that a white form of *P. scapigera* came into her possession last year ; I have not seen it, but it should be an interesting addition. (*Fig.* 5.)

P. sessilis. This species has been continuously in cultivation in this country since 1932. Its name has been much confused and at one time it bore the name of " Edgeworthii " which has now been given to the plant that was known for so long as " Winteri." This species grows particularly well with me, both in the open ground and in a pot. This spring I had so many cuttings that I did not have room for them in a pro-

pagating box and dibbled them straight into the open ground where most of them rooted and have made fairly good plants. I can best describe this plant by saying that in the growing season its leaves resemble nothing more closely than beetroot leaves—that is, the leaves are upright, pale green with dark red veins and midrib. As the resting period draws near the old leaves begin to wither away and the young leaves assume a horizontal position; the new leaves have much shorter leaf stalks than those that are passing away. Professor Sir William Wright Smith and Dr. Fletcher, in their paper on the Petiolares Section, noted that the leaves were efarinose but had a few potentially farinose glands on the lower surface, but during the last two winters I have observed that the young leaves round the flowering buds have a slight covering of meal on both sides. I doubt whether this is due to my soil as *P. scapigera*, getting the same treatment, never exhibits any sign of meal. The flowers, which are a pale mauve with a yellow eye, are about an inch in diameter and are borne singly, like the common Primrose. A single crown will bear a continuous succession of flowers over a period of six or seven weeks. This species has not set seeds with me but it is easily divided in spring. There is also a white form of *P. sessilis* which I have not seen. (*Fig.* 6).

P. sonchifolia. This Primula was first flowered in this country in 1926, but it was not until 1931 that really strong specimens became available. They were flown to this country as resting buds, and to the best of my knowledge the species has been continuously in cultivation since. The foliage dies down in winter to form a bud which may be almost as big as a hen's egg. As the leaves begin to appear in spring, so do the flowers. The outer leaves may grow up to twelve inches long and perhaps four inches broad; as the name indicates they are not unlike the leaves of the Sow Thistle. For the greater part of the year there is no evidence of meal, but by August, when the winter bud is forming, meal will be found on the younger leaves both above and below. The midrib is pale

green and the species is easily distinguished from *P. bhutanica*, its near relative, by this fact; the latter's leaf has a dark-red midrib. The flowers, borne on a scape, are variable in colour and may be any shade from pale lavender-blue to intense indigo-violet, always with a yellow eye. *P. sonchifolia* sets seeds and can be raised fairly readily by this means. (*Figs.* 7, 8).

The hybridists have been busy in recent years and to my knowledge there are now three good crosses all of which I have growing happily. Two of them, *P. scapigera X P. bracteosa* and *P. tsariensis X P. Calderiana*, were raised by that well-known Primula specialist, Mr R. B. Cooke, Corbridge, Northumberland, and the other, *P. Edgeworthii X P. scapigera*, known as "Pandora," by Mrs C. B. Saunders, Farnborough, Kent, whose exhibits have taken so many first prizes at the Alpine Garden Society's Shows in London.

Though I am pressed for space for my own collection, I would not think of rejecting these excellent hybrids simply because they are hybrids. All three of them have some quality which makes them desirable.

I give below some notes on these hybrids:—

P. Edgeworthii X P. scapigera. This plant resembles a strong growing *scapigera*. Its flowers are pale mauve with a white eye and as it is easily suited it should soon become popular with those gardeners who do not restrict their collections to species. If it has a fault it is in the formation of its flowers, the petals of which do not overlap, thus giving a rather ragged appearance.

P. scapigera X P. bracteosa. This hybrid more closely resembles *bracteosa* but there are occasional leaves that look almost typically *P. scapigera*, being the same pale green and having a winged leaf stalk irregularly and coarsely cut. Its flowers, too, are closer to *bracteosa* than to *scapigera* and it has the

same characteristic as the former in that it throws a vegetative bud at the end of the flowering scape. It is a good grower, being perhaps slightly more robust than *P. bracteosa*, and I consider this to be the best of the three hybrids though of course others may think differently.

P. tsariensis X P. Calderiana. The general appearance of this plant is close to *P. tsariensis*. The leaves are dark green and crinkled like those of *chamaethauma* and the leaf stalk is stained red. Like its parents it dies down in the autumn leaving a resting bud, and the flowers appear in spring soon after the leaves. This hybrid has the habit of *P. tsariensis* of flowering again in late summer or early autumn. The flowers are carried on a scape and are very similar to those of *P. tsariensis*, being a dark purple. This hybrid is a sturdy grower and Mr Cooke would seem to have bred a plant with the best qualities of the two parents; mine, which was a single crown in spring 1947, has now increased to six plants, one of which has a double crown. This shows the ease with which it may be propagated by division.

I should perhaps warn my readers that I have been accused before now of being colour-blind, but the colour descriptions I have given, while they may not agree with the colour chart of the R.H.S., are, I think, near enough. I should like to emphasise that although these Primulas require a good deal of care and attention they are well worth it, and anyone with a cold frame, even although it be no more than 4′ x 3′, or an unheated greenhouse, can have much pleasure from their cultivation and in addition a wealth of flowers during the dull months from December to March. The flowering season is, of course, longer than that, extending perhaps to the middle of May.

Is it too much to hope that in a year or two we may see a large increase in the number of Petiolarid Primulas on the show bench?

The Small Rock Garden

By Captain H. D. G. Taylor.

RECENTLY, when discussing the construction of Alpine gardens and examining some old photographs of mine with the Editor, he suggested that I might write something for the "Journal." I warn my readers that I am an amateur with no botanical, and little other, knowledge on the subject, for which reason I hope to be forgiven if some of my methods appear to be a little unorthodox. I was fortunate in 1933, the year in which I became actively interested in Alpine gardening, in having as friends two very keen and knowledgeable gardeners, the late Lieut.-Colonel J. L. Wood, of Oakwood, Roslin, and Mrs Hally Brown, of Craignahullie, Skelmorlie; my early instruction was largely gained in their gardens. I assisted in the making of walls, screes and Primula beds at Oakwood, and so keen did I become that eventually I determined to construct a small rock garden for myself.

The Site.—I had really no choice in this matter and the site allotted to me was not altogether perfect. Facing south-east, it has a gradual slope; a large Spanish Chestnut tree overhangs its northern end, though this has not proved to be so damaging as was at first expected. The area is bounded on the south side by a Privet hedge (hardly a good thing), east of which lie a lawn and shrub border; behind the hedge stands an old building. Figure 9 shows my rock garden under construction and gives a picture of its immediate surroundings; the photograph was taken from the roof of the house, and thus it is "a bird's eye view."

Materials.—Rock, leafmould, peat, sand and stone chippings were collected first—I was fortunate in having plenty of room for this. The first-named was

by far the most difficult to handle but, using a hand-cart and with a considerable expenditure of energy on the part of a young brother and myself, the carefully chosen pieces were eventually brought in. The rock is not ideal, as can be seen from Fig. 10, but the whiteness has to some extent worn off until it now looks not unlike weathered sandstone. Plants such as the Thymes, Geraniums, Sempervivums and Sedums will grow quite freely on it. All the materials required were obtained locally.

Construction.—In order to accommodate many types of Alpine ranging from Candelabra Primulas to Saxifrages, I decided to make two screes—a high scree which would be dry, and a low one which would be moist. The soil on the site was excavated to a depth of three and a half feet in the shape of the low scree ; this soil was thrown up to form the foundation of the high scree. The low scree was dealt with first. The cavity from which the soil had been removed was filled to a depth of one foot with drainage material consisting of rubble and broken pots ; over this was spread a layer of peat, leafmould and manure. The soil mixture, to a depth of one and a half feet, consisted of two parts of chippings to one part of soil, the latter being composed of loam, sand, peat and leafmould. Around this scree, to give it a finish, I built a wall three stones high, putting a layer of peat, between the stones. Stepping stones and outcrops of rock were added to break the flatness of the scree.

The wall round the lower scree, mentioned above, was planted with Helianthemum, Dianthus, Phlox, Alyssum and Aubrieta, all of which have grown into large plants producing a great splash of colour but yet do not swamp the choicer and slower-growing subjects which were planted in the scree. This wall has proved to be a marked success, and even after twelve years most of the original occupants of this part of the garden make a colourful show. Figure 10 shows the low scree a year or so after planting ; the Candelabra Primulas will be readily recognised. As water was laid on to

this part of the rock garden I grew many members of this section with success—*P. japonica, P. Bulleyana, P. chungensis, P. Cockburniana* and *P. helodoxa,* as well as *P. denticulata, P. Florindae, P. sonchifolia, P. polyneura, P. rosea, P. farinosa, P. chionantha* and *P. Edgeworthii* were among the species grown, each one in a drift of up to thirty plants. Many of these Primulas have perished, for after the outbreak of the recent war I could no longer keep the water flowing and now, I am sorry to say, I have only European Primulas left, among them *P. hirsuta* and *P. marginata.* Figures 11 and 12 are from photographs taken when plants were fully established; the walls and banks have been completely covered with thriving plants, and the general effect of the planting can be seen.

The high scree was constructed in much the same way, with a retaining wall five stones in height. I tried out the " pocket " system here, but this I cannot recommend on account of the amount of valuable space which they occupy. If outcrops are desired in a small scree, then I consider that single tufa " rocks " should be set in, as these may be clothed with Sedums and Saxifrages.

Old stone troughs can be turned to good use in a garden, and having found two I determined to fit them in somehow. To the expert eye they may look a little out of place, one at either end of the high scree, but they provide good homes for Alpines, and a fine clump of *Gentiana verna* is now growing in one of my troughs.

Finally, I would like to say a word or two in praise of bulbous subjects in the scree, for they have proved to be most satisfactory. The Crocus and Tulip species are absolutely first-class if put in the correct positions for general effect. *Iris reticulata* and *I. histrioides* flourish in an ordinary scree mixture; while nothing can be finer in spring than a drift of *Anemone blanda.*

A Swiss Tour, 1948

By Miss E. M. Savory.

WE left London on June 18 and after an all night journey arrived, over an hour late, at Stälden on the way to Saas Fee. We could get no further by train so continued our journey by Post Auto, which rushed round hairpin bends at great speed sounding its triple post-horn. That took us to Saas Grund, and then everyone who was not brave enough or rich enough to ride up on a mule had to start an hour's walk, or rather climb, up to Saas Fee. The luggage all went up on the mules. It was a very hot day. We all made the journey safely—some sooner, some later—and were glad to have dinner and get to bed early. Saas Fee is surrounded by glaciers, most of them "dead," that is to say receding and leaving great rocks exposed and no longer covered with snow and ice. It was a very good centre, as the energetic members could walk and climb as many miles as they felt equal to, and the rest could find all the lovely plants in quite accessible places not too far away from the hotel.

Our first excursion was to Genshorn and Hohbahn Gletcher, quite an easy walk though rather steep. The best plants found were *Androsace argentea*, flowering so profusely that the flowers were overlapping and hiding all the foliage, a most lovely sight; lots of *Ranunculus glacialis*, a very good form, and *Senecio uniflorus*, whose only station in Switzerland is Saas Fee, a lovely silver tuft about three inches high with good golden flowers carried singly but lots of them to a clump. Sheets of *Aster alpinus* which made whole banks turn mauve; this was interspersed freely with *Dianthus Carthusianorum*, a very beautiful colour combination.

Next day the object in view was the Plattjen 8,200′, where we expected to find *Eritrichium nanum.* After floundering in quite deep snow and scrambling up a terrible mass of huge stones, we found a few plants, also *Androsace glacialis.* After that we went across more snow towards the Britannia Hut, where *Douglasia Vitaliana* was found; but it was bitterly cold and we turned back to find masses of " Woolly hair the Dwarf " on some rocks near the hotel where we had lunched. The day also brought *Anemonae sulphurea* and Baldensis, Lloydia serotina, Linnaea borealis, *Doronicum Clusii,* four Pyrolas and *Ranunculus pyrenaeus* to our collection.

Mattmark was our next objective. A long walk and a very cold day, but a red letter day as regards plants. We nearly walked over a great patch of *Campanula excisa* on the way, and coming back found *Campanula cenisia.* When we arrived at the Mattmark hotel where we had hoped to find shelter from the snow and eat our lunch in comfort, the place was closed with a great iron shutter, and we could only find a little shelter under a wall and sitting on the doorstep. We went on towards Monte Moro, and in a dry torrent bed a huge and very lovely form of *Ranunculus glacialis* was growing in large clumps, and where the grass was beginning to grow there were masses of *Primula farinosa* and quite a good number of plants of *P. longifolia.* When at last we arrived back at the cafe at Altmark on our way home, we found a supply of hot coffee and the most delicious meringues, so we gave up worrying about our precious francs and had a good feed.

Another day was devoted to Gletchen Alp and Lange Fluh, one of our two sunny days during the fortnight. No flowers that we had not already found, but a steep climb to 8,400′ and a lovely view and masses of Orchis, Primula, Arnica and again *Primula longiflora.* Next morning, whilst we were having breakfast, we saw the place was covered with fresh snow.

Altrona Pass into Italy 8,500′ was disappointing, a rather dour valley with a stream running through it ending in a mass of snow covering the pass and bare moraines lower down. Triftalp meant walking down to Saas Grund and then up the opposite side, a very long steep zigzag path emerging into a little village and a rather stony alp with streams and bare stony moraines. The plants found on nearly all walks were *Ranunculus glacialis* and *pyrenaeus*, *Loiseleuria procumbens*, *Anemone sulphurea*, *Lloydia serotina*, *Senecio uniflorus*, Orchis, Ferns, Primula, Artemesia, *Geranium rivularis* and *Geum reptans*.

Notes from Westmorland

HAVING become the Local Secretary for Westmorland and Cumberland for the Alpine Garden Society and also the County Representative for the North-west for the Scottish Rock Garden Club, I feel that in a way I am a " link " between the two societies on this side of the border. How I wish it was easier to travel about in these days, for I should greatly enjoy visiting some Scottish gardens, for I frankly confess that I know little about the climate and conditions of many parts of Scotland.

Naturally I know that many Primulas and Meconopses do better in the North-west of England than they do in the Midlands and the South ; on the other hand these same species grown in say Inverness-shire grow into gigantic cabbages compared to my modest little plants ; however, we all have to be content with the climate and conditions in which we live.

Possibly some Scottish member will reply and tell us something about the plants which do well in his or her particular district, and in this way we may gain some hints.

I wonder what success Scottish rock gardeners have had on keeping *Aquilegia Jonesii*, and especially *A. scopulorum* in character. In the field notes of the Greig and Worth expedition to the Rocky Mountains in 1938 it is stated that *A. scopulorum* was only three to four inches high, but wherever I grow it in my garden in rich or poor soil, flat or stony ground, it always grows to a taller and less attractive plant. The only comfort I have on this point is that I heard from Dr. Worth and he assures me that *Aquilegia scopulorum* " misbehaves " in his garden in America, and not only there but in its native mountains where he has seen it at 11,000 feet and nearly a foot high. " Starva-

tion screes " are Dr. Worth's prescription, so this year I think I shall make up the soil in a sink on very strict rations, principally old mortar rubbish sifted and mixed with a very little sand and humus.

Are Scottish gardeners afflicted with millipids in their gardens? I think this pest has been responsible for more losses in my garden than anything else.

My greatest treasure ever since 1939 has been a precious plant of *P. aureata* given to me as a small plant from the Edinburgh Royal Botanic Garden in 1944; this I managed to keep, and showed it last year at the Alpine Garden Society's Show, where it received an A.M. I think most people know the story of the origin of this lovely Primula. It is supposed to come from Sikkim; seeds of various Sikkim species were received at Edinburgh, and seed of this Primula was found in company with a Swertia. It is allied to *P. petiolaris* and is included in Sir William Wright-Smith and H. R. Fletcher's " Genus Primula " in the group *Scapigera*. It is a singularly lovely Primula with deeply cut margins to the leaves, white farinose on both sides, the midrib and petiole coloured red, and the flower is a rich pure yellow with a deep orange flush. I have got it to set two seeds, but they did not germinate, and the best way of increasing it is by division. I have also tried leaf cuttings with no success, but if very carefully watched it is possible to get plantlets from the axils of the leaves. My original plant of *P. aureata* has had its vicissitudes, in fact several times I have feared that I had lost it. Apparently in good health one day, the next may see it wilting, and having a slightly yellowish tinge to the leaves; then I know my deadly enemy has been at work, and that the only hope is to unpot it, when I invariably find that millipids or some pest has eaten off the main roots. The only cure that I know is to bathe the " stump " in a weak solution of permanganate and replant in fresh soil with a good proportion of leaf mould and peat.

This winter, or rather late autumn, my large plant of *P. aureata* was looking healthy and well with a double crown and plenty of flower buds when one day in December I saw the signs of wilting and found that the lovely long main root, about ten inches long, had been completely severed and I could not find the enemy who had done this cruel thing. Patience is certainly needed for some of the rarer Primulas. In 1939 I received seed of *Primula Cusickiana* from Mrs Berry, of Oregon, collected by herself in the Wallowa Mountains. She informed me that a man who lived in these mountains had told her that it would take five years to flower from seed. Every year for five years I watched the tiny spoon-shaped leaves appear; every year only very slightly larger, and no sooner had they appeared than they seemed to die down again, to be seen no more till the next spring. Still I watched and waited for five years (war years when I could give scant attention to " fussy " plants); at the end of this time I still had three precious little plants, then alas! just when I thought I might have a chance of seeing one in flower my hopes were dashed to the ground, as they never reappeared in 1947.

My friend, Mrs Berry, has written an account in the Alpine Garden Society's " Bulletin " last year of her attempts to find " Cooky " (as she calls this little Primula) in Union Co., Eastern Oregon, where it was apparently first seen by Professor Cusick. The elevation is not so high as that of the Wallowa Mountains. Two trips were unsuccessful but on the third Mrs Berry collected plants and I was one of the fortunate recipients of a package of these Primulas which Mrs Berry describes mailing to England last May. When they arrived here I hardly believed they could be alive; they were encased in rock-like clay which I could only soften at all after repeated soakings. However I potted them up and hoped for the best. To my amazement and somewhat to my horror, one plant chose to throw up leaves in the beginning of December, when the sudden and severe frost we then had made it quickly die down again, and so far I have seen no

signs of life from it since. Now in March I have three of these lovely gifts showing green leaves, and I am wondering if I really shall see at last a flower of this charming little Primula, which from the description of anyone who has seen them in their native mountains is very fascinating. Mrs Berry tells me " the violet flowers are in clusters with a heavenly scent," but the conditions it requires are so different from those of Westmorland and the Lake district. It grows in its native mountains on wet hillsides surrounded by melting snow, but directly it dies down and becomes dormant it requires a thorough baking and drying in hot sunshine during the summer months—not easy to provide when July and August are very often the wettest months in the year in this part of the world.

CICELY M. CREWDSON.

Some Plants of the Dry Western High Himalaya

By R. E. Cooper, Curator,
Royal Botanic Garden, Edinburgh.

THE western Himalaya differs from the eastern Himalaya because there are no main secondary ranges trending south from the main chain as in the east, but there are instead three main chains some miles apart all trending north-west to south-east. All of them are lofty, but the valleys between them are progressively higher, like gigantic steps up to the plateau of Ladakh in western Tibet. There are several routes as old as the hills they traverse from the plains of India northwards into Tibet, and they link up with the ancient trade route which crosses Asia from the China Seas to the Caucasus. It was my fortune a decade or two ago to be able to go north from Simla a few marches along that one followed by Sven Hedin in 1905, an account of whose journey was published as " Trans-Himalaya." I was after suitable plants for our gardens, and after crossing the third of the great ranges found myself in such barren country that after a few stages in it I turned back. But there were plants there on the great dry screes of rock debris about the high valley floors and, although they are not likely to figure in our gardens, some small account of them and their environment may be of interest.

The first of the great ranges is behind Simla, and on its northern side the river Sutlej runs westward at an elevation of 3,000 odd feet. The next range encloses the very fertile valley of Kulu where the climate is temperate throughout its floor elevated 5-7,000 feet. The surrounding hills rise to twelve or

thirteen thousand feet, but the main range is higher and is crossed over a saddle at an elevation of 13,000 feet by the Rohtang Pass. Further north is another great ridge crossed by the Bara Larcha Pass of over 16,000 feet, whence the way lies open to Leh in Ladakh. The valley floor, between the Rohtang and the Bara Larcha is never below 10,000 feet; the valley floor north of the Bara Larcha is about 15,000 feet. That is the top step. Since each of the great ranges is a little higher than its southern neighbour, it follows that the rain clouds coming up from the south impinge on each of them in turn losing more and more of their rain. The southern face develops a moisture loving flora, but the northern face flora has to live under drier conditions. The Rohtang shows this well. The corries and upper valleys abutting its southern face also supports flocks of ibex, whose stalking on a bare hillside with no cover at all at four o'clock in the morning at the breath-taking elevations of 14,000 feet and over is one of the finest hunts I know. The hillsides abound in stones of all sizes, all poised to slide with tinkling crashes at the slightest inadvertent kick of a rope-sandal-covered foot and scare the beasts away. In this game the hunt is the thing, one's wits are against the beast's, and it is not just chagrin at getting no trophy that makes one reconciled to the view; there is no more depressing sight than the corpse. The discovery of a mass of little flowers, be they *Primula rosea* or *Reidii*, a dwarf Corydalis or Meconopsis makes one feel much more uplifted.

The richness of the wet Rohtang slopes in lovely garden plants is well illustrated in Coventry's three-volume flora, and has been so well written up many times already that nothing further need be said. A few hundred feet below the pass on the north side the reduced rainfall shows its effect. Incidentally, the light was found to be very different photographically to that of the moist area. All plants had mat rosette habit. Potentilla, Androsace, red and pink Polygonums, a white Stellaria, an Aster, were common. A bush hanging from an isolated crevice turned out to

be a gooseberry ! Near the line of 11,000 feet occasional plants of Juniper, Birch and Rhododendron grew in sheltered places by stream sides. The valleys north of the Rohtang range make up an area called Lahoul, the whole of which is above 10,000 feet in elevation. It is cut off from the rest of the world throughout the winter months, and in the little settlements the people spend that time in a prolonged bout of hospitality, going from house to house, all of which are connected by flat roofs so that they may do so. When the snow melts and the fields can be worked again the men of the village spend the first few days (or more) resting after the orgy and recuperating in the sun, while the gentler(?) sex get on with the cultivation. Two streams rise in and run through Lahoul—the Chandra and the Bhagar, and at their junction the combined valley is winding and broad with large stretches of cultivatable alluvial by the streams. The flora on the irrigated stream edges is quite luxuriant, having many grasses and flowering herbs of Labiatae, most of them with scented foliage, and Compositae, but away from the streams an aridity prevails which is astounding. The hillsides have a thin scattering of Juniper, and on certain slopes which are bare of scrub there are extensive stretches of *Eremurus himalaicus*, whose dry fruiting stems are collected and stored for fuel by the women of every small settlement of just two or three houses, and who present an extraordinary appearance as they come in with huge bundles of seven foot long stems protruding over their heads. The position of the settlements are determined by the presence of water, and they usually take the form of a group of squat, square-built stone houses, one of which may have a watch tower, surrounded by a few dry-stonewalled areas, the fields. It is interesting country, because Mongol Tibetans and Aryan Indians, both Hindu and Moslem meet, to make an odd mixture of customs, features and language. One of the famous shrines of Buddhism is on Lahoul's southern border and is called Triloknath. It is a group of three buildings joined together ; one is plain Hindoo, another has a steep penthouse roof, common to the heavy rain hill forest

areas, while a typically local flat roofed central chamber links them. A group of prayer flags floats over the group.

Lahoul is a land of little rain, its waters come from the melting snows and glaciers, but the wind finds the freest access, and plants become tufts in the shelter of the rocks ; they spread by means of runners above and below the ground and are zerophytic to a degree. The general look of the country is more like land above tree level, and it was a pleasant reminder to find an occasional Birch tree, and by a place called Sissu, a sprinkling of blue Pine trees. It is, or was, called the " Blue Pine of Bhutan," but it is common throughout the Himalaya from six thousand feet up to about eleven thousand feet, the upper limit of trees. *Pinus excelsa* is now called *P. Wallichiana.* A hairy grass, a Polygonum, and a Borage, are the commonest sand plants, but on sheltered ledges asters and an occasional Rose bush appeared. By a stream, an Aconite was found mixed up with Balsams and nettles. Opposite Sissu is a fine waterfall with its base hidden in a cloud of spray, and this is only to be reached by a suspension bridge of willow-twig ropes most unpleasant to grasp, which sways disconcertingly in the wind as one crosses it. Early morning is the time the natives go across to gather wood, and hasten to return before midday when the wind gets going strongly. The gorge from halfway between K. and S. southwards has steep sides, above which peep snow crowned peaks and flat snow beds, where streams flow through chasms in the rock and are often hidden for half their descent,

Timber begins to appear in something like quantity. and as a permanent feature of the landscape about Gondla, where Poplars, Junipers and Willows are to be seen, and across the valley *Pinus excelsa* grows up to 10,000 feet line, and above that, Birch. There are a fine balanced pair of peaks overtowering a small village by the stream a couple of miles before G, and from the snow bed between them the edge broke away with a thunderous roar and smashed on a flat ridge a few hundred feet below.

The village of Gondla at 10,130 feet elevation is distinctive for a tall erection belonging to the local headman, and for a few living Juniper trees, of which dead stumps were seen above Sissu. A group of plants of Pyrus sp. were seen nearby. Tangles of a narrow leaved Elaeagnus and some plants of Hippophae were seen near water.

On this march many plants of henbane *Hyoscyamus niger* were found, invariably in dust and filth, always dry, at the foot of walls of houses, and near G. a rambling white-flowered Ipomoea was seen.

The view of the Gophan (a local snowpeak) from the west next morning was very fine, for a shower during the night had cleared the air. The headman's house stands on a small prominence after the style of Tibetan Djongs or castles, and a boulder in an adjacent field has human-figure-outline-carvings on it twenty feet in height.

The road keeps gradually down to the junction of the Bhagar and Chandra rivers. The slopes, bare of trees, are dotted with Artemisia, Cotoneaster and Berberis, red and white clumps of Verbena, and on rounding a small spur below a steep, bare cliff the slopes are grey with a fine-leaved, silvery Artemisia, purple with a showy Thyme, and a Scabiosa, and relieved by splotches of green Iris leaves. Just before the junction of the stream is a huge overhanging bank of gravel and alluvial or glacial debris with a very localised colony of plants from other areas. A Delphinium in fruit sat in a shady nook, and a yellow Potentilla on steep inaccessible slopes above, *Androsace sp.* and a yellow-flowered hairy Verbena, and a small rosette, mat habitted Saxifraga being most distinctive. The road runs along bare slopes dotted with Labiatae bushes, until in the vicinity of Kyelung willow trees line the road in a most pleasant fashion. Commanding situations invariably have a collection of houses or a monastery or *chorten* upon them, and the high hills tipped in snow give them a splendid background and

setting. A big stream near K. was in full spate, the sun having melted the snows above its source. On stony slopes a fresh species of Borage was found, and the fields were gay with Silene, Nepeta, and Umbelliferae, Ranunculus, Senecio, Sonchus and Carduus, but on the higher slopes the grass was beginning to turn brown. Previous winter falls of snow have been poor, and local saying suggests an early and severe winter, more so when the first snows occur in August. A march to Triloknath coincided with the break-up of a fair held in that place, and the road was mostly remarkable for a stream of picturesquely ornamented women and sombre clad men, gay with tassels of mica and Tagetes ; all were exuding good humour and polluting the air with the odour of native brews as they passed along, vociferously singing songs.

The road is very barren for some miles and makes a sudden descent to Tirot. This is the ancient and still observed boundary of the States of Lahoul and Chamba, emphasised by the tottering remains of a watch tower by the bridge on the Lahoul side. The willow glade was peopled with a motley throng of members of all the local tribes, including lamas. The majority of them were asleep after the excitement of the fair.

Information was obtained here that *Hyoscyamus niger*, of which many plants were found in ripe fruit on the previous day's march, was used as an " exorciser of tooth inhabiting worms," and consequently seed was most desirable but was not to be taken away. Nevertheless a package of a few pounds was sent home.

Through the kindness of D.C. Kangra Dist., a permit was given to cross the " Inner Line " and visit the region of the Bara Larcha Pass and the Lingti Plains beyond it.

Below Darcha the Bhagar is joined by two streams, the union of whose valleys has resulted in an extensive flat of alluvial stretching for two miles or more southwards to above Jisa.

Fig. 9.—Rock Garden under Construction.

Fig. 10.—The Low Scree.

Fig 11.—The Rock Garden in Full Bloom.

Fig. 12.—Thriving Plants Round Scree.

The valley between Kyelang and Jisa is quite normal, the streams wandering at times in a defile between the hillsides that slope more or less steeply to its banks. Cultivation occurs near one or two streams from which irrigation canals can be made, but the main stream is not utilisable. The slopes about Jisa had a thinnish covering of both a *Cupressus sp.* and a *Juniperus sp.* forming open forest of twenty feet height on stony and otherwise bare slopes, and from this natural reserve it is imperative to take supplies for many days' journey ahead since fuel is not to be had. The hillsides facing north are covered with a low, loose herbage of Ephreda and Artemisia. The Artemisia persists as far as Patseo and beyond into the form of Artemisia steppe ; but nearer, and up to the Baralarcha, the flora consists of rock crevice plants.

The valley is wide at Patseo, a dominant feature being the screes of sandstones and limestones all weathered to a reddish-ochreous appearance. Two miles beyond Patseo, " the place of stones," the valley bifurcates, the rock-beds thrust up to look like a Sphinx. The valley to the east is followed, a gradually opening and rising valley, with extensive screes from snowbeds, glaciers and peaks on either side.

Zinzinbar is a halting place of little interest, and the road ascends from there somewhat more rapidly to the base of the Bara Larcha pass, passing above the river on tall cliffs of cracking alluvial beds. From here the slope is most gradual and passes a fine lake before turning north to cross the pass at 16,600 feet above sea level. On the pass itself is a small hut for the use of beleaguered travellers, and no matter how much anyone may need a fire none of its woodwork is ever used because that might imperil the safety of a following party. The flora of the Bara Larcha consists entirely of herbaceous species either of rambling loose mat habit or of tight mound-forming habit, the latter growing on sand, and more normal species clustered among sheltering rocks like Cochlearia, Stellaria, Leontopodium, Allardia, Saxifraga, Legumes, Sedums,

Koeleria sp., Aster, Astragalus, and a few black and white flowered Saussaurea. Arenaria, Potentilla, Gypsophila, Delphinium, Umbelliferae, Corydalis, and a fresh Labiate. An interesting yellow-flowered pinnate leaved species of Biebersteinia was common between bare boulders of screes, while Koeleria, a small fern, and Bellis occurred in sand. The stream below the lake is lost in the base of a huge scree emanating from a fine snow bed behind the hut, from beneath which it again emerges swollen by fresh waters. The pass is a most interesting piece of landscape, since these ranges run parallel. The central one diminishes to a scree uniting with screes from the southern range to form not only a barrier and watershed for the Chandra and Bhagar rivers, but also for the waters of the northern glaciers, which form the Lingti Chu (or river) all in the space of a square mile.

This latter stream flows somewhat rapidly northwards! passing several flats one of which flooded by sun-melted snow water at midday had consisted of beds of gravel early in the morning. It is called the drying lake or Chukum Tso. There was a Primula growing by it. Below this place the valley narrows to its junction with a big valley from the east, and it is conspicuous for a bewildering amount of screes of bare, black and iron-coloured rock in huge blocks. These were inhabited by colonies of marmots, whose shrill cries of "chink," "chink," "chink," greet every passer-by. The united basins make a large flat called Kenlung. The plants on the screes of Kenlung were isolated between rocks and in sheltered nooks, or scattered in tufts down them, and included Lychnis, Epilobium, Saxifraga, Meconopsis, Gypsophila, Koeleria, Borages, Legumes, Geraniums, and sticky-calyxed Caryophyls, grasses, etc. This main basin is again joined by a large valley from the S.W. and flows due north five miles or so below Kenlung, the valley widening out to the Lingti plain. This plain is a huge flat of alluvial stretching northwards to the Sar Chu for about seven or eight miles, joined in its centre by an equally fine valley from Padarm. The plain stops

abruptly where the Sarchu and Lingti Chus join. This is also the boundary of British Territory and puts a stop to further journeying northwards within the limits of my permit.

The soil of the plain, drying now as the water drained from it and as the sun and strong winds operated upon it, was developing a network of cracks, and a queer selection of plants grew in these cracks. A *Cynodon*-like runner-grass turned them into green meshes, but there was also a Gentian, a Compositae, and a Hippuris. Their behaviour was remarkable in view of the fact that the soil and the water are soda or borax impregnated so that one had to carry one's own water for drinking, as well as fuel for a fire, to some extent.

The slopes of the hills of the plain towards the Sarchu has extensive stretches of *Caragana pygmaea*, the plants making spiny mounds of thin foliage through which the stems gleamed like dull gold. Mixed with them were similarly wind shaped mounds of Elaea gnus and Astragalus. These plants of Caragana grew on boat-shaped pinnacles of alluvial held together by their roots. Across this plain runs the age-old highway from India to Leh and Ladakh, marked by pack and flock animals of the people going along it.

There is little fodder on these high marches (for a train of any size it must be carried), but the animals wander among the bushes, browsing where they can, their hooves loosening the gravel and grit between the bushes. This, the wind lifts and drives along, scarifying round the bushes and wearing their pinnacles in time to a rather beautiful streamline. The channels become two or three feet deep, until either the plant dies and the pinnacle is worn away or undercutting makes its fall.

The climate on the Lingti plain is far from pleasant. The sun is still an Indian sun, strong and scorching, making the wearing of a topee a useful safeguard.

The wind from the north belongs to these cool, very cool uplands (the daily range and temperature is very great). One is always of two minds, hot face and cool back, or vice-versa, until nightfall and then one is uniformly cool. Fine dust is always on the wind, augmented by heavier material in the gusts, and the rock contains borax. A few days of traversing and fruitlessly exploring this plain will make the skin of the nose and lips harden and crack and peel off, and on returning to the milder climates of Lahoul we counted four such separate peelings.

The main stream had cut down into the plain, alluvial for nearly thirty-forty feet, and parts of this bank were erect and unworn ; at places it had worn or been washed into slopes, making the most picturesque turretted effects. They were quitebare, but at the junction of streams seed carried along by them were plants of Hippophae, Elaeganus, *Polygonum sp.*, and grasses, with an occasional bush of Artemisia and a scrophulariaceae, carried there doubtless in some way by the caravans.

All the herdsmen who take their flocks to the north side of the high ridges for grazing must get back before the first of the autumn snows block the passes. I came through on one of the last days, and as I lay in my tent at night was conscious of a rustling among the stones and a constant low whinnying. At daylight I got up prepared to go out and collect seed of many special plants marked in the previous weeks for harvesting. The reason for the rustling and whinnying appeared in the stream of sheep and goats crossing the passes in a never-ending stream, the beasts all spreading out over the hillside foraging as soon as they were beyond the narrow pass. They had as good an eye for an outstanding plant as I had—better, in fact, for hunger improved their vision. My seed crops from that particular area were completely devoured. Such is a plant hunter's luck!

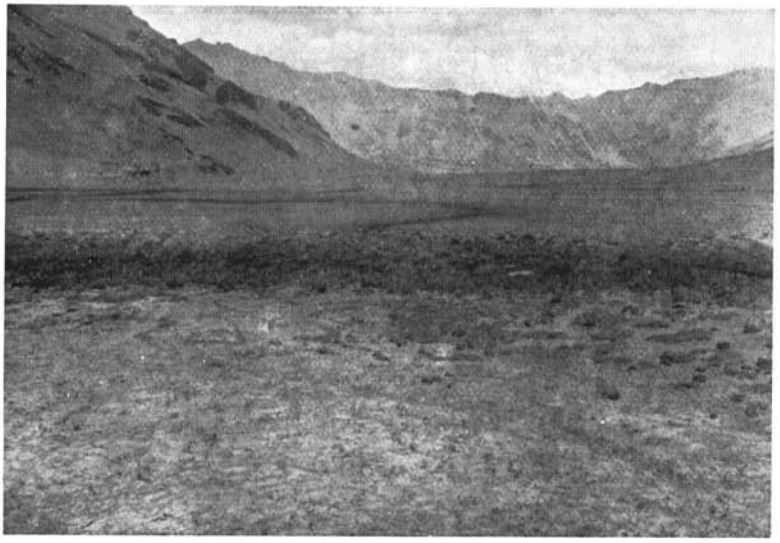

Fig. 13.—The Lingti Pass Vegetation. (*P. 37*). [*R.E.C.*

Fig. 14.—Caragana Pygmæa. (*P. 37*). [*R.E.C.*

Fig. 15.—Kenlung Scree Plants. [*R.E.C.*

Fig. 16.—The Bara Larcha Pass. [*R.E.C.*

Show Reports

Glasgow, 20th and 21st April, 1948.

THE most successful Glasgow Show since pre-war days was held within the Christian Institute, Glasgow, on Tuesday, 20th and Wednesday, 31st April, 1948. The competitive classes were well contested, and several members who had not hitherto competed came forward with creditable exhibits which received awards. This was most gratifying to the Committee, who are anxious that all members should exhibit and so add to the success of the Shows.

One of the features of the Show was a very fine exhibit by one of the Club's Vice-Presidents, Mr E. Darling, Port Glasgow. His exhibit took up the whole of the space in front of the platform, in the West Hall, and was a great attraction during the whole of the Show. Altogether some 80 pans were on view, and while it is impossible to mention them all, special praise is due good pans of Daphne petraea grandiflora, thickly studded with buds, which must have been a glorious sight a week later; Cassiope lycopodioides, which a week earlier had received the chief award at the Joint Lecture with the Glasgow and West of Scotland Horticultural Society; and a very old specimen of *Picea balsamea* hudsonia. Very great credit is due to Mr Darling for the time and expense in putting up such a fine exhibit. General disappointment was expressed that the Trade did not give greater support to the Show, but Mr J. Drake, from Aviemore, and Mr D. Wintersgill, Thornliebank, Glasgow, reaped a rich reward for their enterprise. Mr Drake had a particularly attractive stand of very well known plants in pans, and it was fitting that his beautiful pan of Mertensia coriacea should receive the George Forrest Medal. This is the first occasion on which this award has gone to a member of the Trade, and Mr Drake deserves to be congratulated. The exhibit was very

strong in Primulas and Clarkei, chionantha, sino-purpurea, pubescens alba and Marven were all good; other good plants were Lewisia Tweedyi, Polemonium confertum, growing strongly and well flowered, Sanguinaria canadensis fl. pl. and Cassiope lycopodioides, of which Mr Drake was particularly proud, as he had raised it from seed.

Mr Wintersgill had a very nice stand, in which Westmorland limestone was used effectively to display a fine selection of plants which included *Primulae pubescens* Mrs Wilson and The General, *P. Linda Pope, Penstemon Newberryi rupicola,* with a background of plants of the beautiful *Magnolia Soulangeana.*

In the competitive classes the Dr William Buchanan Memorial Trophy was awarded to Mr D. Livingstone, Carluke, who had a narrow victory over Mr H. Archibald, Carnwath. Mr Livingstone's winning six was *Androsace cylindrica* (a very well grown and flowered specimen), *Vaccineum Nummularia, Primula Linda Pope, Helichrysum virgineum, Celsia acaulis* and *Lithospermum oleifolium.* Mr Archibald had good plants of *Lewisia brachycalyx* and *Saxifraga Grisebachii,* Wisley variety. Major and Mrs Walmsley were, as usual, strong in Ericaceous subjects, and their plants of *Phyllothamnus Erectus* and *Phyllodoce aleutica* were particularly good; they also had the chief award in a strongly contested class for Gentians with a fine flowered specimen of *G. acaulis.*

Of the new exhibitors, Mr Lamb, Carluke, had many fine plants and was first in five classes; Mr Masterton, Aberfeldy, had four firsts; Mr and Mrs Knox, Alexandria, two firsts; and Miss Macdougall of Macdougall, Oban, one second prize. Great credit is due to those competitors, and it is hoped that their success will be the means of other members following their example. New competitors are always welcome, and the Show Committee is always happy to help newcomers.

In Section 4 of the Schedule some very fine vases of Narcissi were staged, and in competition Mrs Jamieson, Newton Mearns, was first in Class 60 for three vases, Mr Archibald first in Class 61 for five blooms Trumpet Narcissi, and in Class 60 Mr Neill, Blantyre, took the honours for five blooms Incomparabilis ; Mr Goodlet, Milngavie, was again first for one greenhouse plant in flower.

It should be realised that, for the most part, the success of a Show depends on the energy and ability of the Show Secretary, and great credit is due to Mr Wintersgill for such a very fine first effort. Mr Wilkie, Royal Botanic Garden, Edinburgh, put up a most beautiful display of his photographs of choice rock plants, and those who were present at the Show must have been envious at the many rare subjects portrayed.

G.F.L.

EDINBURGH, 11th and 12th MAY, 1948.

The Show was held in the Waverley Market and attracted a very good attendance, over two thousand paying for admission. There were over 180 entries from 22 exhibitors, and the standard of the exhibits was very high ; in fact this seems to be rising with each successive Show, and considering the unusual vagaries of the season the plants shown did great credit to their exhibitors.

The George Forrest Memorial Medal was awarded to an exceptionally fine *Daphne petraea* from Mr Henry Archibald, of Ogscastle, who also won the K. C. Corsar Challenge Trophy for six pans of rock plants. This group included a very fine specimen of the Bee Orchis, a rare native plant seldom seen and surely even rarer in flower on the show bench.

The Carnethy Medal, offered for the first time at this Show by the writer and Mrs. Tod for three pans of rock plants, was introduced to encourage the smaller exhibitors who might find it difficult to put up six pans for the Corsar Trophy without automatically debarring themselves from other classes but who might

manage three. A satisfactory entry of four sets of very good plants was forward in this class, which was won by our Secretary, Mr Livingstone, with three excellent pans.

The principal prize-winners were Mr Henry Archibald, Mr Lamb of Carluke, Mr Livingstone, Mr and Mrs Masterton of Aberfeldy, Dr and Mrs Tod, and Major and Mrs Walmsley. In all, twenty of the exhibitors won prizes in the various classes.

The oddness of the season and some very severe late frosts largely eliminated certain classes, as did the date, which was just late enough for some of the groups. Most of the Rhododendrons were cut by frost so that entries were small, as were those in the Primula and Androsace classes. A new class for Primulaceae, excluding Primula and Androsace, suffered heavily and only two entries reached the bench ; this was a pity as this class should bring in some very interesting plants which hitherto have had to be entered in that for " any other rock plant," a wide one which always has been a trial to the Judges.

There were several innovations at the Show. Firstly, lectures were given by Messrs. Livingstone, Robb and Wilkie which were well attended and much appreciated ; all lectures were illustrated with slides. Secondly, there was a display of Mr Wilkie's magnificent photographs of Alpine plants and shrubs. These photographs are quite unique and we were privileged to have them ; it is hoped that the method of hanging and lighting did them justice. The third was the method of distributing the trade stands so that each stood separate from its neighbours, which was intended to avoid the congestion which usually occurs, and seemed to work quite satisfactorily to that end.

Several notable plants were exhibited in the competitive classes, such as Mr Livingstone's *Raoulia eximia* and *Jankaea Heldreichii*, both particularly difficult subjects. Then, too, Mr Ingram, of Honey-

brae, Carlops, showed some fine specimens of British native plants which are seldom exhibited, and another plant which, while not rare or particularly difficult, is seldom seen at Shows, namely *Rubus arcticus*, with its surprisingly large pink flowers on two-inch shrubby stems.

Another unusual plant for the bench was *Incarvillea grandiflora brevipes*, that most un-Alpine-looking of high Alpine flowers, which Messrs Backhouse of York showed on their stand. We were glad to welcome this famous firm, and we were glad to find that they were satisfied with the results of this, their first, appearance at one of our Shows. They had a very fine stand which aroused much interest and comment.

Mr Drake, of Inshriach, after catastrophic frost damage in his nursery, showed an excellent lot of pans of Lewisias, Meconopses and Primulas. The Edrom Nurseries and Mrs Laing of Hawick both had neatly constructed little rock gardens which displayed their plants beautifully, while Mr Wintersgill showed us some very fine shrubs which are all too seldom seen at our Shows. Mr Clark exhibited a wide range of Alpines from his very fine stock, as did Messrs Forbes of Hawick. A second newcomer to the Show was the Springhill Nurseries of Aberdeen, who exhibited their famous Double Primroses and a new line of Hybrid Cowslips which will probably become very popular, combining as they do the colour range of the Polyanthus with the scent of the Cowslip. Messrs Dobbies Ltd. were not able to show us Alpines this year, but put up a most superb display of their famous Tulips.

Messrs James H. Steele Ltd. showed us a range of gardening equipment from tractors to hand forks; Messrs Melvin Bros. had lawnmowers and other mechanical appliances; and the B.S.F. Developments Ltd. demonstrated the various ways in which electricity can be used in the garden. Plant Protection Ltd. had a stand exhibiting their range of products from fertilisers to the new selective weedkillers; and

Lavex Ltd. had an exhibit of snads, peats and fertilised compost. Finally we had two more new firms, Messrs James Thomson & Co., who let us see the range of gravels and rocks that are, at last, once more available for those who are making new rock gardens or altering old ones, and Messrs Douglas and Foulis, who had an excellent stand of books on gardening, a feature which seemed to be much appreciated.

Lastly the thanks of the Club are due to the Royal Botanic Garden, who by the kindness of our Honorary President, Professor Sir William Wright Smith, and the endeavours of Mr Cooper and Mr Robb, put up a very fine display of rare, unusual and interesting plants for our envy, admiration and education.

The Judges for the Competitive Classes were Mr G. F. Laurie of Glasgow and Mr. James Robb of the Royal Botanic Garden, Edinburgh, to both of whom our sincere thanks are due for the execution of their difficult and ardous task.

HENRY TOD,
Hon. Show Secretary.

Plants and Problems.

OVER POTTING

One is told to be careful not to overpot Alpines, or in fact any plants, as the soil which the roots do not use goes sour. Is this really a universal truth? If one thinks about it, surely those plants at least which like a damp soil will find conditions for their roots more natural and equable in a largish pot than in a small one where the roots get up against the pot and are thereby exposed to sudden changes of temperature and dryness.

Surely sourness of soil is due not to overpotting but to inadequate drainage.

Of course, a crevice plant will presumably prefer a tight-fitting pot. M—L.

SEDUM STAHLII

While a member of the S.R.G.C. my true interests lie with growing Cacti and Succulents, but in the case of the latter there are several members which may also be classed as Alpines, so that our interests will occasionally overlap.

The Sedums are a case in point, and while they are attractive subjects for the rock garden or Alpine house I grow mine in pans in a cold house with their more prickly neighbours.

Sedum Stahlii, if not allowed to become too straggly, makes a delightful plant for indoor decoration, particularly if a grey porous pan of one of the new compositions be used to show off its reddish-brown, egg-shaped leaves. These are set closely on numerous rather brittle stems and care must be taken not to break them. In August or September the flowers are produced at the tip of each stem, covering the plant with a mass of bright yellow stars.

Propagation is simple—merely allow the leaves which drop off to root in the pan. An almost endless supply of little plants will be then forthcoming, and these may be

left, if there is sufficient room, to help form the solid mass of colour desired. or they may be carefully removed to new quarters.

The soil should be a rich sandy loam, with good drainage, and care must be taken not to over-water, particularly in the Autumn and Winter, as the rich bronze colouring might thereby be spoiled. In mild situations this would make an attractive addition to the trough garden. W.P.C.

BLUE BUTTERCUPS

Anemone obtusiloba patula seems to have the reputation of being difficult. Certainly many people remark on those in my garden (Central Perthshire) and ask how I manage to get them to flourish as they do.

It is, I think, merely a matter of the right soil and the right conditions. Mine g ow in dampish soil made up of at least 50% peat and leaf-mould, and they are shaded from the mid-day sun. My plants are about two feet in diameter after being where they are for about three years. This year they started to bloom early in May and they are still blooming as I write this (20th October).

This year I have got some nice strong self-sown seedlings for the first time. M—L

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(OR PERMANENT WEED-KILLER)

Time saved on garden "chores" gives more time for more interesting jobs; a permanent weed-killer will do this.

Copper sulphate is just that, or pretty nearly. Put it on dry at the rate of half a pound per square yard, and rake it in so that it is well mixed with the top inch or so of the path. Keep back about a quarter of your crystals to use on patches you may have missed—the weeds will show you where they are. Only "fine" crystals should be used.

I have paths treated five or six years ago which have not required weeding since, and the R. B. G. chemist says it will probably be effective for ten or fifteen years. M—L

J. McCrindle, J.P., F.Z.S.

We regret to record the death on 22nd October, 1948, of John McCrindle, J.P., F.Z.S. A prominent member of the S.R.G.C. from its inception, he did much to foster a love of Alpines among the many thousands of visitors who were drawn as by a magnet to his unique rock garden at the "Moorings," Dunure.

A fisherman by occupation, he was of a very observant and inquiring nature. Few were better versed in the herring industry than he, and the knowledge and experience of a lifetime served him well in many a Government Commission.

Strongly opinionative, he was forthright and fearless in expression. A true Nature lover he was an acknowledged ornithologist and had made a particular study of bird life on Ailsa Craig. When not at sea he was exploring the moors in the hinterland. He knew every inch of the ground from Galloway in the south to his beloved village and beyond. There were few wild flowers he failed to recognise, and many of these were found growing happily in his rock garden.

He knew his Burns intimately, and was an acknowledged authority on all pertaining to the National Bard.

Altogether he was an outstanding personality, and as he advanced in years he devoted much of his time to Local Government and education. He was a County Councillor and a Justice of the Peace. Thus there were many demands on his time, and yet, if one visited the "Moorings" he was invariably found working among his treasures, or reconstructing a portion of his rockery that had offended his æsthetic taste. It is no exaggeration to say that every stone in his rockery had its story. They were collected from the rocky shores of the mainland and islands of the Firth of Clyde. Here and there throughout the garden were numerous sandstone troughs of unusual shape and enormous size, testifying to the owner's ingenuity in having them placed in position. His circle of friends included all ranks and among them was George Forrest, who visited the "Moorings" regularly between his plant-hunting expeditions. These two had much in common. Alike in age and build and their love of the wild, it is said that McCrindle would accompany Forrest on his next expedition. Forrest's premature death upset these plans.

And now McCrindle has gone. His ashes were scattered to the four winds from the top of the hill that overlooks the village of Dunure, and on whose crest he had often stood as man and boy and looked upon a scene of natural beauty unsurpassed anywhere in these islands.

EDWARD DARLING.

Book Review

" Primulas in the Garden." by Kenneth C. Corsar, published by Lindsay Drummond: 12/6. This book, written by the Club's Honorary Editor, comes to fill a long-felt want in the literature available to the growing number of Primula lovers. It deals with the subject in non-technical language which is readily understood by all and contains information and hints for the expert and the novice alike. Mr. Corsar has had almost a life-long experience of Primula growing and he makes it plain that he is drawing upon that experience, and not from any second-hand information in the views he expresses. It is for this very reason that I found the book so refreshing. It is a good thing to hear other people's views on this and that, and to compare one's own experience with others. For instance Mr. Corsar considers Root Aphis as the pot grown Primula's greatest enemy, but I would venture to suggest that the larva of the Vine or Raspberry weevil is the real arch-enemy whose devilish work almost always results in death to the plant attacked and against which there is, as yet, no guaranteed remedy.

The book deals adequately with the cultivation of Primulas and gives details of species and varieties suitable for the various situations in which they may be grown, including Scree frames and Alpine houses. The species mentioned include the best of these we have known for years and also many of the new ones that are now available in limited quantities, such as *P. P. bhutanica, bracteosa, Clarkei* and *sonchifolia.*

The illustrations, over 50, are a feature of this book. The majority of the photographs were taken by Mr David Wilkie, whose photographs have been so much admired at our Club Shows. The others were taken by Malby, the quality of whose work is also well known. This is a book I recommend without hesitation to the Primula grower and to the general rock gardener alike.

D. L.

THE SCOTTISH ROCK GARDEN CLUB.

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