

Editorial Copy



The JOURNAL of
THE SCOTTISH
ROCK GARDEN CLUB

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VOLUME XI, Part 4
No. 45

SEPTEMBER 1969

Editor—A. EVANS, Royal Botanic Garden, Edinburgh

Obtainable from Mr. D. ELDER, Hon. Treasurer, 152 Raeburn Heights, Glenrothes

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Editor's Page

It is difficult to know when a rock gardener's year begins and ends. Spring, I suppose, seems a good time to start, but so much goes on in other seasons that one would find it hard to say when the year finishes. All plants, I know, have a resting period, but one cannot accept their dormant or growing periods as being indicative of a particular season. By our calendar the dormant period in some plants is summer while in others it coincides with our winter.

All this may be fortuitous for the enthusiast, however, for he finds no time dull and while he may look forward, with excitement, to the flowering of a particular favourite, he finds much with which to occupy himself at all times.

At least it can now be said that the winter period is approaching when catalogues and gardening books may be browsed through at leisure and plans can be made. And might I say this is an excellent time to look back as well as forward? There are bound to have been a number of failures as well as successes and often it is the former which takes up most of our thoughts and which we discuss more.

“To travel hopefully is a better thing than to arrive, and the true success is to labour.”—R. L. Stevenson.

The striving after success is the major part of any hobby and while to arrive gives great satisfaction it also takes something away. This is where the true enthusiast scores; he never arrives. He never attains complete success with all his plants, for his selection of genera, species, varieties and cultivars is always changing. Every year new plants are being added to his collection, bringing with them new problems and challenges. This collecting and discarding is a very important part of growing plants.

Pleasure from plants can be got in many ways and this issue illustrates just how fascinating a number of our members find them.

Searching for plants has always been popular, and even although records of finds are kept only on film more members are able to enjoy this pastime. Rock garden construction and layout is another facet which gives pleasure to many and great importance is often put on the placing of rocks and the association they have with each other. Groups of plants adapted to one kind of environment such as scree, bog or open exposure, or even the study of a particular genus as in

Trillium, Cassiope, Rhododendron or Primula form other avenues of exploration. While much of this may appear to be a trifle deep, it is in fact simply paving the way for a more engrossing interest, the morphological study of plants themselves. Plant forms, leaf shapes, flower structures, root systems are all part of the same interest—plants.

One other aspect, and one which is used more often than any other and is probably studied least, concerns plant names. How plants get their names is a fascinating story and for a few shillings it is possible to buy a book which will explain what the names mean. It may also help to improve the spelling on plant labels.

Obviously, then, one lifetime is not long enough to get to know all about plants and because one need never arrive may be the reason why gardeners live so long.

Slide Library

THE LIBRARY contains over 1500 35 mm. colour transparencies mounted in 2 × 2 in. slides. A list of these can be had by members on application to the Curator.

Colour transparencies (35 mm.) of members' gardens, especially of their Rock Gardens, Screes and Peat Banks, would be most gratefully received. Views of the Alps would also be very welcome.

The following tape-recorded lectures are available for hire :—

1. "Early and Late Flowers for the Rock Garden" by Major-General D. M. Murray-Lyon, D.S.O., M.C.
2. "Adaptation to Environment" by Mrs. L. C. Boyd-Harvey.
3. "Dianthus for the Rock Garden" by Mr. John Belchamber (presented by the lecturer).

Each recording is accompanied by a set of slides. Charge : 7/6. Typescript copies of the lectures, with slides but without recordings, can also be supplied. Charge : 3/6.

There is also available a tape-recording of a BBC "Rock Gardeners' Forum", which was held at North Berwick and broadcast in January 1964. This runs for about 25 minutes and is not illustrated by slides.

Members in the U.S. and Canada please note that Lectures Nos. 1 and 2 can be hired from Mrs. Henry G. Clarke, Bear Swamp Gardens, Ashfield, Mass., 01330, U.S.A.

Full particulars of the above from the Curator : Mrs. C. E. Davidson, Linton Muir, West Linton, Peeblesshire.

Christmas Cards

THIS YEAR'S Club Christmas Cards will be of the two colour plates (figs. 88 and 89) in this *Journal*. They will be supplied in lots of NOT LESS THAN ONE DOZEN, either all of one kind or mixed, as desired, and will measure $4\frac{5}{8}$ ins. \times $5\frac{1}{2}$ ins. It will be sufficient to give figure numbers when ordering, which should be **as soon as possible** to the Hon. Treasurer : David Elder, 152 Raeburn Heights, Glenrothes, Fife, enclosing the necessary remittance. The price, including envelopes, is 10/- per dozen, post paid.

The cost of producing colour photographs in the *Journal* can, to some extent, be offset by Club members supporting this Christmas Card Scheme.

Seed Distribution 1969-70

WILL MEMBERS who have seed for next year's distribution please note that the closing date for receiving donations (or lists of seed to follow) is **15th November 1969**, but that I shall be grateful for contributions that arrive earlier.

The Seed List will be published in January 1970 and is sent, as routine, to all overseas members and to all home members who have contributed seed. Other home members must ask for it if they want it and, in the past, have been requested to send a stamped self-addressed envelope. Last year, however, four-fifths of the envelopes that reached me were too small to contain the list. If a suitable envelope ($8\frac{1}{2} \times 5\frac{1}{2}$ ins.) is not available when you write, may I suggest that you send a stamp and a self-addressed label ?

Dr. MARY TOD,
Carnethy,
Seafield,
Roslin,
Midlothian.

Conference Show Harrogate 1971

IN 1971 the Alpine Garden Society and the Scottish Rock Garden Club will be combining to put on what should be the finest and most ambitious Alpine Show ever held in Great Britain, or for that matter, the World.

Our hosts will be the North of England Horticultural Society, who are to make available one of the larger marquees at their Spring Show to be held in Harrogate's beautiful Valley Gardens. There is not the slightest doubt that the combination of the Conference, the Conference Show and the North of England Horticultural Society's Spring Show will attract exhibitors from all parts of Great Britain; competition should be keen and any prize won will be well deserved.

It is fitting, therefore, that awards should be worthy of the occasion, and whilst normal cash prizes will be increased in value, the Show Secretary is appealing for trophies that can be won outright. He would appreciate hearing from any member of either Society who would be prepared to donate such a trophy or, alternatively, a sum of money to purchase one.

It is proposed that the awards should take the form of usable articles rather than conventional silver cups. One that springs to mind is a silver salver, suitably inscribed with the donor's name.

Offers will be gratefully received by the Conference Show Secretary, S. E. Lilley, 133 Monmouth Drive, Sutton Coldfield, Warwickshire.

INTERNATIONAL CODE OF NOMENCLATURE OF CULTIVATED PLANTS

The new edition, published by the International Bureau for Plant Taxonomy and Nomenclature is now available, price 10/-.

It may be obtained through the

ROYAL HORTICULTURAL SOCIETY,
Vincent Square, Westminster, S.W.1.

Review

SINCE the Review of June last year, the Club has suffered the sad loss of a former President of the Club who, in the immediate post-war years, was indefatigable in his work to rebuild the Club, whose membership at 1948 had dropped to less than 400. Major Alan Walmsley, by his drive and tireless work on behalf of the advancement of the Club, saw the membership first pass the 1000 mark in 1950. Two years later it had passed the 2000 mark and the Club seemed settled on a sound foundation. Right up to the time of his sudden death he maintained his keen interest in the Shows and in the business affairs of the Club.

It is satisfactory to be able to say now that our membership still seems to be increasing slowly but steadily ; the total membership at the end of May stood at 3200. An interesting point is the number of new members joining from more distant countries such as Japan.

Also very noticeable is the fact that the filling of vacant Group Convenerships by new Group Conveners has been followed by a flow of new members in the areas concerned ; this has been particularly obvious in the case of Selkirkshire. This county, where not more than a minority of houses can be built on level ground, would seem to the passer-by to be particularly adapted to the pursuit of rock-gardening. Indeed, before the foundation of the S.R.G.C., the Border counties had several very flourishing local rock garden groups.

The year 1969 will long stand out in the memory of all those connected in any way with plants and the land, whether they be gardeners or farmers, and probably the nurserymen deserve a particular word of sympathy because if the weather had not been equally unkind to them their stock would have been in great demand to replenish depleted gardens. For almost five months the country was swept more or less constantly by easterly winds, ranging between north-east and south-east, and the eastern part of Scotland suffered from an unprecedented heavy and persistent rainfall, while the west of the country experienced a quite abnormal drought. Plant losses were heavy, garden work of any kind was hindered—sometimes so long as to cause abandonment for the year—and even after Easter much damage was done to dwarf conifers and other rock plants by biting east winds which damaged even forest trees.

All this, of course, affected our Shows, and more especially the

earlier ones, some of which were pathetically thin and were only redeemed by the noble efforts of members who had provided protection for their plants or else had very sheltered gardens. In spite of this it was good to see, even at the earliest Shows, a worthy proportion of high quality plants and, as the season progressed, this proportion steadily increased till by the end of April or early May good specimens of plants were in the majority again. The thanks of us all are due to those members who went to great efforts to ensure that their local Show would not let the Club down, and to those Show Secretaries who put in such an enormous amount of arduous work to attain the same end. At least one Show Secretary wrote an individual note to every member who had at any time previously competed—with the consequence that a spectacular and excellent Show resulted.

It is rather a tragedy that in some of our Shows—not all—competition is so terribly weak in Section 2. This section ought to be the feeding section for Section 1 and, as members pass out of this section by their own efforts, there ought to be a flow of new members coming in their place so that the level of competitors is maintained and the standard of the Show as a whole kept in a healthy condition.

The Autumn Show held in Dundee last October turned out to be a really amazing success with a wonderful entry of outstanding and most meritorious plants. Even the most optimistic of us must have been surprised. May I remind members that this year's **Autumn Show** is to be held at **Musselburgh** on **19th and 20th September**, when it is hoped that an equally fine display will be on show. Full details will be found on page 44 of the *Year Book*.

Considerable progress has been made by the Joint Committee appointed by the S.R.G.C. and the A.G.S. to go into the matter of the International Conference due in 1971. In the interests of economy and to cut costs to members, it was agreed to meet halfway at Harrogate instead of meeting for one week in London and one in Edinburgh, as in previous Conferences. This has proved a most popular choice, and the Harrogate authorities are doing everything possible to ensure that the Conference will be an outstanding success with the minimum of expense to the two bodies concerned. Already heavy bookings are pouring in from overseas members of the two Societies.

I wish to end this Review by recording my most grateful thanks to all Office Bearers, Group Conveners, Show Secretaries and the many individual members who in one way and another are doing so much and working so hard for the welfare of the Club. Especially I

would like to mention one who for two seasons now has—entirely unaided—coped with that possibly most arduous of Club tasks, the annual Seed Distribution—Miss M. R. Robertson. I know they all find a pleasure in that work and do not look for thanks, but they most heartily deserve them.

One person I have kept till the last, Mr. Alfred Evans, who so generously took over my editorial duties in 1967 though he was an extremely busily occupied man. His work as Editor speaks for itself in the very attractive form the *Journal* now takes, and the quality of the material he has gathered together within its pages. Most unfortunately Mr. Evans feels bound by the pressure of other work to resign as Editor at the end of this year, and I would couple my gratitude and very sincere thanks to him with equally sincere regrets for the loss to the Club by his resignation as Editor.

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Some Tasmanian Plants

by K. D. GILLANDERS

AFTER waiting a year we were at last ready to start our holiday in Tasmania, with plant hunting our main interest. Unfortunately we had only two weeks to spend there. This meant that we had to make our stops as brief as possible at the different collecting areas to be able to fit them all in. Our trip covered 1600 miles and with many days spent climbing and collecting this meant some long hard drives on several occasions. Many of the roads in Tasmania are through mountainous country which makes travelling slow. The car had quite a load to carry for, in addition to my four sons, my wife Lesley and me, there was all our camping gear plus the collected plant material that grew at an alarming rate as we progressed. On top of this there were the piles of rocks that my boys, keen rockhounds, insisted on collecting and bringing along. All this was fitted somehow into and on to our Holden stationwaggon.

Our first collecting stop was Mount Wellington, whose 4166 feet peak overlooks Hobart, the capital of Tasmania. It is so close, in fact, that a 30 minute drive from the centre of the city will take one to the summit. The disastrous bush fires that swept this area two years ago had burnt right to the top. After hearing how bad the fires had been we had some misgivings about finding very much there, but because of its close proximity we decided that it was worth a try. The fires had indeed burnt all but odd patches of boggy ground, the largest of these areas covering only about an acre. From the vegetation on these patches, it could be envisaged just what the summit had been like before it was burnt. Now the landscape was nothing but a mass of dolerite boulders and blackened dead branches. Although this was a very dismal first impression, we did see and indeed collect several interesting plants.

Richea scoparia (fig. 69) was the first plant to catch the eye. It was in full flower but we managed to get a little seed from some of the previous season's seed capsules that still persisted on the plants. A member of the Epacridaceae and comprising ten species, this Australian genus embraces nine species native to Tasmania. The plants when growing in colonies, which they usually do, make impenetrable barriers. Their sharp stiff leaves which clothe the stout branches deter even the most

enthusiastic collector. The inflorescence, a stiff erect panicle, carries tubular flowers which are almost closed at the mouth. They vary in colour from white through shades of pink to orange and red. Isolated plants were only two feet high, but those in thickets were twice that height. Although it may sound disagreeably prickly, it is in fact a very handsome plant in foliage and flower.

One plant that I particularly wanted to find was *Celmisia saxifraga*. We have three *Celmisia*s in Australia but this species is endemic to Tasmania. We came upon a number of plants growing in association with the widespread *Celmisia longifolia*. Later, at several other localities, we found large drifts of it—silvery mats consisting of rosettes of fine awl-shaped leaves. *Celmisia saxifraga* can be distinguished from *C. longifolia* by its smaller rosettes, forming tight mats, its finer leaves and shorter-stemmed, smaller flowers.

A small shrub which cannot be missed when in flower is *Bellendena montana*, known locally as the "Mountain Rocket". A member of the Proteaceae, it is monotypic and endemic. It varies in height from six inches to two feet, the flowering stems rising several inches above this. The small flowers are generally a deep cream and are produced in dense erect racemes. During the autumn the seeds which are attached to a thin ovate wing, half an inch in diameter, turn bright crimson. Here it was growing in very moist peaty soil in exposed positions, but some plants seen later were in rather dry, gravelly soil among scattered Eucalypts.

Several cushion plants such as *Abrotanella foresterioides*, *Pterygopappus lawrencii* and *Donatia novae-zelandiae* were seen, but I will mention these later as we saw them in great numbers on Mount Field. The only other plant of note we found here was *Ourisia integrifolia*. It is a gem and is found in moist peaty positions near tarns or in cool rock crevices. The stems root as they creep along and are thickly covered with dark green fleshy leaves a quarter of an inch in diameter. Slender four-inch stems hold one or two five-lobed flowers which are white or sometimes tinged with lilac.

Our next stop was Mount Hartz National Park about 50 miles south of Hobart. Weather conditions were not ideal when we left Hobart in the early morning and, as we neared the Hartz range, we could see that all the higher peaks which reached to over 4000 feet were covered in heavy cloud. The road up through the National Park at first passes through magnificent forests of Eucalypts and *Nothofagus cunninghamii*. At 3000 feet *Phyllocladus aspleniifolius*, the "Celery-

topped Pine'', and *Eucryphia lucida* form large stands. Masses of the ''Tasmanian Laurel'' *Anopterus glandulosus* were in flower, as was *Telopea truncata*, a ''Waratah'', endemic to Tasmania.

We had hoped to see *Prionotes ceranthoides* in flower but only found spent flower heads. This very spectacular plant, known as the ''Climbing Heath'', scrambles about over the ground and up the trunks of trees, revelling in the rotting bark and wood that are so abundant in these high rainfall forests. This area has an average rainfall of 70-80 inches. The inch-long crimson tubular flowers are slightly constricted at the mouth and are produced in profusion. A member of the Epacridaceae, it is endemic and the only species. I also saw this plant growing in fairly exposed positions just above the tree line on the Hartz range. Here the plants had crept between rocks and dwarf shrubs and were only a few inches high. Possibly plants from these situations would prove hardy in a cold climate and they would certainly be a wonderful acquisition to the rock garden.

Upon reaching the end of the road, we were rather horrified to find no clear ground suitable on which to pitch a tent. In fact, the rather impenetrable scrub came right to the edge of the road and that was just wide enough to turn the car. Several walking tracks led off into the bush in various directions and, after a quick reconnoitre, we discovered an old abandoned hikers' hut several hundred yards along one of these tracks. We decided to use this as our camp while we were here. The fact that it had started to rain did not make this decision very difficult. From our camp the trees thinned out very quickly and after about a mile we were above the tree line altogether. The soil here was very peaty and acid with a pH of about 4 and overlaid dolerite and sedimentary rock. Where the ground was very damp, such as the small plain-like areas that were at the base of the peaks of the range, masses of *Milligania densiflora* (fig. 68) grew. This member of the Liliaceae is known as the ''Tasman Lily''. There are literally hundreds of acres of it, over which we had to tramp. The inflorescence rises from a tuft of coarse strap-like leaves broad at the base and tapering to a point. It carries a long loose panicle of creamy white flowers that create a lovely feathery appearance. Flowering stems can reach two feet in height and seem to have a white mealy or woolly substance on them. The long thong-like roots delve deep into the ground and we found only very small plants could be removed without severely damaging the roots.









Fig. 69—*Richea scoparia* ▲ Photo—R.B.G., Edinburgh

◀ Fig. 68—*Milligania densiflora* Photo—R.B.G., Edinburgh

Fig. 70—*Leutkea pectinata* Photo—R.B.G., Edinburgh ▼





Fig. 71—Abbé Armand David



Fig. 72—Jean Marie Delavay



Fig. 73—Jean André Soulie

One of the most thrilling finds of our trip was made here. My son Douglas saw it first, a plume of deep pink growing at the side of Lake Esperance. It was a pink variant of *Milligania* and the only plant with pink flowers we saw. Although isolated colour forms are reported at times, they are rather rare, so we were quite delighted with our discovery. Fortunately we were able to remove this plant successfully and it is now growing quite happily in our rockery.

Rain and hail prevented much plant hunting and only the desire to find *Geum renifolium*, which is on several peaks in this locality, made us venture out at all. Unfortunately we did not find this lovely little plant with its kidney-shaped hairy leaves. I believe it likes cool rock crevices and fills them with its leafy rosettes. The pure white flowers are produced singly on six-inch stems.

While searching for this we did discover some plants of *Ewartia planchonii*. It grows only on the very top of the mountains in crevices in rock faces where it makes tight clumps of tiny rosettes of leaves which are covered with a whitish wool. Like several other *ewartias*, it is very similar to *Raoulia*. In fact, the three endemic species were once classified as *raoulias*.

Masses of *Richea scoparia*, *R. pandanifolia*, *Bellendena* and the prostrate form of *Bauera rubioides* were plentiful, also shrubs bearing brilliant berries such as *Cyathodes glauca*, *C. juniperina* and *Gaultheria hispida*. Several species of *Trochocarpa* were in fruit. The smallest species is *T. thymifolia*, which grows to a height of one or two feet. It has attractive pink flowers produced in clusters on the terminal shoots. These are followed by bluish-purple fruits.

The general colour of the landscape in this area, and in fact much of south and south-west Tasmania, is olive-brown. This is due to the so called "Button-grass", *Gymnoschoenus adustus* and several other low-growing plants, such as the "Creeping Fern", *Gleichenia alpina*, which have this rather dull colouring.

Our next stop was at Mount Field National Park about 50 miles west of Hobart. This Park covers a large area and contains several high mountains up to 4700 feet, and many beautiful lakes.

There are a number of interesting conifers growing there and one that was in fruit at the time of our visit was *Microcachrys tetragona*. The plants we saw, which were growing above the tree line in exposed positions amongst scattered boulders, were so profuse that they covered the ground and we found ourselves walking on them a great deal of the time. The female cones are very attractive, being bright red, three-

eighths of an inch long, and produced on the terminal branches. I have heard that this plant is often called the "Strawberry Cypress", but I would liken the cones to a small raspberry rather than a strawberry. The fine cypress-like four-angled foliage is a deep green and no plants were higher than twelve inches. Some authorities classify it as dioecious, while others disagree. From our observations of the plants we saw, it would appear that some at least are dioecious.

Another small conifer that grew in the area was *Pherosphaera hookeriana*, also known as *Microstrobis niphophilus*. We saw it growing in the same conditions as *Microcachrys* and in many cases they were together. It reaches a height of three to four feet and makes a dense bush with fine cypress-like foliage. Leaves on the exposed parts of the plants had taken on a yellowish-green colour, whereas the interior and sheltered parts of the plants were a deep green.

On Mawson Plateau, which is part of Mount Field massif, we found masses of cushion plants. They intermingled with one another and, although from different genera, it was practically impossible to identify them from one another unless they were in flower, as their foliage was very similar. *Abrotanella forsterioides*, another endemic species, was the only one flowering and was making cushions up to three feet across. These were studded every few inches with pure white flowers. The flowers are campanulate and sit level with the top of the foliage which is a mass of very small emerald green rosettes. Cushions of these and several other plants such as *Pterygopappus lawrencii*, *Donatia novae-zelandiae* and *Phyllachne colensoi* look like mounds of moss, yet are so hard one can stamp on them and not leave a mark. They love moisture and cover the sides of seepages and tarns right to the water's edge. In these conditions they make a continuous undulating carpet with only odd plants of *Richea* and *Astelia* competing with them. Several small plants use these cushions as a home. *Gentianella diemensis* can often be seen growing on them, also the "Alpine Sundew", *Drosera arcturi*. This interesting little plant makes large colonies, obviously the cushion plants making an ideal seed-bed. The leaves alone are very attractive, being tinged bronze-red and covered with glandular hairs. The white flowers are half an inch in diameter and are produced singly on stems two inches high.

Pterygopappus lawrencii could be discerned by its slightly glaucous foliage, but *Dracophyllum minimum* and *Phyllachne colensoi*, although most likely growing here, could not be identified.

In moist pockets *Oxalis lactea* scrambled about among other herbs and studded the ground with its milky white flowers. This species is similar, and closely allied to, the South American *Oxalis magellanica*.

A trip on the Gordon River road produced some very interesting material. This is a new road built by the Tasmanian Hydro Electric Commission and runs south-west from Maydena, near Mount Field, for 54 miles. It finishes here where a new dam is being constructed by the Commission. Most of this area was virtually unexplored until this road was built several years ago. The rocks here are quartzite, although conglomerates, slates and serpentine also occur. Generally the soils are very acid with a pH of 4 and comprised of a shallow layer of blackish peat and quartzite sand. South-west Tasmania lies in the path of the "Roaring Forties", a cold wet air stream from the west. This gives this area an annual rainfall of 140 inches, which has a marked effect on the vegetation and very little fauna exists here. A peak we ascended was The Needles, which are about 3500 feet high, a climb of 1000 feet from the road. Growing at the sides of the road and all the way to the summit was *Hibbertia procumbens*. Individual plants were about twelve inches in diameter and quite prostrate. The bright golden one-inch flowers open flat and are held just clear of the foliage. Plants look attractive even before they flower, as the round flower buds which are a reddish-brown stand out against the fine green leaves.

It was when we reached the top that we saw our first plant of *Blandfordia marginata*, known as "Christmas Bells", in flower. Unlike the three mainland species, which grow near the coast and prefer low altitudes, *B. marginata* can be found close to the sea but more frequently on mountains up to 5000 feet. It was one of the most spectacular plants we saw. This species loves to get its roots down into rock crevices and shows a preference for vertical banks or steep slopes. The leaves are lax and strap-like, up to 18 inches in length and of rather coarse texture. The stout flowering stems may rise to three feet but are frequently lower and are topped by an umbel of about ten funnel-shaped flowers up to two inches in length. The form generally seen is orange-red tipped with gold, but pure yellow forms are also known.

We saw the first fruiting specimen of *Coprosma moorei* through the viewfinder of the camera. We had just found our first flowering plant of *Blandfordia*, which was growing out of a crevice in a vertical rock formation, when, hurriedly setting up the camera and focusing it, I

was amazed to see a ribbon of blue berries in a crevice of the rock behind the *Blandfordia*. This prostrate little plant was growing in cracks in perpendicular rocky outcrops mainly on the sides facing south and west. The flowers are inconspicuous, but the quarter-inch shining bright blue fruits, which appear to be sprinkled over the tops of the plants, make it a gem. *Coprosma pumila* is another prostrate shrub noted for its colourful fruits. This species produces an abundance of orange berries up to half-an-inch in diameter. Unfortunately it does not hold all its fruits clear of the foliage and some are hidden by the fine leaves which are similar to those of *C. moorei*. It favours moist to boggy conditions near springs and seepages.

Anemone crassifolia was a plant we were hoping to find here. It was quite a thrill when we discovered that we had climbed into an area that was full of it, scrambling about among "Button-grass" and other herbs and small shrubs, putting up an odd leaf here and there. It was extremely difficult to lift plants of it, as the ground was a mass of tough fibrous roots and the slender roots of the Anemone were entangled with these. The leaves are lobed into several leaflets, the undersides being light purple. The glistening white flowers have eight petals up to one and a half inches across, and are produced singly on stems six to seven inches high. This plant is endemic to Tasmania and the only Anemone occurring in Australia.

One of the gems of the Tasmanian flora is *Hewardia tasmanica*, a member of the Iridaceae. The burgundy-red flowers have six narrow petals that taper to a point and open out either flat or slightly reflexed. They are two inches in diameter and the yellow stamens are very prominent. The stiff foliage resembles *Sisyrinchium angustifolium*, being only slightly larger and making clumps up to 18 inches across. We were too early to collect seed, but got several plants that appear to be growing well.

Another little plant that has the appearance of a lily but is closely allied to the rushes occurred in damp places. It is *Xyris operculata* and it makes a small tuft of rush-like leaves four to five inches high. The slightly taller flower stems carry a single flower that has three bright yellow petals backed by brown hairy bracts.

There are over 30 species of *Helichrysum* in Tasmania, many of these being shrubs too large for the rock garden. One little species that was growing in exposed positions among rocks there was *H. pumilum*. It has fine dark green leaves with a silver-white reverse and looks very similar to a small version of *Celmisia*. The white flowers

have pink or red bracts on the exterior and are produced on four-inch stems. This species is similar in appearance to *H. dealbatum*, which we saw growing on the east coast.

There were very few shrubs in this locality, "Button-grass" and various herbs being the main flora, although several small boronias were most attractive. *Boronia citriodora* is pink-flowered and has fine foliage which is delightfully lemon-scented when crushed. Another species with flowers in various shades of pink and only growing up to twelve inches in height was *B. pilosa*.

Further along this road we discovered a colony of *Utricularia dichotoma* var. *uniflora*. This little plant would provide a problem in cultivation. It grows in swamp-like conditions and even in shallow pools of water. The leaves are very small and, in the case of plants growing in water, are sometimes not produced. It sends out stolons that have tiny bladders attached and these trap minute animals. The thread-like flower stalks are three inches high and the lilac or purple flowers have a very prominent lower lip that resembles an inverted fan. It forms colonies, and groups bearing 40-50 flowering stems could be seen growing in an area of two square feet. These were in pure quartzite sand, but it does occur in a great variety of soils, as long as they are moist and cold.

From the Gordon River, we returned through Mount Field and travelled across to the west coast. Although there are numerous mountains high enough to support interesting flora along this route, none was easily accessible to travellers like ourselves with limited time to spare. The forest vegetation of the west coast includes huge tracts of *Nothofagus cunninghamii*, and *Gaultheria hispida* grew from steep banks on the sides of the road for miles. We collected a good quantity of seed which was just ripe. The clusters of its glistening white fruits, which are actually large fleshy calyces, make this a most attractive plant. It is very similar to *G. appressa*, which occurs in Victoria, but I feel *G. hispida* is a superior garden plant.

Our last collecting area was Cradle Mountain in the north-west. This is a very beautiful spot with numerous lakes and mountains all within easy access. Most of the mountains here reached just over 5000 feet, with large plateau areas at over 4000 feet which extend for miles. In this region the rock formation is very varied and includes dolerite, siltstone and quartz. Many of the mountain sides are quite precipitous and rocky cliffs and outcrops are numerous. As with the other districts we visited, the soil was extremely acid at pH 3.5. Rain-

fall is over 100 inches per annum and snow can fall at almost any time of the year. In fact, drifts were still lying in high places while we were there, which was in mid-summer. The road leading up to Cradle Mountain passes through high plain country for many miles and some very spectacular wild flowers were seen there. Masses of *Helipterum anthemoides*, *H. albicans*, a white form, and *Gentianella diemensis* were in full flower. Podolepis with their golden flowers were also numerous and a few plants of *Helichrysum bracteatum* were seen.

A small tree that grows around the 4000 feet level in this area is *Nothofagus gunnii*. Although ten to twelve feet high when growing in association with *Arthrotaxis* and *Eucalyptus*, it only reaches two to three feet as isolated specimens in exposed positions. One never associates deciduous trees with the Australian bush, but this plant is an exception. Its leaves are like *Fagus sylvatica*, only very much smaller, and colour beautifully in autumn. Its wiry branches form a mass of contorted stems and because of this it is known locally as "Tanglefoot". It was too early to see these plants in their autumn glory, of course, but they were in fruit. These were three-eighths of an inch long and light red in colour, contrasting well with the apple-green leaves.

Numerous *Nothofagus cunninghamii* and gnarled old trees of *Arthrotaxis cupressoides* and *A. selaginoides* were very much in evidence. The tree line gave way to masses of low shrubs including *Richea*, *Boronia*, *Rhomboidea*, *Bellenden montana*, *Microcachrys tetragona* and *Podocarpus alpina*. Higher up these were reduced to scattered specimens with native grasses and low herbs which made walking and climbing much easier.

Ewartia meridithae was our first find, and this was growing on a narrow exposed ridge. It formed tight mats several feet in diameter and in growth and appearance is similar to *Raoulia australis*, only in this instance the leaves are slightly smaller and have a golden sheen. The small flowers are whitish and are held on one-inch-high stems. This little plant and the *Helichrysum* I will mention next are both very attractive rock garden plants and well worth growing.

We had been told that *Helichrysum milliganii* could be found here, so we were on the lookout for it. Once on top of the plateau, we found it growing in profusion in moist peaty soil in full sun. Most of the plants were only in bud, but a few were fully open. The one and a half inch-wide papery flowers are glistening white with the reverse of the bracts a bright crimson. The buds are just as lovely, if not more

so, than the open flowers. The plants are composed of neat rosettes of light green leaves, the margins of which have long silky hairs.

Pentachondras were very plentiful here, as were *Drosera arcturi*, *Donatia*, *Coprosma moorei* and *Archeria* species. We were told that *Pernettya tasmanica* occurred here but, although we searched for several hours, we could not locate it. I have this species growing in my rockery at home, but the plants were raised from S.R.G.C. seed.

Large areas had recently been under snow and, due to the weight, plants of *Celmisia saxifraga* looked as though a steam roller had been over them.

I had been unable to get much information about one plant we found, *Campynema lineare*. It was assigned to the Amaryllidaceae by Benthams and Hooker, and more recently to Hypoxidaceae by Hutchinson. There are only two species known, one endemic and the other in New Caledonia. Growing only a few inches in height, it has one or two fleshy linear leaves with incurved edges and tapering to a point. The half-inch flowers, which have six petals and are widely campanulate, are produced one or two on a stem. They have a green interior flushed with burgundy and are brown on the reverse side. When growing among grasses and other herbs it was rather hard to locate, but when seen growing among rocks it stood out prominently. Its colour reminded me of some of the green-coloured fritillarias.

While away from the camp we very nearly lost several of our collected plants. I had made it a practice to unpack all the collection on making camp, plunge them in water and leave them in a shady place. They suffered from the travelling as the interior of the car got quite hot at times. I had done this at a creek which ran right by the camp site and had about 50 plants, balled in plastic and moss, spread out under a tree. On returning to camp we found some animal, probably a wallaby or more likely a Tasmanian devil, had investigated several of the packages, torn the plastic and carried off a few, but had dropped them a short distance away. After this episode we kept the plants in the tent while we were away from camp. Perhaps this was fortuitous, as the following night we had several inches of rain that flooded the small creek, and the area where we had stored our plants was now under several feet of rushing water. This bad weather put an end to our plant hunting holiday for although we waited another day for the weather to clear, we finally had to pack up in rain and go. From here we proceeded to the home of a friend near the north coast to await the sailing of the ferry back to the mainland. We found the

Tasmanian endemic flora very fascinating and our only regret was that we had not found more plants. Perhaps in a few years we shall try again and this time we should be going with a better knowledge of where to look and what we expect to find.

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The Genus Trillium

by ROBERT J. MITCHELL

WOODLANDS and peat gardens would be poorer places without some of the decorative species of Trillium and their use in providing colour and interest is well known, not only due to their flowers but in some cases because of leaf shape and colour too. Since only a few are grown in gardens it was felt that an assessment of the genus as a whole might be of interest.

Comparatively little has been written about trilliums over the years. Stewart Mitchell, in our own *Journal*, wrote a fine article dealing with some of the American species, while in the R.H.S. Lily Year Books of 1962 and 1963 E. B. Anderson and P. M. Syngé have tried to bring trilliums to the attention of the gardening public. It is incredible to think that Linnaeus, in his *Species Plantarum* in 1753, described three species, i.e. *T. cernuum*, *T. erectum* and *T. sessile*, and these are the main species grown today, with the addition of the very desirable *T. grandiflorum*.

Actually there are some 30 or more valid species described in botanical literature and, while many are worth growing, it would be wrong to say that they are all decorative and of horticultural merit.

The name Trillium was given to this genus by Linnaeus and it refers to the three-part formation of the flower and leaves. The perianth consists of two whorls of three; the outer segments, which in a dicotyledon would be termed the sepals, are green and the inner ones, the petals, are coloured. The flower colour ranges from pure white to pink and purple, and from clear yellow to green. In some species the leaves are also coloured and mottled on the surface, which give added interest. Like the flowers, they are arranged in threes in a whorl near to the apex of the stem which arises from a short thick erect rhizome.

This genus now belongs to the Trilliaceae, a small family recently split off from the much larger Liliaceae to which it is closely related. In Trilliaceae the leaves are in whorls, whereas they are alternate in Liliaceae.

Scoliopus and Medeola, two North American plants, and our own British native *Paris quadrifolia* (Herb Paris) are sufficiently akin to Trillium to warrant inclusion in this new family. All are woodland plants requiring moist shady conditions and all have leaves in whorls.

In the case of *Medeola* more than one whorl of leaves are arranged on the stem and the flowers are in clusters, while *Paris*, of which there are more than one species, may have four or more leaves in a whorl. *Scoliopus*, on the other hand, although bearing *Trillium*-like flowers, produces its foliage at ground level and no leaves are present on the flowering stem.

Trilliums are confined to the North Temperate regions of the world. The greater number are found in North America but there are a few species native to Japan, Korea, Formosa, Kashmir, China, Kamchatka and Siberia.

They are mainly found growing in woodland or scrubland where the soil is moist and rich in humus. Also there are reports of plants growing in great quantity in fairly open country, but only where the soil "oozes with water in the spring". Spring moisture is essential but cool summer conditions are equally important.

In the main, the more horticulturally interesting species are found in America, the Appalachian Mountains being the region from which come the greater number, and even in a single community a great many forms arise. This, alas, has resulted in a super-abundance of names which has caused some confusion. Miles, writing in the *Journal of the R.H.S.* Vol. LXXVI, p. 315, describes variations in *Trillium grandiflorum* in two adjacent locations in S. Ontario. In woodlet A only one variety was found with a green stripe on the petal, whereas in woodlet B only 25 per cent. of the plants were typically *T. grandiflorum*. The remainder had variations from green petals to leafless plants with enlarged sepals. Luckily, botanists who prefer to lump similar kinds together are in the majority and, therefore, the number of generally accepted species is confined to a reasonable one.

It is interesting to note that *Index Kewensis* and other botanical works list some 69 fully described species but, thankfully, later works have reduced a great many of these. For instance, *Trillium erectum* can now count as synonyms *T. foetidum* Salisb., *T. obovatum* Pursh, *T. pendulum* Willd. and *T. rhomboideum* Michx., while *T. luteum* (Muhl) Harbison and *T. cleavlandicum* (Wood) Fern, are considered distinct enough to be classed as forms of *T. viride* and *T. undulatum* respectively.

We thus have a great many names which are no longer valid and in this article it is the intention to deal only with those plants which are recognised as distinct species.

There are very few people in this country who grow a comprehensive collection of these decorative species, but of course these plants are not readily obtainable. The lesser known species which are not so

attractive are very interesting and could still be classed as "plantsmen's plants". Trilliums are difficult to propagate and this, coupled with the fact that they are in short supply, could be the reason why they are not so well known.

Trilliums prefer a moist acid soil containing humus. This is the soil condition in which the greater proportion of them grow in the wild. Two, *T. pusillum* and *T. nivale*, grow in drier situations, the latter in soils which are neutral or even slightly alkaline.

Mr. E. B. Anderson in his garden in the Cotswolds is growing many species of Trillium in a soil which is very alkaline. He mixes peat and leaf mould with the soil for acid-loving plants, but he says he has trouble with a few, particularly *T. kamschaticum* (fig. 103) which fails because of chlorosis.

Stocks are slow to increase vegetatively, and seed sowing, which can be tricky and lengthy, is often the only way. To germinate, the seeds must have two periods of cold separated by a period of warmth. This process is aimed at breaking the phenomenon called double dormancy. The first cold spell breaks the dormancy of the radicle (root), while the second cold spell breaks the dormancy of the epicotyl (shoot), after which normal growth should occur. Seeds are best sown immediately they are ripe, in fact they should be sown straight from the seed pod and must be kept moist during the whole of the germination period, otherwise the developing seedlings will perish.

Trilliums do not like to be moved about once they are established. It is not impossible to transplant them but they take several years to settle down again after being disturbed.

Propagation by division is mentioned by some authors but this is slow and not altogether recommended for the more difficult species. Even those species which are easily grown are not prolific in the production of new rhizomes.

In recent years in the U.S.A. a method of notching the rhizome two-thirds round below the growing bud, while the plants are still *in situ*, has resulted in the development of new rhizomes and new buds. In the autumn any new rhizomes produced can be removed and potted up. This method was, I believe, developed by Walter E. Thwing as early as 1946 but has not been altogether successful with all the species.

Another method, developed recently in Oregon by Gilman Keasey, involves removing portions of the rhizomes, each containing two or three roots, and packing them in sphagnum in plastic bags until callus forms and they start growing. Although this is a useful method to bear in mind, it should be pointed out that it has not been successful



Fig. 103

Trillium kamschaticum

with all species, and before practising this on a large scale further experimentation and more information are needed.

Geographically, there are two areas where trilliums grow wild. By far the most important, horticulturally, is North America, as it is there that the greater number of species of garden value are found. The eastern Asiatic species, however, are spread over a wider area covering Kamchatka in the north, Yunnan and Hupeh in the south, and Japan to Kashmir. Authorities vary as to the number of species and this is certainly true of the group belonging to the Orient. The map of eastern Asia shows the geographical locations of those dealt with here, and clearly illustrates that, apart from a few outliers, the majority come from Japan.

The most interesting one, ecologically, is *T. govonianum*, which is several thousands of miles from the Japanese locus and is solely confined to the immediate vicinity of Kashmir and Sikkim. *Trillium tschonoskii* (fig. 105), on the other hand, has a wider distribution and



Fig. 104

extends from Japan, Korea and China almost to the eastern range of *T. govanianum* in Sikkim. We have proof of this in the collections of George Forrest, who gathered specimens of *T. tschonokii* in eastern Bhutan. A third species, *T. kamschaticum*, also has a wide geographical distribution which extends southwards from Kamchatka to Japan and Korea.

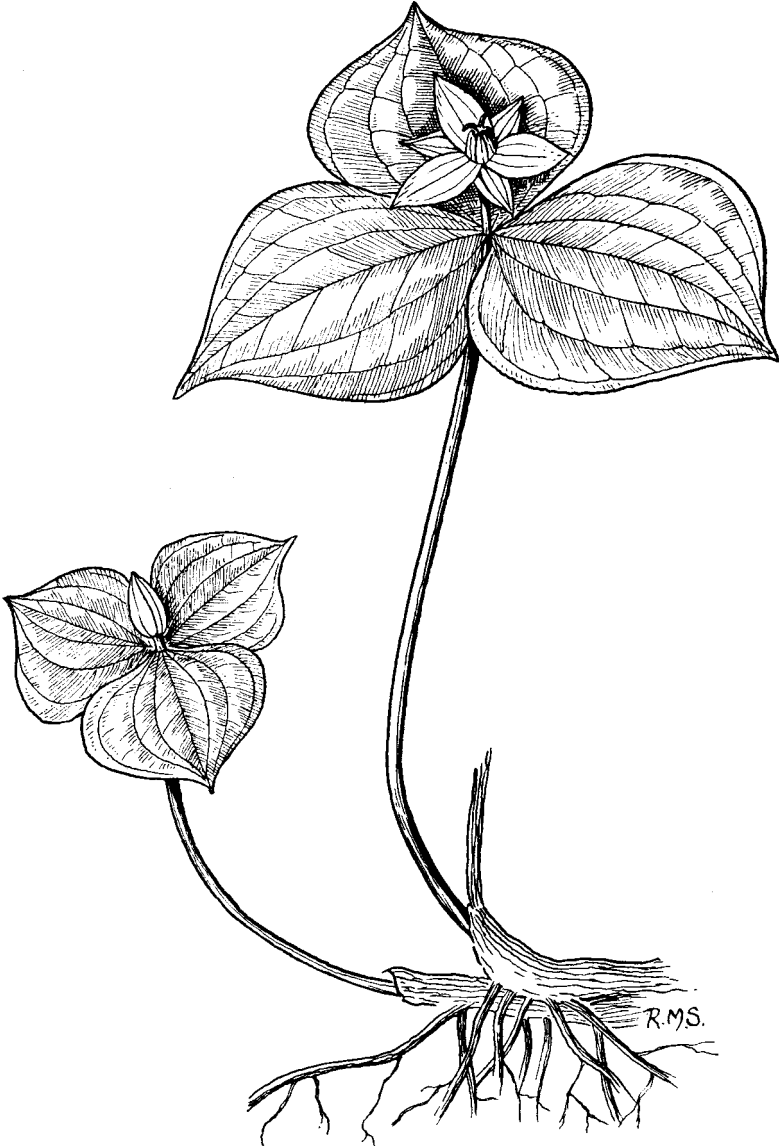


Fig. 105

Trillium tschonokii

Apart from these three far-ranging trilliums, the remainder of the eastern Asiatic species and their natural hybrids are confined, more or less, to the Japanese islands and others surrounding them.

Trillium govanianum Wall is, perhaps, neither garden worthy nor interesting to grow, for it has very small purple flowers some $\frac{3}{4}$ in. to 1 in. long. Because of its unique distribution, however, which lies thousands of miles from the two main centres, it is botanically interesting.

In the Himalayas, it grows at an altitude of 8000 to 10,000 ft. in grassy woods and steep stony hillsides, and flowers there in May and early June. It is now being exploited for its yield of the drug *Diosgenin* which is in great demand in the pharmaceutical industry. This material is also present in *T. erectum*, but not in great quantities.

Trillium govanianum is 6 ins. to 10 ins. high, with short-stalked oval-shaped leaves $1\frac{1}{2}$ ins. to $4\frac{1}{4}$ ins. by $1\frac{1}{4}$ ins. to 4 ins. which are sharply pointed. The plant is illustrated in Blatter's "Beautiful Flowers of Kashmir", Vol. II, plate 61 (1929) and, more recently, in "Spring Flowers of Sikkim Himalayas", f. 95 (1963), referred to by Professor Hara in the "Flora of Eastern Himayala" (1966), p. 418.

Trillium tschonoskii Maxim., (fig. 105) could be the bridge between *T. govanianum* and the eastern Asiatic locus. This species has an extremely wide geographical range in Japan, Korea and China. It has been collected as recently as 1950 in Bhutan by Ludlow and Sherriff, at altitudes varying from 7500 to 9000 feet, and by Stainton, Sykes and Williams in Nepal in 1954. Its habitat is in rain forest and shady woodland. George Forrest found it in S.W. China in mixed and pine woodland in shady positions from 8000 to 11,000 feet. Forrest made later collections in Yunnan, thus extending the known range and plant records. Rock and Kingdon-Ward bear this out.

Plant hunting journeys by Henry and Wilson changed the recorded distribution of this species to include the Hupeh Province of China. The type locality of *T. tschonoskii*, however, is Japan, where it grows in the mountains of Honshu, Shikoku and Hokkaido. It also grows in Korea and Sakhalin.

There is some confusion over the validity of the name *T. kamtschaticum* Pall., applied by Pallas in 1814. Hultén, writing in the Flora of Kamtschatka (1927), Part 1, p. 252, states that this name is a *nomen nudum* and therefore not valid, and suggests the name *T. pallasii* in its place. This same plant is mentioned by Pursh as a synonym of his own *T. obovatum*, contained in Lambert's Herbarium, and Komorov, writing in Flora Peninsulae Kamtschatka (1927), p. 305, accepts *T. obovatum* Pursh to be the valid name with *T. kamtschaticum* in synonymy.

To confuse matters further, Ker-Gawl, writing in Bot. Mag. t. 855 (1805), spells the plant *T. camschatcense* and lists it as coming from Kamchatka ; this name has been accepted by Gleason in Bull. Torrey Botanical Club (1906) XXXIII, p. 393. The area cited is similar to that of *T. kamtschaticum*, and it seems quite feasible that this could be the same plant. There is also the chance that the plant, described by Komorov in Flora URSS IV (1935) p. 748 as *T. rhombifolium* and coming from eastern Siberia, is the same species. Whether or not this is the case it would be difficult to prove without delving deeply into the herbarium collections of the world. More recent floras of the region, however, give *T. kamtschaticum* as the valid name, citing *T. obovatum* and *T. pallasii* as synonyms. Makino, in the New Illustrated Flora of Japan 1963, Ohwi in the Flora of Japan (English revised Edition) 1965, and the monograph on Eastern Asiatic Trilliums by Samejima in Acta Hort. Gotoburgensis XXV (1962) all subscribe to this view.

The geographical range of *T. kamtschaticum* is a wide one covering Kamchatka, the Kurile Islands, Sakhalin, Korea, Manchuria, Hokkaido and Honshu, where it is normally found in association with Birch (*Betula ermanii*), Filipendula, Geum and Thalictrum. It prefers the moist meadows near rivers or streams, flowering in these conditions during June and July in Kamchatka, and a month earlier in Japan. This is a small plant, up to 12 ins. high, with sessile leaves which are ovate to rhombic-orbicular, 3 ins. to 6½ ins. long and as much wide. The flowers, which are carried on stems, are white in colour. In fact, it is very like a dwarf form of *T. grandiflorum*, with erect stems carrying flowers slightly tilted to the side. The petals are 1 in. to 1½ ins. long and are oval-elliptic in outline. A form with six petals has been reported by Takeda in the Journal of Japanese Botany 1926-7, pp. 86-7. In this instance, three of the stamens developed as petals, thus giving twice the normal number of petals. It was not considered to be a double form, however, although a plant bearing double flowers was found by Matsumura in Hokkaido in 1937.

There are two varieties of this species recognised by Samejima. They are distinguished by the colour of their ovaries and fruits.

Trillium kamtschaticum var. *kurilense* Tatewaki has a purple ovary and fruit, quite different from the pale yellow-green of the type species, which does, however, have a purple-tipped ovary. This variety is a native of the Kurile Islands and Hokkaido. The second, *T. kamtschaticum* var. *soyanum* Samejima, has a bright green coloration overall and is endemic to Hokkaido.



Fig. 82—*Castilleja oreophila*



Fig. 83—*Castilleja* sp.



Fig. 84—*Mimulus primuloides*
Gentiana oregana

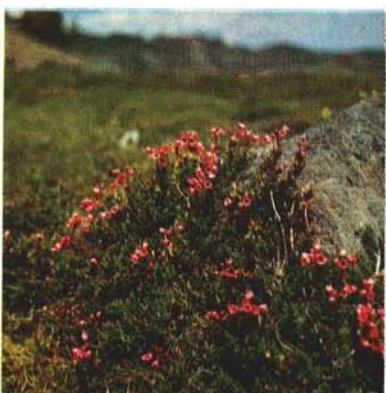


Fig. 85—*Phyllodoce empetriformis*



Fig. 86—*Penstemon rupicola*

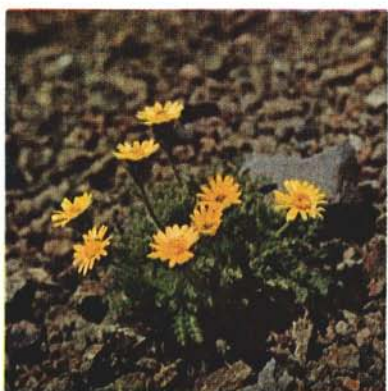


Fig. 87—*Hulsea nana*

84), a very dainty species which propagates from tiny buds. Making a delightful contrast among the carpets of *M. primuloides* were clumps of *Gentiana oregana* (fig. 84). The plants were six to eight inches in height. Most were still in bud but we later found them in more sunny locations where they were in bloom; the flowers, perhaps half an inch across, were deep blue and very pretty.

A few plants of "Shooting Stars", *Dodecatheon*, were still in flower. These were growing in very moist areas by the banks of the stream. The leaves formed a rosette and the plants were little more than two inches high; the flowers were large and brightly coloured. Incidentally, the white "Shooting Star", *Dodecatheon dentatum*, is one of the most delightful plants I have found in this country. It is usually found at higher elevations but can be seen in the Columbia Gorge in moist areas by streams and, more specifically, on cliffs where it is continuously moistened by spray from waterfalls.

The clumps of "Red Heath", *Phyllodoce empetriformis* (fig. 85), were now abundant. The flowers were a little past but the ardent photographers found some clumps in a more shaded locality which were still at their best. This is indeed a very pretty shrub and one wonders why more garden lovers in this area don't grow it. The "Cream-Coloured Heath", *Phyllodoce glanduliflora*, found at slightly higher elevations, was also plentiful. The pale cream flowers are by no means showy but it is an interesting plant nevertheless.

A shout of joy from our guide and adviser, Harold F. Comber, was due to his discovery of a plant which here is known as "White Heather", *Cassiope mertensiana*, in full flower. It was actually overhanging the stream and was covered with white, waxy, bell-shaped flowers. I had taken cuttings on an earlier trip and found that they root easily and seem to make excellent garden plants.

We now came to a flat area at approximately 6500 ft. Here we found a dwarf form of the "Swamp Laurel", *Kalmia polifolia*. This tiny shrub crept along the surface and was very difficult to see from a distance even when in full flower. The flowers were rose-pink in colour and delightful. It definitely prefers moist areas not too far from the stream and at higher elevations. It is a somewhat delicate but very attractive shrub.

We scrambled across more hilly areas and continued to find blue composites, asters and erigerons, in abundance. In one species the leaves were narrow and stayed relatively close to the ground. Stems were approximately four inches in height; flowers were almost an

inch across, pale blue and very attractive. Large masses of a plant which was very succulent and resembled a *Sedum* were actually *Saxifraga tolmiei*. This plant preferred more sandy, gravelly areas. The leaves were produced in abundance and the whole carpet covered with starry flowers. The entire effect was most enchanting. Two other saxifrages were found, both with tiny white rather uninteresting flowers, and were not identified.

A plant with moss-like foliage forming carpets in drier areas was "Partridge Foot" or "Alpine Spiraea", *Luetkea pectinata* (fig. 70). The flowers were white to cream, and pretty.

A plant which looked like an Orchid from a distance and grew in lower wetter areas was *Pedicularis groenlandica*. The flowers were lilac to purple in colour and the foliage serrated; plants were six to eight inches tall and most attractive.

The view of the surrounding country was now breath-takingly beautiful. Patches of melting snow were everywhere; a dwarf Phlox, *Phlox diffusa* which was over at the lower levels was in full flower here. The variety of colour was fascinating and ranged from pure white to lavender—some even shell pink. These delightful plants covered whole areas and the flower form was also varied, especially the width of the petals.

The only trees now were short stumpy pines, *Pinus albicaulis*. These had attained weird shapes and forms and undoubtedly many were hundreds of years old. Growing near were clumps of a yellow composite which looked like a miniature *Doronicum* but actually was *Arnica latifolia*. The plants were six to eight inches tall with opposite leaves.

The taller lupins of the lower elevations were surpassed in grace by a tiny species, *Lupinus lyallii*. This legume crept along the surface of the ground, had glaucous foliage and deep purple flowers. It definitely preferred dry, sandy areas and was very beautiful and graceful.

We were now making our way up a scree and found three penstemons in the area. The most showy and beautiful was "Crimson Beard Tongue", *Penstemon rupicola* (fig. 86). This wonderful plant makes brilliant patches of beauty on the very barren upper screes. Normally it is a plant of high altitudes, but I have found it on the cliffs of the Columbia Gorge where it had descended almost to the level of the river. A very attractive variety with small deep purple flowers and with either a prostrate or erect form was *P. menziesii* var. *davidsonii*.

A delightful composite forming rosettes and growing among the loose gravel on the scree was *Hulsea nana* (fig. 87), a plant with a most delightful form and habit. The flowers were large and deep yellow. The foliage was particularly attractive, deeply serrated and pubescent. This species was very plentiful. Another composite was also found very high, the flowers pure white, the foliage short, narrow and glaucous.

A *Mimulus* growing among rocks near the stream was *M. caespitosus*. The plants were short with large, deep-yellow flowers.

The highest plant was a tiny tufted one and a member of the Polemoniaceae, *Collomia larsenii*. It, too, was growing among the gravel on the scree. The leaves had a reddish colour and the lilac flowers were tiny.

We had now reached large glaciers and were at approximately 7500 ft. elevation. The peace and tranquility found amid such beauty is impossible to describe. We started our descent and all the party felt indeed fortunate in being able to experience such a trip. Here, beneath the serene and brooding majesty of a towering snow-clad mountain, we had found time to linger and enjoy nature at her best.

I hope that anyone who visits the Pacific North-west in early August will make a point of viewing the alpine flora on Mt. Adams, for it is an experience one can never forget.

(The writer wishes to acknowledge the aid given by the late Harold F. Comber, whose patient help in identifying the plants was deeply appreciated.)

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Rock Gardening - “from the ground up” - III

by HENRY TOD, Ph.D.

FIRST, it should be said that, in spite of the general belief to the contrary, it is much easier to lay out and make a garden on a bare undeveloped site than it is to “convert” an established garden to one’s own ideas and design.

In an established garden, and particularly an old one, it may be necessary to cope with masses of hedge, shrub and tree roots, while the bare site, even if unpromising, will generally have been under grass or, at most, weeds. In addition, one is loath to scrap good hedges, trees or shrubs and, if they are really large, they require expert handling to move them. Accordingly one must work in conjunction with them or else be ruthless and destroy—I write from bitter experience ! It is probably easier to modify a *small* developed garden, for there one is less likely to have large subjects to deal with, and a bigger proportion will generally be in grass or “flowerbeds”.

It is often said that one should aim at “a natural effect” in building a rock garden. This may have been true for the Robinsons, Jekylls and Farrers of past days when gardens extended to acres, and the rock garden could emerge gradually out of rolling lawns and disappear equally gradually into shrubberies or open woodland. Nowadays such gardens are almost entirely “things of the past” and we must fit our rock gardens into what in those days would have been considered “a mere pocket-handkerchief of a garden”. Unless one has a very small garden on a steep slope, a rock garden must be largely “artificial” and if one has, as I have, a dead flat garden, it has to be entirely contrived. That does not, however, prevent us from making it look as good as we can, and to appear as natural as possible.

The late Captain B. H. B. Symons-Jeune, in an excellent if rather complicated book, advocated the construction of “single-feature” rock gardens. These might consist of a big outcrop of rock or be a low-lying out-cropping ridge of rock, and from a design point of view they could be both striking and beautiful. However, and this to my mind was their weakness, there was not much room for plants and little chance of extending them to accommodate new acquisitions as

any extension tended to spoil the design. For such an undoubtedly fine plantsman as he obviously was, this always seemed odd to me, but there it is.

In this book, "Natural Rock Gardening", he laid down very explicitly and with a wealth of diagrams the doctrine preached by Farrer on the correct use of stone. Oddly enough, Farrer himself, consciously or otherwise, had been quoting very accurately from Robinson, who had said some twenty years earlier that stone should be laid to conform with the natural run of the strata, not sticking up higgledy-piggledy as was the Victorian custom.

Now if a garden possesses a slope all is well, for it is only necessary to mould the slope into varying degrees of steepness with some hollows and some humps, and then work the stone into the slope in as natural a way as possible. Many authorities have enthused wildly about Westmorland limestone for building rock gardens. In past years this must have made many dealers in stone rich and sadly emptied the pockets of rock gardeners who then found that, as it was limestone, they could not grow lime-hating plants which, of course, was no what they wanted.

One example of the most idiotic efforts that I have ever seen was a weathered-limestone rock garden built in the middle of a stretch of heather moor! This had been bought as it stood at Chelsea, transported north, plants and all, and reconstructed in its new setting. In many ways this was a wasted effort, for it was a massive affair in which many tons of stone had been used and when the second owners of the garden examined it in detail they found that there was no room for their own plants—and they had to build another one beside it.

Now there are two morals to this. The first, do not use too much stone, so avoiding what Farrer called "The Devil's Lapful"—or this will result in too much stone and too few plants. The second, use only local stone because (a) it will cost less to transport, and (b) as it is local it will "fit into the landscape". Perhaps the only exception to this is where the local stone is whinstone, for this is very hard and breaks into angular lumps with little "structure". It is also extremely awkward stone to handle and it takes an expert to make it "look good". In the event of the local rock being limestone, one must either forego growing lime-haters or build the upper part of the rock garden with a neutral or acidic stone and use the limestone only in the lower levels.

In all construction the first and by far the most important thing is to **CLEAN THE GROUND THOROUGHLY**. It must be dug over with the greatest care and the roots of all perennial weeds and grasses hand-picked and removed. Failure to do this will lead to an endless, and needless battle with weeds which, in the end, may lead to the complete dismantling and rebuilding of the rock garden. Once again I write from bitter experience for on one occasion I got running grass into one bank and in the end it all had to come down with the loss of some very good, well-established plants.

When the ground is really clean, (and if one has the time and the patience it may be well worth letting it lie "fallow" for a season, weeding it constantly); it should be moulded roughly into the contours wanted. Next, work can begin with the stone, always starting from the bottom of the slope, and it should progress across the bank before going up to the next "level". Every stone must be firmly set and should be made to lie backwards and downwards into the soil and so carry the rain-water into the soil instead of encouraging it to run off down the slope (fig. 90). The stones should be buried appreciably more

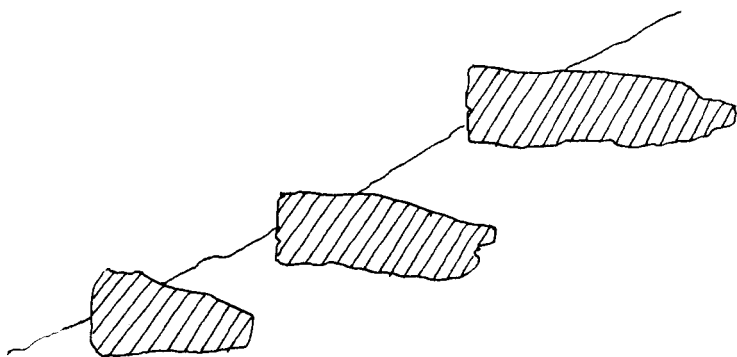


Fig. 90

than half their depth into the bank for, from the point of view of the plant, this underground part is the more important. The roots will spread over its buried surface forming a fine mat in the "cool root-run", an expression so beloved of the writer on rock-plants, and of the plants themselves.

Firmness of bedding is also very important for, when weeding, one must stand or kneel on the rocks. If they should tip, a bad fall can be the result. Furthermore, one does not want air-pockets left behind the stones, so it is necessary to ram the soil tightly around and

under each stone as it is set in place.

Another point to be kept in mind when placing the rocks is that if there is a gap between two stones, it is better to avoid having a similar space immediately above it (fig. 91). Two or more such gaps,

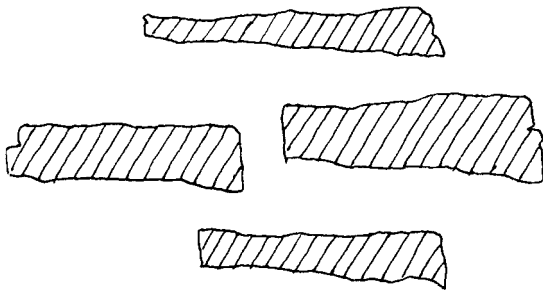


Fig. 91

so placed, may cause "gully erosion" where the soil can be washed down by heavy rain and, for that matter, young plants can be easily washed out.

By excavating a moderately deep "gully" and filling it with a scree mixture a most valuable feature can be introduced into a slope so widening the scope for growing a more extensive range of plants. Such a scree should be quite narrow and deep at the top, but as the bottom is reached it should become gradually wider and more shallow. One has only to think of the screes on the hillsides in the north of Scotland and the north-west of England to obtain examples. If two screes are made, one filled with Farrer's mixture and the other with the mixture recommended by Boothman (see part 1 of this series), one should be able to grow a really wide range of plants.

If it is at all possible, the bank should have more than one exposure; one facing into the sun and another lying away from it. This may necessitate cutting fairly deeply into the bank and throwing the excavated earth into a projecting ridge, but if it can be done it will increase the number of different aspects, for not all rock plants like full exposure. *Ramondas* and *haberleas*, for example, if planted on a south-facing wall, will curl up into brown balls of almost moribund leaves, but with some shade will open out into healthy green rosettes and flower freely.

On a slope, drainage is not a problem; the plants that prefer damper conditions are given sites near the foot of the bank, while those requiring drier conditions are naturally placed at the top. There

is, however, one point to be kept in mind. A slope sometimes has natural springs or drainage levels where water will ooze out in wet weather, and these are not always at the foot. If the weather is dry, it is as well to look out for areas where the soil seems to be darker, heavier or stickier ; these could be springs or ooze-patches and it might be worth while watching to see what happens after the first really heavy rain. Such water-flows, if steady, can be used to advantage and the seepage contained by cutting a channel and using this for moisture-loving plants.

Incidentally, this has been a very real problem at the Northern Horticultural Society's Gardens at Harlow Car, for there the springs seem to move and suddenly one will burst out in a new place while, perhaps, another will cease to flow. This, of course, is quite an abnormal occurrence, but occasionally it can happen. Springs and ooze-levels occur fairly frequently in clay soils, so where this is present they must be watched for on steepish slopes and when the surface levels have been altered.

Access paths should not be forgotten. First, one must have room to weed and to plant, and second, friends will want to get up close to the plants. Picking one's way from stone to stone may be good enough for the owner but, with the best will in the world, less agile friends can only too easily demolish small treasures or, if nothing worse, sprain an ankle.

As I pointed out earlier, when one has a slope to use as a base, building a rock garden is relatively easy, but when the garden is flat the problem is distinctly more difficult. On a level site one must adopt one of two, or possibly three, methods. The first is to construct banks, the second to use the "rock-bed" technique, and the third to build "table-top" rock gardens or double walls after the designs favoured by the late Dr. Curle. I shall deal with the rock-bed, table-top and double-wall methods in a later article ; they are in many ways more difficult and expensive to construct, so at this point I shall discuss the building of banks on a flat site.

Probably the most important and basic point in building banks is to provide a reasonably solid core. The first rock garden that I built consisted of three-foot-high banks of soil, and in nine or ten years these had collapsed or, more accurately, flowed down to an average height of nine to eleven inches, and this in spite of being fairly thickly planted. This made me realise how important it was to have something more stable in the centre of the bank than just soil.

A long time ago I wrote an article on this subject in which I suggested that old scrap bricks made an excellent core for a bank—which they do—and was immediately attacked for reverting to mid-Victorian ideas when, to quote Benjamin Maund, “anything rude enough” was used *on* rock gardens. My point was that good stone, in relatively small amount, could be used for the “dressing” of the bank, i.e. worked into the surface as outlined above, while the brick formed the stabilising core and made a good “cool root run” for the plants. I went further in that particular article, this was in war-time, and said that if stone could not be obtained the coring of the bank alone would be enough to keep the root system of the plants in good condition.

Though this was true it was heresy, at least, if not blasphemy, and I was attacked for this as well. A few years later I was interested to see Kingdon-Ward make the same point in his little book “Common Sense Rock Gardening”. Things are easier now in the matter of getting rock for “finishing”, but this does not alter the importance of providing the bank with a good solid core.

Even although a bank is well cored, the surface soil in which the plants are growing is still liable to be washed away by rain or be blown away in the wind. The core, however, will hold the structure firm and ultimately, if the plants are left sticking up in the air or the core begins to show, the surface soil may be replaced by top-dressing.

One of the very real problems in building a bank is the question, “From where is the soil to come?” Mr. W. G. McKenzie, now of the Chelsea Physic Garden, once said to me that, if you want a six-foot high bank, dig down three feet and throw up three feet. In this way you provide the “extra” soil you need, but make sure that the excavated subsoil goes into the centre, as a core, and the top-soil is used to face the bank. This was good advice, and still is, provided one does not dig to below the winter water-table and end up, as I did with a bank standing in a pool of water. The rough sketch shows this method of construction (fig. 92). If the material for the centre of the

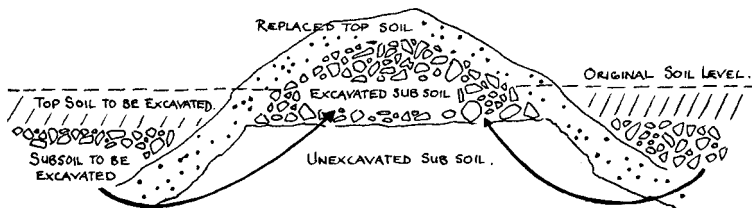


Fig. 92

bank can be obtained elsewhere, one need not dig so deeply, for the "throw-up" fraction will be greater in proportion.

Poor gravelly subsoil makes quite a good core. It packs down well, yet is permeable to water and roots and "stays put", satisfactorily. I have used old bricks laid parallel in one course, placed at right angles in the next one, cross-wise again in the next, and so on, at the same time working the compost into the one- to two-inch spaces left between the bricks in each layer. The mound is formed by gradually reducing the number of bricks in each layer, and then finally placing a thick layer of soil or compost all over. The decorative finishing stone is then worked in so that the inner edges rest on the bricks, giving stability all through (fig. 93).

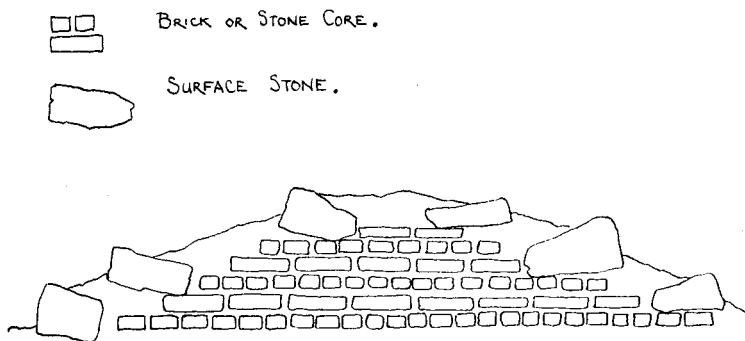


Fig. 93

Failing old bricks, waste stone, coarse gravel, gravelly subsoil or any hard, firm material can be used. But if either bricks or stone have come from old buildings where lime mortar and not cement was used, it is better to chip off or scrape away this mortar, lest too limy conditions occur in the heart of the bank which could upset lime-haters. Good hard cement does not seem to be so bad; the lime in the cement is so hard that, apparently, it is less freely available and not so likely to cause trouble.

Building up banks, however, has one definite advantage over using a natural slope. For instance a bank has, or can have, two faces, so one can have a sunny side and a shady one and, by curving the banks, any orientation around the compass can be constructed (fig. 94). It is

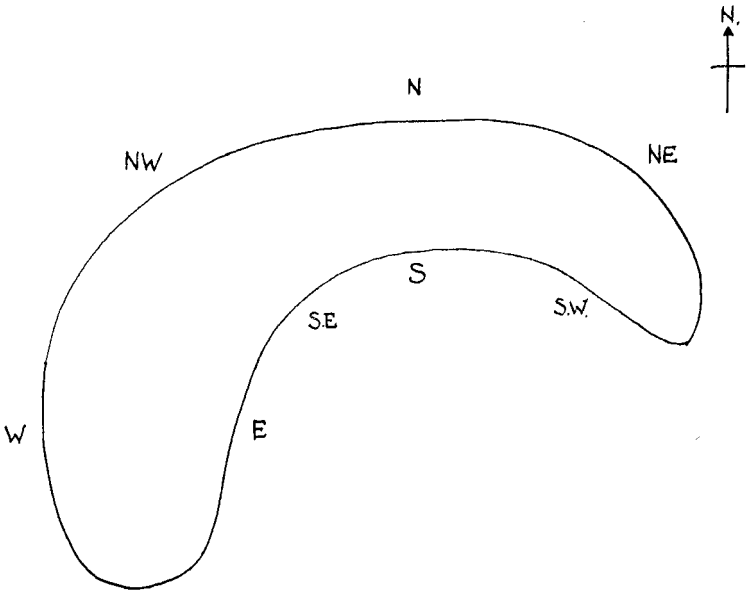


Fig. 94

quite surprising the difference that can be shown between, say, a south-west face and a north-east one. On the latter, which will be relatively damp and cool, *Phlox subulata* may grow rampantly and fail to flower ; on the sunny side, however, where conditions will be drier and warmer, it may grow more slowly but flower profusely.

In the next part of this series I shall consider the siting of a rock garden in relation to the various other features in the garden and the exposure to weather which happens to exist there. Further, I shall discuss the value of rock in the rock garden and some of the styles of construction which should be avoided.



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My Twelve Favourite Alpines

by H. ESLEMONT

IT WAS the final meeting of the season of the local group. A postcard announced that two members had been invited to show and discuss slides of their twelve favourite alpines ; a plant sale was to follow. It appeared that I was to be one of the speakers.

I forget who told me that his list of twelve favourite alpines ran to at least twenty, but I was soon to learn how right he was. My brief was twelve plants, no more, and a decision, however difficult, had to be made. The compiling of such a list is influenced by so many factors that the result may be expected to vary widely among individuals. I believe I can at least claim that my dozen plants will give pleasure ; all of them have been grown successfully in unheated frame or alpine house.

It is with considerable reluctance that I pass over the spring bulbs. A number of them, collected in Iran and elsewhere, have flowered with me this year for the first time. These new and colourful crocuses, colchicums, reticulate irises and fritillarias proved a real tonic at the end of a long and rather dreary winter.

Among the spring flowers my first choice is *Pulsatilla vernalis*, "Our Lady of the Snows". This lovely Anemone never fails to please, be it in bud, flower, seed, in the wild at the edge of the melting snow or in cultivation. I find it difficult to flower out of doors as the furry buds rot away in our wet winters. It thrives in a rich gritty mixture, in a deep pan, and my ten-year-old plant, repotted annually after flowering, produces up to fifteen flowers. It spends the summer plunged in an open frame and is returned to the alpine house in October.

A high alpine buttercup from New Zealand comes next on my list, *Ranunculus sericophyllus*. It inhabits rock crevices and sheltered hollows in the central Alps of that country at altitudes of between 5000 and 7000 feet. Its striking large yellow flowers are borne over finely dissected foliage and its cultural challenge adds to its interest. Perfect drainage and carefully controlled watering are essential or the fleshy roots will quickly rot away.

Several of these high alpine ranunculi and *R. haastii* in particular are worthy of the attention of the keen plantsman. A volume received recently from one of my correspondents entitled "The Alpine Ranun-

culi of New Zealand'' by F. J. F. Fisher can be recommended. Propagation is by seed, which should be sown fresh as germination can be slow and difficult.

The saying "Third time lucky" neatly describes my experience with *Orphanidesia gaultherioides*. I remember admiring a large plant of this rare relative of the epigaeas, an inhabitant of the Black Sea area, growing in dense shade at Branklyn. I was promised a layer. Unfortunately the following winter was a severe one and the plant, which had been given no protection, perished. Subsequently, on two different occasions, I acquired plants and lost them both. They were in pots and probably were allowed to dry out. On my third attempt I planted the *Orphanidesia* outside in a cool north-facing border in the shade of some azaleas and kept it moist. In November it was covered by a Marmex cloche and after quite a hard winter has rewarded me with a few flowers. Seeds of this fine plant have been collected on recent plant expeditions and it is to be hoped that it will soon become more plentiful.

Picking a *Primula* is a task for a Solomon. I have selected *Primula allionii* var. *alba* (fig. 78), which in a good form can be quite outstanding. This *Primula*, which hails from the Maritime Alps, should be acquired in one's youth, as it increases so unconscionably slowly. My plant, after eight years, measures barely six inches across. A large specimen of the more usual mauve form, which I acquired from a dispersed collection ten years ago and is now in a twelve-inch pan, must be at least thirty years old. If the plants are grown in a mixture containing a quarter limestone chips, and have tufa collars round their necks, they require little attention, save for the removal of dead flowers and decaying leaves. I replot mine every third year and occasionally feed them with Bio during the growing season.

The F. C. C. form of *Paraquilegia grandiflora* will always have pleasant associations for me. My plant came as a seedling ten years ago from these great and generous gardeners, the Rentons. Mr. Renton informed me that his plants originated from seed collected by the late Major George Sherriff. In nature, I understand, the *Paraquilegia* attains a considerable age and already mine is developing a branched woody stem. Photographs taken in the wild often show it as a crevice plant and my experience confirms that it should not be over-potted. A careful watch should be kept for its great enemy greenfly, which can soon wreck a promising plant. Unfortunately, I have not yet succeeded in collecting viable seed.

Phlox triovulata can lay good claim to being crowned queen of the phloxes and I have no hesitation in including it in my top twelve. A native of New Mexico, it enjoys a hot sunny situation in gritty soil and should be repotted every year after flowering. Propagation is by root cuttings or side cuttings pulled off with a heel.

If one hesitates over the risk of taking root cuttings from a precious plant a safer method, adopted by me and one which has proved successful, may be attempted. In the first instance this involves planting the Phlox in an orchid pot ; this has holes around the sides as well as the bottom.

The orchid pot is then plunged in a larger one and the gap between them filled with a mixture of 50% sharp sand and sorbex peat which is kept moist.

If all goes according to plan, roots from the Phlox should penetrate the holes of the orchid pot and new shoots should appear in the space between the two pots. When these growths are about two inches long, they may be detached and potted up.

Daphne petraea 'Grandiflora', a cultivar generally grafted on another species, has gained more major awards than any other alpine plant. I prefer the wild plant which is smaller and neater in all its parts. I sought it one hot summer day on the Cima Tombea but was unable to reach its rocky fastness. My Daphne, on its own roots, was planted eleven years ago in a half-inch hole bored through a lump of tufa. It first flowered in 1961 and has bloomed regularly ever since until it was repotted in 1968. Daphnes do not enjoy repotting and in the case of grafted plants especially, great care must be taken not to disturb the root system more than necessary.

One more shrub, *Kalmiopsis leachiana* 'Marcel le Piniec', an F. C. C. cultivar, appears on my list. *Kalmiopsis leachiana* is a variable species and in this form the flowers tend more towards pink than mauve. In a well-flowered specimen the foliage can be almost completely hidden. *Kalmiopsis* flowers best when slightly pot bound and when potting on this creates a problem. I find it advisable to tease out slightly the tight ball of roots to encourage them to move into the fresh soil, after which care should be taken not to allow the soil to dry out. My plants spend the summer plunged in an open north border and they are returned to the alpine house in October.

Jankaea heldreichii, an endemic of Mt. Olympus, ranks high on any plantsman's list. In its native home this Gesneriad enjoys cool moist conditions. During the summer months my plants are housed

in a covered north frame but are returned to the drier climate of the alpine house in winter. Jankaeas increase slowly and my limited success with them may be attributed to attempting to grow them in too dry an atmosphere. I have germinated seed but lacked the skill to bring the seedlings through their first winter. An interesting hybrid between Jankaea and Ramonda was recently added to my collection.

Dicentra peregrina is a Japanese charmer which recently gained an A.M. when shown by Jack Drake. In well-grown specimens the pink "bleeding hearts" are suspended gracefully above the ferny foliage. A gritty mixture suits this species and a fellow member has a venerable plant growing in a mixture containing 50% tufa lumps which flowers and sets seed regularly. Seed should be sown immediately as it quickly loses its viability.

The Campanula family is a large one and from it I have selected *Campanula morettiana*, a species which inhabits hair cracks on vertical rocks in the Dolomites. This gives a clue to its cultivation, for I once succeeded in establishing a plant in a lump of tufa, where it flowered happily in my alpine house for some eight years. One spring, alas, it was no more ! Perhaps it had been kept too dry during the winter months. It can, of course, be grown in a gritty mixture, but I do not find it so long-lived under these conditions.

Cyclamen neapolitanum, F. C. C. form, rounds off my list of a dozen favourites. That fine plantsman, Herr Wilhelm Schacht, once stated "The days I have spent on Mt. Parnes are unforgettable" and it was on the slopes of that Greek mountain, famous for its flowers, that I collected this Cyclamen during one memorable holiday. It was chosen on account of its attractive leaf markings as it was not in flower at the time. Cyclamen appear to resent disturbance, especially when they have been allowed to dry out, and my plant took three years to settle down to pot life before flowering. *Cyclamen neapolitanum* is only one member of a very large genus. If the species are suitably chosen they will provide flowers throughout the year.

Recent expeditions to Turkey and Iran have brought back a number of new ones. Some of these have flowered for me recently for the first time. Two very attractive ones are the diminutive *C. parviflorum* M & T 4341 and a large-flowered, dark claret *C. pseud-ibericum* which arrived as a seedling under the number P.D. 26844. These cyclamen seem to enjoy the cool conditions of a partially shaded north frame with the lights removed in summer and an occasional weak application of liquid Bio.

This brings me to the end of my story and leaves me with only one regret—the number of fine plants I have been compelled to omit.

P.S. As a matter of interest the twelve hardy plants for cultivation in the open ground selected by the second speaker were :—

Bulbocodium vernum, *Iris winogradowii*, *Saxifraga oppositifolia* var. *latina*, *Lewisia brachycalyx*, *Incarvillea mairei* 'Frank Ludlow', *Trillium rivale*, *Paeonia obovata* (from S.R.G.C. seed), *Dianthus subacaulis*, *Raoulia grandiflora* (protected by wire netting from birds), *Roscoea cauleoides*, *Lilium formosanum* var. *pricei* (from seed) and *Colchicum speciosum* 'Album'.

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Fig. 88—*Mimulus lewisii* and lupins with Mount Hood in the background *Photo—E. McRae*



Fig. 89—*Calceolaria darwinii*

Photo—W. Cairns

Cassiope

by A. D. REID

I HAVE just returned from a short tour of the policies (mid-February), and my yearly concern for certain species and hybrids of Cassiope, if not laid to rest, has at least been encouraged to accept that all may yet be well.

Every year, by mid-November it can be seen that the leaves and stems of certain species have become completely drained of green colour ; from the appearance of the plant it would be natural for anyone unacquainted with this habit to assume the worst. I am sure there must be experts in the Club who can given an explanation of this, in five-letter words, I hope. Still, I never fail to register concern at seeing vigorously growing green plants turn to dried up bedraggled specimens in a very short period of time, remaining so for three to four months. Have we here a factor mid-way between evergreen plants and those which are deciduous? And is this the evidence of the plant's ability to reduce transpiration to the very minimum? If so, it is most interesting although, when first noted, somewhat alarming. It has been observed that only a few species do this even when all are grown under similar conditions, which prompts the question—why?

From observation in gardens, and what I have learned of their natural conditions, cassiopes, like their near relatives the heaths and heathers, grow best in wet peaty moor or tundra conditions with ample water during the growing season. This is followed, during the plant's resting period, by frost, snow and drying winds. These rigorous conditions would appear to lock up or withdraw the water supply necessitating action by the plant for survival. In nature this type of environment appears to apply to all cassiopes, therefore, why do only certain species adopt these unusual and alarming measures?

I don't want the reader to assume from what I have written that cassiopes are difficult plants to grow—far from it. With certain exceptions, they are among the easiest and most rewarding, putting on an excellent display in the garden and, when well grown, providing the stiffest competition on the show bench. Many, too, are among the easiest plants to propagate, which thus ensures pleasure and pride in one's ability to increase stocks either for one's own use or to give to friends.

High among the most appealing cassiopes is the hybrid *C.* 'Edinburgh'. This cultivar has everything to encourage the beginner to take a wider interest in the genus. It is not faddy and will flower well in practically any position in the garden or in a pot or pan. If it has a fault, it is that it has a tendency at times to throw side shoots from high up on the main stems and these are inclined to make the plant look top heavy. Early judicious cutting back of the over-vigorous stems helps to keep the plant shapely.

Another very desirable hybrid is *C.* 'Clara Muirhead' (fig. 101), raised by that enthusiast, Mr. R. B. Cooke of Corbridge, Northumberland. *Cassiope* 'Clara Muirhead' does not appear to have any fads or vices and will certainly reward the grower who can spare even the minimum of attention.

Cassiope selaginoides (fig. 77) has a number of forms, all very attractive and first-rate plants. The plant originally introduced seems to be slightly smaller and more shrubby in growth than the form found by Ludlow and Sherriff and sent home under the number L & S 13284. This new plant is probably the most outstanding of all the cassiopes for size and texture of flower. In my experience, however, this form has neither the vigour nor longevity of the others.

A low-growing *Cassiope* which will give the cultivator immense satisfaction is *C. lycopodioides*. This dwarf species rarely fails to cover itself with attractive cream-coloured bell-like flowers which are further adorned with red or brown calyces and stems. Plants with green or very light brown calyces and stems are occasionally met with but, in my view, these forms are not so striking. A slightly more shrubby and upright species is *C. mertensiana* and it has an equally attractive variety, *C. mertensiana* var. *gracilis*. Whilst I have seen very good flowering forms of both these plants, my efforts to produce equally well-flowered specimens have not been so successful. It is possible that if the plants were given more light in autumn so that the new wood were better ripened, they might be more floriferous.

When cultivating cassiopes many growers fail to realise that these plants demand copious supplies of water during the growing season, and I would go as far as to say it is virtually impossible to give them too much. It must be stressed, however, that an open compost where the drainage is good is important as, in common with most plants, cassiopes will not grow in waterlogged soil.

There are now coming forward quite a number of newer hybrids which will provide the enthusiast with more variety of form. In

addition to these there is a hybrid, known as *C. 'George Taylor'* of which *C. wardii* is one of the parents. This plant is quite close to *C. wardii* and has in fact been noted in some gardens masquerading under that name ; when seen in company with *C. wardii*, however, it is quite distinct. A good form of the species is, in my view, one of the real aristocrats of the rock and peat garden world and, I fear, is likely to remain so as it does not propagate easily. Fortunately this is a factor which it apparently does not pass on to its hybrid progeny.

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Serendipity

by SHEILA MAULE

THE DEFINITION of the title in the dictionary is "the faculty of making happy chance finds", and the word was coined by Horace Walpole from the title of a fairy tale "The Three Princes of Serendip", the heroes of which "were always making discoveries, by accident and sagacity, of things they were not in quest of". Nowadays this word has come to mean a collection of all sorts of things; it has not much to do with sagacity, but has quite a lot to do with chance happy finds. Incidentally, Serendip was an older name for Ceylon.

Having got that over I want to move to another part of the world, Japan. There are many Japanese things that I find interesting and beautiful—drawings, paintings, embroidery, garden design and, dare I admit it, bonsai—and, last but not least, plants, alpine in particular. I am always on the look-out for them and have managed to get quite a collection. Some time ago I was lent a pre-war catalogue of a famous Japanese nurseryman. It was rather like a peep into Aladdin's cave, pages of the most exciting descriptions of plants for sale, "mats" of rarities at so much per square foot. I pictured the peat beds carpeted with such beauties as *Schizocodon*, *Bryanthus musciformis*, etc., and other parts of the rock garden full of plants I had "never heard tell of". I sent off an air mail letter, post haste, to ask what he had available now, only to get an answer, more or less by return, to say "nothing", as he only sold to the trade. So much for that.

One of my favourite Japanese plants is *Tsusiophyllum tanakae*, ericaceous and monotypic, a beautiful little bushlet, much branched and with tiny oval pointed green leaves, hairy at the edges. In winter the leaves go a lovely golden colour and are most attractive. The twin buds open into small white tubular flowers, azalea-like in shape, the whole plant being miniature and charming. It likes a cool leafy lime-free soil and not too sunny a position. A plant which I got last year is *Pteridophyllum racemosum*. This is an interesting-looking plant with a rosette of fern-like leaves, but they are soft, and the flowers, which I have not yet seen, are "four-petalled cup-shaped freely borne on spiked branches". I await the flowers with interest. Another lovely plant from the same part of the world is *Jeffersonia dubia*, a member of the Berberis family. I often wondered who Jefferson was but now

understand the plant was named after Thomas Jefferson, former President of the United States of America, who lived from 1743-1826. *Jeffersonia* is also known as *Plagiorhegma*. What a choice of names. Incidentally, *Plagiorhegma* comes from the Greek, *plagios*—oblique ; *rhegma*—a fracture. *Jeffersonia dubia* is a Manchurian woodland plant ; it likes acid soil and cool conditions, and grows well in the peat bed. The flowers are a beautiful lavender colour with a crystalline texture ; in some positions the attractive kidney-shaped leaves, which are a pale bronze shade when young, tend to overshadow the flowers, but I understand the remedy is to plant it in a fairly exposed position. It has an American relation, *Jeffersonia diphylla*, which has white, rather uninteresting flowers, but nice leaves with a deep cleft in them. *Jeffersonia diphylla* is not nearly such a good plant as *J. dubia*.

Glaucidium palmatum is another glorious plant from the same part of the world, which I am sure many enthusiastic people grow. The flowers have the same sort of texture and colour as *Jeffersonia dubia*. It also is a woodlander and grows 12-18 ins. high. I find the mice are very fond of the buds just as they are coming through the ground. There is a white form of this plant, also very lovely, and a dwarf form which I have never seen but sounds most attractive. I have a plant called *Allectorurus yedoensis* ; I saw it in a catalogue, consulted Farrer, who wrote : “ *Allectorurus yedoensis*, though very rare in cultivation, is a lovely little fairy that ought to offer no problem of delicacy considering its specific name. From among arching glossy strap-shaped leaves, like those of some tiny *Imantophyllum* (not mentioned in the “English Rock Garden”) shoot up loose graceful plumes of rosy lilac stars, suggesting those of an *Anthericum*, to which indeed, the plant is closely related, and to whose simple treatment we all hope it may respond”. Well, after such a write up it was a “must”. I waited two years before it flowered, only to find that the plumes were the the opposite of graceful, in fact stumpy, and the rosy lilac stars were a dirty mauve, the only true thing being that it wasn't difficult to grow. Perhaps I have got the wrong plant.

The list of Japanese plants which I should love to have and try to grow is long and includes *Primulas reinii* and *nipponica*, which sound interesting, *Gentiana nipponica* (I have a plant of this but I doubt if I am going to be able to get it to become established), and many others of which I have read.

After the long winter I long for some colour in the garden, and I find the spurges are showy and early. Mr. Roy Elliot tells us in his

book "Alpine Gardening", that the juice of *Euphorbia heptagona* was used by Ethiopian tribesmen as a deadly poison for their arrow tips, and Farrer says "all of them are poisonous alike to eye and taste". However, I find them colourful and attractive. *Euphorbia polychroma* with its greeny-yellow bracts is very decorative and looks colourful in the spring sunshine ; *E. myrsinites*, grown in a poor dry sunny spot, flowers well and looks lovely flowing down a wall. *Euphorbia epithymoides*, about 18 ins. in height, is also gay and there are others to choose from. I have *E. biglandulosa* from Greece, but it has never flowered with me. I imagine it craves for the sun of its native country. I must just mention two other euphorbias, *E. griffithii* and *E. cyparissias*. The first is a spectacular plant quite different from the others with lovely orange bracts ; it is apt to run about, so should be put where it can have room to spread. *Euphorbia cyparissias* looks very attractive when grown in poor dry soil. It can assume brilliant orange and scarlet tints, however, unless one can give it a place where it can ramp at will ; one may spend the rest of one's life getting rid of it.

I find *Corydalis* quite irresistible ; most of them have beautiful delicate flowers and lovely ferny leaves. One easy to obtain and grow is *C. solida*. (I believe *C. cava* is similar). I think its curious smoky-purple flowers are unusual, and at the Edinburgh Royal Botanic Garden it grows in profusion among rhododendrons ; it looks lovely and I plan to copy it in a small way in a peat bed, which seems to provide the conditions *Corydalis* enjoy. They are no trouble, disappear after flowering, and one forgets about them till they reappear next spring. *Corydalis wilsonii* from China is also an attractive plant with good solid spikes of yellow flowers, but it is not hardy here and gets killed in a cold winter. Perhaps the most breathtaking of the lot is *C. cashmeriana* ; what a beautiful indescribable colour, peacock with a hint of emerald ? I don't know how to describe it and I hesitate to say I have got it to grow at last, but I hope I have.

There is another *Corydalis*, this time from Japan, that runs it pretty close for colour, namely, *C. ambigua* ; it is earlier flowering but not quite of the same fantastic colour. I cannot leave the Papaveraceae without mentioning that ethereal and temperamental beauty, *Dicentra peregrina* var. *pusilla*. I must quote T. C. Mansfield's description of it in "Alpines in colour and cultivation". "*Dicentra pusilla* (*peregrina*) Japan : Delicate silver-grey foliage, so finely divided as to become almost moss-like in its texture, rising stems bearing above this silken cushion hanging cloven hearts of rose-pink with a projecting drop of creamy white. For the scree in a position of half sun". What a beautiful

description ! Farrer doesn't even mention it in "The English Rock Garden", so I imagine he must never have heard of it, though he spent some time in Japan. Another one I have a great affection for is *D. cucularia*. I first saw it flowering in the alpine house at Wisley, a beautiful plant with such delicate charm, the flowers like white doves planing down, and I have seen them described as being like small white moths. Its vernacular name, "Dutchman's Breeches", by which it is known in its native home, the United States, is much more prosaic.

I am going to finish on a group of plants of which I am very fond—the "silvers". To my mind neither the rock garden nor the alpine house should be without them ; they are a marvellous foil for blues, mauves and purples, and tone down the hotter colours, reds and terracottas, etc. I must confess they look rather a dirty grey in wet weather ; most of them are sun lovers. A particular favourite is *Euryops evansii* (fig. 79) (now called *E. acraeus*), coming I think from the Drakensberg Mountains. This lovely silver-leaved shrub is bone-hardy, even in this cold garden ; it came through the winter of 1963 unharmed when some so-called hardy plants were killed. I have a lovely *Euryops* on the scree bed, and it grew to be a large plant, in circumference anyhow, and it always looked attractive, no dirty grey bedraggled look for it, and when it was covered in its yellow daisy-like flowers it was a lovely sight. It never grew leggy but stayed compact. This begins to sound like a cautionary tale and so it is. I think that it was 1st May, two years ago, that we had a heavy fall of wet snow, which weighed the branches to the ground and "opened" the plant up and, although I tried to get the snow off it, the *Euryops* never recovered its original shape. It sprawled all over the place and looked very unsightly. I cut it back but it didn't break away again. It has left a descendant, presumably from a layer.

In the alpine house there is one very silvery-leaved plant I like—*Synthyris pinnatifida* var. *lanuginosa* (syn. *S. tomentosa*). In an article in the S.R.G.C. *Journal*, written about the Olympic Mountains in the U.S.A., the writer says that this plant often blooms under the snow. It has 6 in. spikes of blue flowers and must be a lovely sight as the snow melts in its native mountains. *Celmisia*s are other silver-leaved plants, ranging from tiny to large specimens, mostly with good silvery leaves. *Celmisia spectabilis* var. *argentea* is a particularly good variety ; the leaves are very useful for flower arranging and last a long time in a dried winter arrangement. I could mention many more good silver-leaved plants, but I think that is enough serendipity !

The Rock Garden and Woodland Garden in Indiana and Wisconsin

by LAWRENCE JOHNSON

I LIVE adjacent to a fairly hilly part of northern Indiana ; a short distance away the country is level to the horizon. None of our hills bear a truly alpine flora yet *Dodecatheon* and *Viola pedata* are to be found. I have no rock garden of my own, but am familiar with a very splendid example of the art of rock gardening only a short distance from my home. It was planted and is maintained by Mrs. Walter Welch, whose husband is the well-known Iris hybridist and holder of various Awards of Merit from the Royal Horticultural Society.

An anthill-like eminence studded with field stones serves as a rock garden for most of my gardening friends. On the other hand, there are many devoted and successful growers of alpine and rock garden plants in this region. One friend spends his vacations in the Rocky Mountains and describes them as "simply a gigantic rock garden", yet he grows quite wonderful plants on perfectly level ground at his home.

I think we do better at growing woodland plants. The country round about is rich in woodland flora, though it is some of the oldest settled land in the Middle West. One cannot just go out and find native orchids, but they are there. A lady of 85 appeared at my garden last summer and presented me with a plant of *Cypripedium pubescens*, blooming in a pot, lifted from a huge bed in her garden. The original stock had been collected on her farm years before. Another lady gave me a chunk of earth containing several *Orchis spectabilis* in full bloom, and they still flourish.

I had a narrow strip of woodland, consisting of various hemlocks, spruce, douglas fir, birches and a tulip tree, most of which were planted about 1934. The whole area was part of a garden laid out to match a similar one we had had at a World's Fair in Chicago in that year. When I first saw the place it was a wilderness, having been neglected from 1940 until 1948. The under-planting contained nothing worth retaining except Mahonia, which is still present. I now display many shade-loving plants in considerable numbers ; the native wildflowers are all introductions and first date from about twelve years ago. Many

I collected myself, while others are gifts from various people. One man brought me a huge sod from his own woods and in it I recognized three kinds of Trillium, two Hepatica, two Violets, an Aster, and several more. Another brought me *Lobelia cardinalis* and *Dodecatheon meadia*.

Arisaema, Polygonatum, Smilacina and Podophyllum have flourished and spread far beyond the confines of the garden. My books don't list two types of Arisaema, but a discerning lady visitor pointed out that I have both a green-stemmed and a brown-stemmed variety. Another visitor brought me from Japan a plant of variegated Polygonatum and it thrives as well as the native form. Here we call *Podophyllum peltatum* "May Apple" and I suppose it is one of the most plentiful of our wild flowers. In rich woodlands the leaves reach a width of from twelve to fifteen inches. The scent of the flowers is described as disagreeable, but only in the way the scent of *Lilium candidum* might be considered too much in a closed room. I wonder how many S.R.G.C. members have tasted the fruit? Only real country children know the taste of it, sweet and insipid. On a drive through the country a rather remarkable thing to see is a huge patch of "May Apple" growing in open pasture land. It is a relic of a forest which has been cleared and is a tribute to the toughness of the plant. I recall, as a child, being with my father in a wood in northern Wisconsin and can still recollect his pleasure at finding a plant of "May Apple". It was almost unknown with us there, but he remembered it from the southern part of that state where the climate is kinder. Quite a few years ago I started growing *Podophyllum emodi* from seed and only this year had my first flowers and fruit.

Trilliums can be found nearby and it is just a short drive to beech wood areas where they are abundant. It is only a few years since I first heard of a double Trillium. I now have several friends who grow it but they make only vague hints about the price they may have paid for it! I once had a flourishing clump of the double form of *Sanguinaria canadensis*, but was too generous with it and have none left now. The native single form is easy to grow and transplant, and flourishes equally well in sunlight or shade. As country children we used to dig the roots in spring and paint our faces with the scarlet juice to look like Red Indians. It is a pity that children these days don't seem to know this game. A recent visitor told me of a friend's garden here in Indiana where the double Bloodroot flourishes in huge drifts!

Some years ago I imported from Britain several plants of *Hepatica triloba* 'Rosea Flore-Pleno'; it bloomed for me, but never flourished

and finally disappeared. I read that it was plentiful years ago and is now thought to be extremely rare.

I grew quite a quantity of a species of Dodecatheon from seed provided by the Royal Horticultural Society and lost the label before the plants bloomed. It had purple flowers and rather limp leaves, but I had many takers for the plants I had to spare. I thought it something of a triumph to bring an American native plant into flower from seed sent from Britain !

One of my first loves among wild flowers is the native turk's cap lily, *Lilium michiganense*, and it is now established in my garden where it flourishes in several locations.

I spent a week in June of last year at my old home in northern Wisconsin, some 540 miles from where I write ; it is an area of great extremes in climate. This was a season of exceptional rainfall and everywhere in the countryside the ferns flourished prolifically, spilling out of the woodlands, along the highways and on railroad embankments.

A jewel of that part of the country is *Epigaea repens*, which we know as trailing Arbutus. I used to find it in oak woods. We knew of a whole hillside covered with it, and the fragrance was haunting. Alas, the hill was denuded of timber to make pasture for sheep and that was the end of the Arbutus. I find it a source of wonder that we share this genus with Japan, the only other locality outside North America where it is native.

Orange is not a very popular colour among gardeners, but I yield to no one in my admiration for the orange wood lily, *Lilium philadelphicum*, which is found in openings in pine woods in my native Wisconsin. I don't know if it is grown in Britain, though certainly *L. superbum* (fig. 80) has found favour there. The native lilies, and many other fine plants, disappeared from view after a prolonged drouth in that region years ago, but they are flourishing once again.

We also had in Wisconsin a true alpine, *Anemone patens* var. *nuttalliana* (*Pulsatilla hirsutissima*), I think, growing in great numbers on high sandstone outcrops near the village where I went to school. We called it "Crocus" and climbed the steep hillsides in the spring to pick bouquets. I can visualise the flowers now, misty blue as far as the eye could see and, equally wonderful in their season were the shining, silken seed heads. I looked at the site, Anderson's Hill, last June, and regretted I could not see the "Crocus" flowers again ; it was the wrong time of year and may be I wouldn't so willingly climb a mountain again.

“ Lichens ”

by ROY WATLING

Because lichens grow in much the same sort of habitats and upon similar substrates as mosses (indeed they are often found inter-mixed) contributions to the study of lichens have been made more by those studying mosses, bryologists, than mycologists. In some ways this is strange as it is those studying fungi, that is, mycologists, who really investigate the group of plants to which lichens are most closely related—in fact some authorities would classify lichens along with fungi in the families, orders and even some of the genera already in use. Under such a scheme lichens are called lichenised fungi but what does lichenised mean ?

The plant-body of a lichen consists of two quite different organisms growing together in an intimate association, a fungus and an alga. Algae, as a group, include the seaweeds as well as the green scums so common in garden ponds and on top of the soil in plant pots—those found in lichens are related microscopic green plants. Usually the fungus makes up the greater proportion of the lichen body with the algal cells buried within it either in a distinct layer of cells or in small packets. It is the structure formed by an association of two such organisms which has been called the lichen, and as the fungus is the dominant partner the fungus is said to be lichenised ; the association is called a symbiotic relationship.

The common fungi which we meet every day, the toadstools and mushrooms (agarics), puffballs, moulds, mildews, rusts, etc., are unable to live without a supply of food but because they do not photosynthesise they obtain their nutrients from either dead remains or living organisms. Thus fungi resemble animals more than plants but, when lichenised, the alga living within their tissue manufactures food from carbon dioxide, water, simple mineral nutrients and sunlight, i.e. produces organic material and some of this is transferred to the fungus. The lichen thus shows some characters of its two components both physiological and morphological ; an added advantage is that the two organisms benefit from the association. The lichen also possesses characters which are unique to it ; for instance, the lichens have a remarkable capacity for withstanding drying out. This ability explains why lichens are seen in such inhospitable sites as on rock surfaces,

walls, etc. In these situations growth is usually slow while under normal conditions and in dry weather it is reduced almost to zero. After rain or when water is made available the lichens absorb moisture very rapidly and continue to grow. Unlike flowering plants they do not have a special cuticle surrounding the plant-body in order to stop or hinder water loss ; the fungus component produces gums and mucilages which under drying conditions holds tightly any available water but, should this also be lost, it rapidly “mops up” moisture as soon as it becomes available again. This same phenomenon explains how lichens absorb their basic food requirements, in the form of mineral salts, doing so through their entire surface and why these same organisms are so sensitive to air pollution ; there is no buffering surface of waxy substances between the active growing tissue and the environment as there is in flowering plants. Although lichens are familiar objects on rocks and trees well away from industrial areas and are found in gardens out of cities, because of smoke pollution near industrialization the surfaces of rocks, walls, etc., are generally devoid of the lovely colours and intricate patterns of lichens.

Some of the beautiful colours found in lichens are due to the presence of substances peculiar to them and are not produced either by the alga or even by the fungus when it has been grown in culture free from its partner, the alga. One group of chemicals known as lichen acids has been used in identification. By designing special tests so that the individual chemicals may be recognised, and as these lichen acids appear to be distinctive, it is possible to distinguish between certain species or at least groups of species.

Before man used chemical tests in identification, however, he was utilising the lichen acids or their derivatives in ignorance, i.e. in the preparation of dyes. Litmus is one of the most familiar of these as it is often seen in the chemistry laboratory and can be remembered from school days ; litmus turns blue in an alkali solution and red in an acid one. Man has also used lichens as food, although it is debatable whether they have much nutrient value. The larger species of the genus *Cladonia*, however, form vast lichen heaths in the tundra and serve as fodder for the great reindeer herds found there.

During mediaeval times remedies for disease were sought in nature by looking for something which resembled the organs which were afflicted ; once found it could be suitably processed and administered. Because *Lobaria pulmonaria*, “Tree Lung-wort”, looked like lung tissue it was used in the treatment of diseases of the chest. Although

many of the cures in folklore were used for some good reason it was perhaps by chance, rather than from knowledge, that antibiotics, with their disease-combatting properties, were present in lichens. This is only a recently confirmed fact. Some of these antibiotics have been isolated in quantity and one such compound has been included in proprietary preparations.

Lichens may be of many different shapes, sizes and colours macroscopically, and although all divisions in classification are the creation of man's mind they can be separated into three distinct, easily recognizable groups which reflect some natural affinity. These are the bushy or tassel-like forms attached only at their base and termed fruticose ; leaf-like or scale-like forms connected by a series of threads—foliose, and crust-like forms clearly and often strongly affixed to the substrate and known as crustose.

The techniques of collection and the examination of lichens depends on the external form just described ; the foliose and fruticose can be satisfactorily collected by scraping off small portions of the substrate with a knife and placing them in packets. In the case of crustose forms, however, it is necessary and important to remove a substantial amount of the substrate as well as the lichen ; thus a good sharp knife is required for wood and bark samples and a stone chisel and hammer for those found on rock. One of the beauties of lichens is that they dry well and make good herbarium specimens for later examination. As in all plant and animal studies accurate habitat notes are required and these should describe the kind of substrate and situation, locality and date.

Although many lichens can be identified satisfactorily in the field by a keen amateur, many, especially the crustose forms, must be taken to the laboratory for closer examination. This usually requires a lens, a set of chemicals and often possibly a microscope. Invariably the identification of a species needs less microscopic examination than that necessary to work out a lichen's position in classification, and probably less than in the parallel field of mycology.

Classification is complex ! Why ?—because there are two organisms involved and it seems that a single fungus may associate with different algae to form the same lichen species or at least one which is only slightly different. Just as the fungi and flowering plants are arranged according to their sexual organs, so lichen classification follows the same pattern. Like fungi they reproduce sexually by spores and it is how and on, or in, what structure these spores are produced that the major classifica-

tion has been designed. Minor details, e.g. differences between groups of species, may be based on spore characters such as ornamentation and septation. The microscopic structure of the plant-body is equally important.

An exciting phenomenon recently demonstrated is that certain of our small toadstools, (Basidiomycetes), indeed species very closely related to some which are not uncommon on peaty soil in our own rock gardens, are the perfect stages of rather loose lichen associations. Normally, however, the lichens contain fungi which have sexual spores borne in sacs (asci) and belong to the group called the Ascomycetes. Lichens are similar to fungi in that they have asexual, vegetative methods of reproduction. Some have dot-like processes on the plant-body which, when seen under the microscope, are flask-shaped (pycnidia) and full of tiny cells budded off the threads of the fungus partner. These tiny cells, the pycnospores, are the asexual spores and are wholly fungus and so have to seek out a "mate" when they land on the substrate. Some lichens, however, reproduce asexually by producing powdery granules which contain both partners, or small outgrowths of the plant-body (thallus) which also contain both partners and break off by erosion and are distributed by wind. Some of the asexual spores are produced in very complex structures such as the special cups (scyphi) found in species of *Cladonia*; these cups are often referred to by the common name 'Pixie-cups'. The scyphus is covered on the margin and just inside with powdery granules of filaments of fungus intermixed with algal cells. The shape of the cup is such that turbulence is set up in any wind movement and the granules are pushed or sucked out.

From such small propagules, with one or both partners present, the lichens are able to spread from place to place exploiting habitats which few if any other single group of organisms could ever colonise. Lichens may be found at sea-level or on the highest mountains, in dry land or in areas washed by the sea or fresh water. Their colours are often bright and shapes intricate, but their beauty is accentuated even more when one begins to study them.

New Zealand Edelweiss

by BRIAN HALLIWELL

I SUPPOSE the word "Edelweiss" conjures up thoughts of the Alps more than any other plant name. It has accumulated many legends and myths so that one comes to expect something rather unusual or attractive from it. Yet how disappointed many people are when they see this plant for the first time. The popular much sought after "Edelweiss" is a species of *Leontopodium*, usually *L. alpinum*.

There is another genus associated with the Alps, the common name of which is also "Edelweiss", but in this instance it hails from the Southern Alps of New Zealand and, in consequence, has earned the name "New Zealand Edelweiss". This is *Leucogenes* and along with *Leontopodium* belongs to the daisy family, *Compositae*. *Leucogenes*, of which there are two species, *L. grandiceps* (fig. 81) and *L. leontopodium*, is found only in New Zealand. In some books these two species may still be listed under *Helichrysum*.

Leucogenes grandiceps is sometimes referred to as the "South Island Edelweiss", its distribution being confined to that island. It is usually found at an altitude of between 3000 and 5000 feet. *Leucogenes grandiceps* grows in stony acid soils, in crevices or over rock faces. Rainfall is high in its native station so that there is plenty of atmospheric moisture throughout the summer. During the winter, however, the plants are covered with snow for months on end.

Lax stems rise from a woody rootstock to a height of six inches or thereabouts, although in some instances they can also be procumbent. The shoots are thickly clothed with small overlapping stalkless leaves, little more than a quarter of an inch in length. In shape they are oval with recurving tips and are covered on both sides with silky hairs. When the plant is about to flower, these stems elongate slightly and the silvery bracts become a little more spaced out than the leaves on the non-flowering stems. The flowers, like those of the European "Edelweiss", depend for their beauty on a row of white woolly petal-like bracts tending towards a buff shade. These attractive petal-like appendages are arranged round several tiny true flowers, yellowish in colour, and the complete inflorescence is but a little over half an inch in diameter.

Leucogenes leontopodium possesses a specific epithet which suggests an affinity with the European genus. This species is often called the "North Island Edelweiss" in order to differentiate between it and the other *Leucogenes*, but this can be misleading as it is not strictly true to say that it is confined to the North Island. It is also known to inhabit the northern part of the South Island. *Leucogenes leontopodium* is found at altitudes of 4000 to 6000 feet in conditions similar to those favoured by *L. grandiceps*.

It is larger in all its parts, with stems rather more rigid and woody at the base. The narrow leaves are almost an inch in length, coming to a point at the tip and, like *L. grandiceps*, has both sides of the leaf covered with silvery silken hairs. These are arranged in a loose rosette which elongates at flowering time to form a stem several inches in length. The inflorescences, too, are very much larger and the colour of the woolly bracts is almost white. The true flowers are also bigger and brighter in colour.

Both are delightful species and it is difficult to decide which is better. *Leucogenes grandiceps* is more graceful, flowers more freely and is easier to grow. *Leucogenes leontopodium*, on the other hand, is more impressive, has extremely handsome foliage, is shy to flower and perhaps a little more difficult in cultivation.

The "North Island Edelweiss" was exhibited at the S.R.G.C. Show in Dumfries in 1967 as a foliage plant, where it won the Lewis Cup. Later in that year the same plant was exhibited in Edinburgh, this time in flower, and carried off the Forrest Medal.

Both plants require similar treatment. Silvery leaves are usually an indication that a plant can withstand full sun, rather dry conditions and exposure to wind, yet such conditions would certainly result in the death of these New Zealanders. As has already been mentioned, these plants are from areas of high rainfall where there is plenty of atmospheric moisture during the summer. For this reason they are easier to cultivate in Scotland than in the hotter, drier parts of the south of England. Where there is plenty of moisture in the air they should be exposed to full sun, but in drier areas they need a northerly aspect and a soil that does not readily dry out.

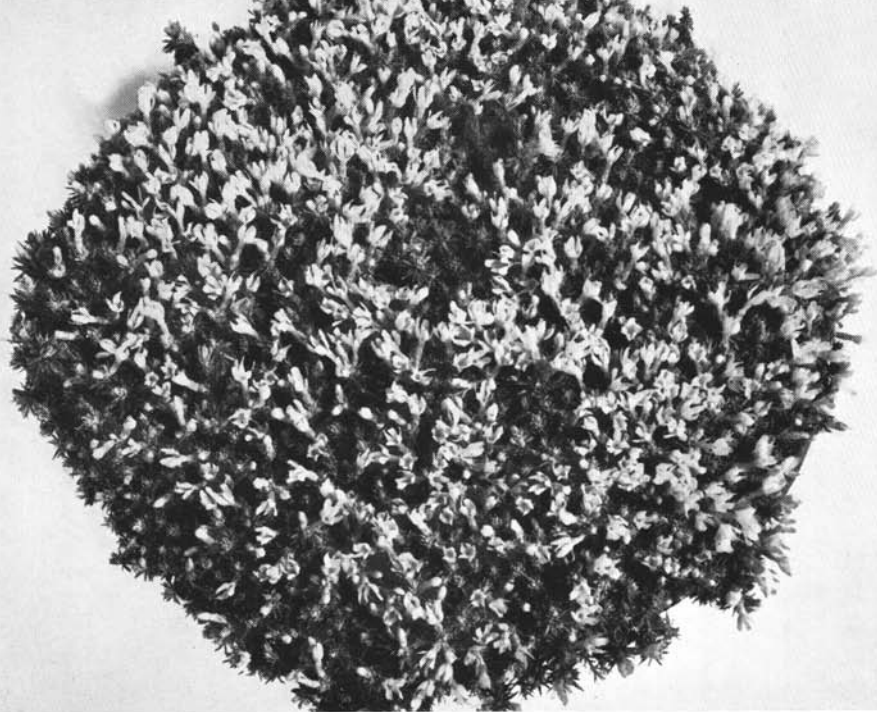
Like many true alpine plants which are buried under snow for most of their period of rest, they are not easy to keep through our mild, damp winters for, under their snowy blanket, the stems and leaves remain dry in ground which is frozen. In our climate they are better kept dry in winter and grown in a soil which is free draining, so that damp-



Photo—H. Tod ▲
Fig. 95—*Fritillaria gibbosa*

Fig. 96—*Linaria tristis* 'Toubkal'
Photo—H. Esslemont ▼





Photo—J. Watt ▲
Fig. 97—*Douglasia vitaliana*

Fig. 98—*Draba mollissima*
Photo—J. Watt ▼



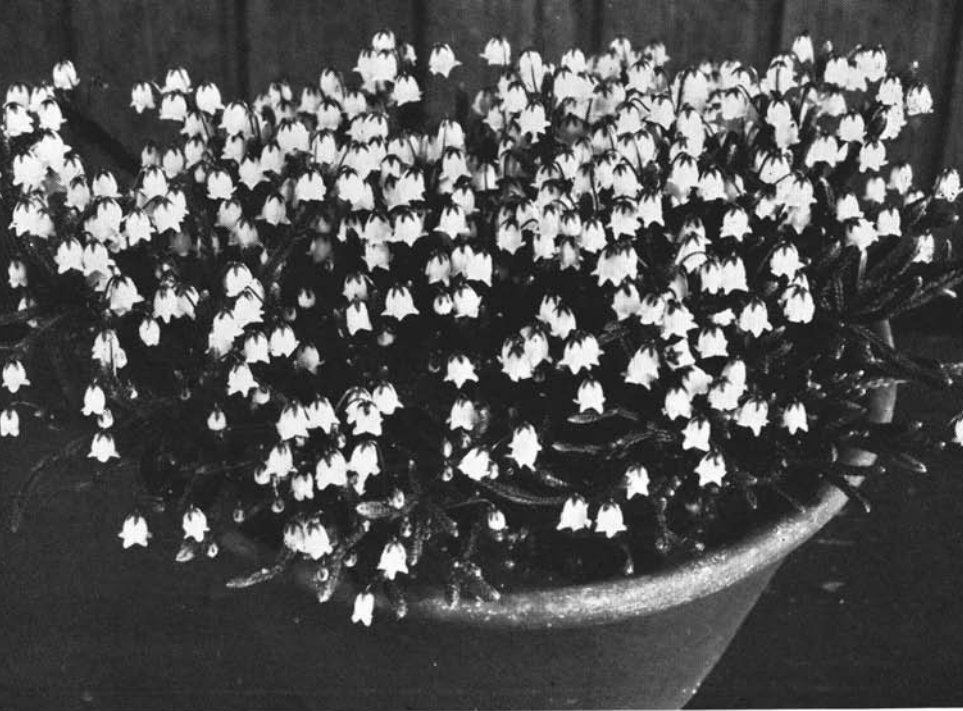


Photo—H. Esslemont
Fig. 99—*Trillium rivale*



Fig. 100—*Phlox nana* var. *ensifolia*
Photo—J. Watt





Photo—J. Watt ▲
Fig. 101—Cassiope 'Clare Muirhead'

Fig. 102—Corydalis cheilanthifolia
Photo—J. Watt ▼



ness on the leaves and round the stems can be kept to the minimum. For this reason they are best planted out of doors in a scree or in a crevice in a rock face and, in areas that have really wet winters, a sheet of glass supported above the plants will give the necessary protection.

Leucogenes grow well in a peaty soil and experience has convinced me that raw moorland peat is better than the commercial grades. Plenty of grit should be incorporated, either in the form of sharp sand or gravel, to ensure free drainage. Avoid planting in a rich soil, as this causes *L. grandiceps* to produce soft growth and *L. leontopodium* loose and floppy rosettes.

Once established these species require little further treatment and this can be confined to a very light dressing of bone meal in spring. In the case of *L. grandiceps* the cutting back of straggly growth and the removal of any basal leaves that have started to wither help to keep the plant tidy.

Both species are good subjects for pot culture and, as they are considered choice plants, are worth growing on for Shows. It is important that the pan be provided with plenty of drainage, and a compost made up of equal parts lime-free soil, sharp sand or fine gravel and raw moorland peat should be used, to which a light dressing of bone meal is added. After potting, the surface of the soil may be dressed with a layer of coarse gravel. The pan is then plunged up to its rim in peat in a place where there is plenty of light and air movement, but protected from drying winds. The plants should then be well watered throughout the summer and a light spray overhead at frequent intervals during hot and dry weather will prove beneficial.

In winter they should be housed in a frame and covered with a frame-light to ward off the winter rains. It is just as important, however, to maintain a good circulation of air and the lights should be propped open at every opportunity. They need only be closed in the severest weather. At the same time watering should be reduced to a minimum.

Both species are easily raised from seed, which is sometimes offered in seed exchange lists. As with many composites, the percentage of good seed varies considerably. It should also be remembered that, like many alpiners, the viability of the seed is not long, and this period may be further reduced if storage conditions are unsatisfactory, i.e., where the atmosphere is too dry or the temperature too high. It is better, therefore, to show the seed as soon as it is received in a lime-

free gritty compost, covering lightly with fine soil. The container should then be placed in gentle heat ; stratification is not necessary. After germination give plenty of light but shun direct sun. Avoid wet or stagnant conditions as these encourage damping off. If in spite of precautions damping off occurs, water with a fungicide containing "Captan". Slugs, too, can be troublesome.

As soon as the seedlings are big enough to handle they should be potted individually and once the young plants are established they should be transferred to a frame where the pots may be plunged up to their rims in peat.

Where stock plants are accessible, propagation by vegetative means is quite easy. Cuttings of non-flowering shoots taken in July root readily and quickly in a mixture of three parts sharp sand and one of peat.

To my mind the "New Zealand Edelweiss" are far more beautiful than their European counterparts. In voicing this opinion I am in good company, for Farrer says of *L. grandiceps* "truly magnificent", and of *L. leontopodium*, "It utterly wipes the "Flannel Flower", *Leontopodium alpinum*, out of reckoning", "Desperately to be desired". Whilst the "New Zealand Edelweiss" are not easy to grow, they are not very difficult, particularly in Scotland. One may have to persevere with *Leucogenes leontopodium* to make it flower, but the result is well worth the challenge.

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Calceolaria darwinii

by A. B. DUGUID

Calceolaria darwinii (fig. 89) has been known for a very long time, in fact was first discovered by Charles Darwin early in the 19th Century and it was described by J. D. Hooker as long ago as 1846, yet one seldom sees it grown out of doors in Britain. It is usually treated as an alpine house plant and cultivated in pots and pans. If care is taken in choosing the site, however, it is really not a difficult plant in the open garden.

To understand the needs of a plant more it is better to know something of its behaviour in nature. Mrs. Ruth Tweedie, who visits Patagonia regularly and has done much to introduce plants from that area into our gardens, kindly supplied me with this note.

“Widespread from sea level near the Magellan Straits and up to 4000 feet further north—great variety in the wild—commonest form up to about 1000 feet in shade and sun—in grass, on screes and up to the edges of forests in leaf mould. The finest form, which might even be a different species, has very large flowers and farinose leaves, is very free flowering and makes huge clumps. It gets some shade from the forest trees, *Nothofagus pumilio*, and is in partial shade from 9 a.m. to 6 p.m. in mid-summer—soil slightly acid with good drainage.”

Thus we have a plant which is fairly widespread in nature and which grows in a variety of sites where the soil is slightly acid.

In my experience I have found that in this country most plants from that area prefer a cool place away from direct sunshine. The site should be facing either north or west and this applies to *Calceolaria darwinii* particularly. It detests root disturbance but this can be avoided by sowing directly in the place where it is to flower. So far I have only used troughs for my experiments but I see no reason why they would not grow equally well in a peat garden ; certainly other calceolarias flourish there.

To cultivate *Calceolaria darwinii* I make up a fairly open compost of 2 parts fibrous loam, 2 parts sphagnum peat, 1 part rough sand and 1 part half-inch stone chippings (lime-free). To this I add a dusting of John Innes Base Fertiliser and thoroughly mix them together. Adequate drainage is first put into the trough or pocket, on top of which the compost is firmly placed. Stone chippings, or some similar

material, are then scattered over the surface with a view to conserving moisture. The seed is now sown thinly, broadcast fashion, on the chip-pings, but as it is very fine it is not covered but is lightly watered in. I find April and May are the best months for seed sowing as this gives the resulting plants a long growing season before winter sets in. By the end of the year the plants should have grown into a solid mat and developed strong deep roots ; the following summer should see them in flower.

Aphids are particularly fond of *Calceolaria darwinii*, so one must be vigilant and apply an insecticide whenever they are seen.

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Plant Notes

CYCLAMEN NEAPOLITANUM

Cyclamen neapolitanum, one of my favourite plants, grows here like a weed ! The exquisite flowers, 3 ins. high, in pink or white, appear in September before the leaves. They are profuse, long lasting and remarkably tough in standing up to the rough autumn weather. They also last well in a vase if picked for the house.

As the flowers fade, up come the leaves which are variously marbled in silver and green and have pink stems. These last all winter and spring and are most attractive.

When the seed pod forms, the stem "corkscrews" down and encircles the round pod nestling on top of the corm. There it stays until the following year, and just when the new flowers are pushing up it bursts and scatters ripe seed around. If there are no mice or ants they can be left to germinate or they can be gathered and sown, at once, in a pan, where they will sprout in a few weeks. (Cyclamen seed if dried may take two years to germinate.)

Cyclamen neapolitanum will grow in partial shade or sun provided the situations are not too dry. The corms must be completely covered with soil and after the leaves have died down in August will benefit from a top-dressing of leaf mould.

Northumberland

CYNTHIA J. H. SANDERSON

RHODOHYPOXIS

I HAVE to put on record that this last winter caused the death of 90% of the Rhodohypoxis in my narrow brick wall bed.

This is the first time in over 30 years that I have lost so many. I put it down to the mild weather early in the year followed by deluges of rain and quite severe frost between the rainy spells.

The Rhodohypoxis in the rock garden and beds, unprotected, survived these abnormal conditions.

Farnham

Mrs. R. McCONNEL

Joint Rock Garden Plant Committee

DUMFRIES—9th MAY 1969

AWARDS TO PLANTS

FIRST CLASS CERTIFICATE

To *x Phyllothamnus erectus* as a flowering plant for the rock garden (votes 6 for, 0 against), raiser unknown, exhibited by Miss M. E. Gibson, Brackenhill, Dalbeattie, Kirkcudbrightshire.

AWARD OF MERIT

To *Iberis* 'Little Gem' as a flowering plant for the rock garden (votes 7 for, 0 against), raiser unknown, exhibited by Mrs. M. Clark, Mainsriddle, Dumfries.

To *Corydalis cheilanthifolia* as a flowering and foliage plant for the rock garden (votes 7 for, 0 against), introducer unknown, exhibited by Crichton Royal Gardens, Dumfries.

PRELIMINARY COMMENDATION

To *Corydalis bracteata* as a flowering and foliage plant for the rock garden (votes 6 for, 1 against), introducer unknown, exhibited by Crichton Royal Gardens, Dumfries.

AWARD FOR EXHIBIT

CERTIFICATE OF CULTURAL COMMENDATION

To W. McGinley, Esq., Hannahfield Cottage, Kingholm Road, Dumfries, for a very fine pan of *Cassiope lycopodioides* (votes 7 for, 0 against).

Show Reports

DUMFRIES

THE DUMFRIES SHOW was held in the YMCA Hall, Castle Street, Dumfries, on 9th and 10th May 1969, and we must congratulate the Show Secretary, Mr. Norman Brown, on a most successful and interesting Show, organised and assembled by him in spite of serious illness.

The Forrest Medal was awarded to Mr. McGinley's wonderful plant of *Cassiope lycopodioides*, which also gained for him a Cultural Commendation from the R.H.S. Joint Award Committee which met at the Show on the first day. He also won the George F. Hutchison Prize for the runner-up with a superb plant of *Draba rigida*, which also gained a Certificate of Merit, along with *Pleione pricei* and *Armeria caespitosa* (Bevan's Form). In addition to these, Mr. McGinley won the Sommerville Trophy awarded to the competitor gaining most points in the Open Section. The best plant in Section II was a very good specimen of *Rhododendron* 'Blue Tit' shown by Mr. P. Cooney; it won the Lewis Trophy. Mr. Cooney also won the Bronze Medal awarded to the competitor gaining most points in Section II.

The Joint Award Committee awarded a First Class Certificate to Dr. Gibson's wonderful x *Phyllothamnus erectus*. Awards of Merit were given to *Iberis* 'Little Gem' and *Corydalis cheilanthifolia*, exhibited by Mrs. M. Clark and Crichton Royal Gardens respectively. A Certificate of Preliminary Commendation was granted to *Corydalis bracteata* from the Crichton Royal. Gold Medals were awarded to Ponton's Nurseries for a display of rock garden plants and bulbs, Messrs. Longmuir & Adamson for rock garden plants and flowering shrubs, and to K. S. Dobie of Dumfries for a display of house plants and sundries.

The Club's Certificate of Merit was awarded to *Draba rigida*, *Pleione pricei* and *Armeria caespitosa* (Bevan's Form), all shown by Mr. McGinley, to x *Phyllothamnus erectus* exhibited by Dr. Gibson, a wonderful form of *Primula rosea* shown by Mrs. Hutchinson, and to the Crichton Royal Gardens for their display of plants.

The general standard of the exhibits was extremely good, while there were some really outstanding plants. It was a great pleasure to see the *Primula* classes, both European and Asiatic, so well represented—to say nothing of the very good entries of polyanthus and auriculas.

I was particularly glad to see a fine pan of the now rather rare *Primula x pubescens* 'Alba', in very good health and vigour, shown by Mr. J. Henderson.

Two genera of particular note were Cassiope and Daphne, and specimens of *Polygala chamaebuxus* var. *purpurea* and plants in Ericaceae were of an equally high standard. Dumfries has always been a very good Show for bulbs, and this one was no exception. Mrs. Maule displayed a number of her Fritillarias and they provided the interest associated with uncommon bulbs while some really good pans of Tulipa and Narcissus species gave the brighter colours expected from these genera.

After last year's catastrophic frost which sorely reduced the exhibits, and the somewhat lower number of entries submitted for a year or so before that, it was a very great pleasure to see such well-filled benches and a good standard generally. The late Major Walmsley had a lot to do with starting the Dumfries Show, and we older members greatly regretted that he could not be there to see it return to its previous high quality. We were delighted to see Mrs. Walmsley, however, giving her usual support to the Show. I know that Norman Brown, who unfortunately had to leave the Show on its first afternoon, wishes me to thank those willing helpers who carried on so well and made the Dumfries Show such a success.

HENRY TOD

DUNFERMLINE

LITTLE SIGN of the disastrous spring was evident at the Dunfermline Show on 23rd May, when the Music Pavilion in Pittencrieff Glen was a mass of attractive colour. The three pan class in Section I was won by J. B. Duff with excellent plants of *Daphne collina* (Certificate of Merit), *Lewisia heckneri*, and *Anemone obtusiloba* var. *patula*, while H. Esslemont was awarded second prize with *Lewisia* 'M. le Piniec', *Primula strumosa*, and *Rhododendron* 'Chikor' (Forrest Medal)—that wonderful hybrid between *Rh. chryseum* and *Rh. ludlowii*. J. Crossland's entry was an excellent third with *Kalmiopsis leachiana*, *Claytonia nivalis* (Certificate of Merit), and *Pleione limprichtii*.

In Class 2 *Raoulia buchananii* gained first place, *Raoulia eximea* second, and a very fine Fritillaria third. In Class 5 for one pan *Primula*, *Primula aureata* came first, and second, and *P. rubra* third. Androsaces in Class 6 were led by *A. cylindrica x hirtella*, followed by *A. chamae-*

jasme and *A. cylindrica*. Class 15 produced a wonderful array of fine plants and *Cassiope* 'Edinburgh', *Rhododendron hanceanum* x *Rh. keiskii* both gained Certificates of Merit. Class 22 for a dwarf shrub was won by a fine *Daphne arbuscula*, closely followed by *Schizocodon soldanelloides* var. *alpinus*, and class 23 by *Fritillaria recurva* (Certificate of Merit) followed by *Schizocodon soldanelloides* 'Magnus'. More good fritillarias were in Class 26 where an excellent *Fritillaria meleagris* 'Poseidon' was closely followed by a good pot of *F. pyrenaica*.

The Best Plant in Section I was, of course, the Forrest Medal winner—*Rhododendron* 'Chikor', while that in Section II was *Auricula* 'Lovebird'. Class 54 was extremely interesting in that it produced several very fine plants of the double *Erodium chamaedryoides* var. *roseum* 'Flore Plenum', one of which gained a Certificate of Merit for Miss Thomson.

Good plants, too many to mention, were evenly spread throughout the Show and the whole made a most colourful picture. Congratulations are due to Mrs. A. Wilson, her helpers and, of course, the competitors.

J. L. MOWAT

EDINBURGH

THE SHOW was held in the Napier Technical College, Colinton Road, on 8th and 9th May, a week earlier than last year.

The severity and persistence of winter to within a few days of the Show caused considerable concern as to whether or not the conditions would deplete quantity and diminish quality. Fortunately quality was not impaired, but quantity suffered, but to no serious extent. What saved the day was the fact that the majority of exhibits had come from the protection of glass in some shape or form.

It was remarked that many exhibits should have been in flower one month earlier in a normal season.

Mr. Harold Esslemont of Aberdeen brought a wealth of beauty to the Show and his skill and perfection in growing his plants made the awarding of the major trophies a relatively easy task for the judges. He was awarded The Carnethy Medal, The Elsie Harvey Memorial Trophy, The A. O. Curle Memorial Trophy and The Cooper Bhutan Drinking Cup. The George Forrest Medal was awarded to *Fritillaria gibbosa* (fig. 95), one of the plants included in Mr. Esslemont's group of 3 pans for the Carnethy Medal.

Cyclamen parviflorum, *Dionysiareti aoides* and *Raoulia buchananii* were the group that won him the Elsie Harvey Memorial Trophy and each indicated his quite outstanding skill in the cultivator's craft. Remarkable for their standard of perfection were such other exhibits from the Esslemont "stable" as *Androsace helvetica*, *Androsace pyrenaica*, *Cyclamen libanoticum* and *Saxifraga florulenta*.

Mr. J. B. Duff won the Kenneth Corsar Challenge Trophy, the premier award, with six pans, each one reflecting Mr. Duff's ability to provide not one perfect plant but six and still be able to contest the Carnethy Medal class with three superb plants, and other classes as well.

The enthusiasm and support of the Edinburgh Show by Mrs. Tucker, now of Haddington and an ex-member of the Edinburgh Group, was rewarded by her winning two major trophies, The Boonslie Cup and The Reid Rose Bowl, and her exhibits were of high merit.

I was delighted to notice that Mrs. James Davidson, our immediate past President's wife, had won the Kilbryde Cup with a miniature garden of great charm and, may I say, promising to justify the conditions of the schedule "to show interest throughout the year".

Mrs. Macdonald of Colinton must surely be congratulated on winning The Henry Archibald Rose Bowl, awarded for a collection of plants from the open ground, after such a winter as preceded the Show.

A special Bronze Medal was awarded to Mrs. Whitby of Edinburgh for her achievement in gaining the highest number of points in Section II.

It is difficult to select one plant for special praise ; I dare to offer *Dionysia aretioides* as the most beautiful plant in the Show—a mound of tight leaves studded with miniature jasmine-like flowers.

So much for the winners, but surely a word of praise and thanks to those not in the prize list who made contribution to a most welcome splash of colour and interest.

W. R. ADAMS

GLASGOW

THE GLASGOW SHOW was held on 14th and 15th May, a month or so later than usual, with the result that a good number of plants not normally seen at this Show appeared on the benches. Despite a prolonged cold spell entries were up on previous years and quality over

all was good, with a number of outstanding plants. Particularly encouraging was the number and high standard of entries in Section II. The later Show and the absence of early morning frosts gave a boost to the Rhododendron Section, in which there were many outstanding exhibits.

The Dr. William Buchanan Memorial Rose Bowl for six pans rock plants was won by Mr. John B. Duff, Glenfarg, with well-matched beautifully grown plants. Among them was the rose-coloured form of *Lewisia tweedyi* which was awarded a Certificate of Merit. In his six, also of very great merit, were *Androsace cylindrica* x *hirtella*, covered with small white flowers having the hawthorn scent of the first named parent, *Cassiope* 'Clara Muirhead', a free-flowering easily grown cultivar and the yellow-flowered not too easy cushion plant *Draba polytricha*. Mrs. Sheila Maule of Balerno, whom we were delighted to welcome, was second in this class with a very fine six, of which those noted particularly were *Anchusa caespitosa*, the true plant with clear blue flowers, *Primula aureata*, the excellent Asiatic Primula with yellow and orange blossoms, and *Lewisia* x *phyllelia* the habit of which indicates that it is a hybrid of *brachycalyx* ; *L. cotyledon* is the other parent.

Mrs. M. Clark, Southick, took the Henry Archibald Challenge Rose Bowl with three well balanced pans of *Anemone obtusiloba* var. *patula*, the so-called "Blue Buttercup", *Phyllodoce aleutica* and *Polygala vayredae*, which was absolutely covered by its purple and yellow pea-like flowers. The second prize went to Mr. and Mrs. W. Scott, Eaglesham, who only last year won the Bronze Medal in Section II. Here indeed was encouragement for beginners to graduate to the senior section. Their plants, small but well grown, were *Cassiope* 'Medusa', *Helichrysum selaginoides* and *Gentiana verna*.

It gives great pleasure to record that the William C. Buchanan Challenge Cup for three pans rock plants, rare, new or difficult in cultivation, was won by Mr. and Mrs. Alex. Todd, Bearsden, old friends of that really great gardener Willie Buchanan in whose memory the Cup was donated. Their plants were *Cassiope* 'Medusa', which is sure to be seen more and more on the show bench, the very fine yellow hybrid *Rhododendron* 'Chikor' raised by E. H. M. and P. A. Cox, and *Boykinia jamesii*, notoriously difficult to flower but here bearing three good spikes of blossom. Mrs. Maule was a close second with three plants not known to the writer. They were *Linaria tristis* 'Toubkal' (fig. 96) with grey foliage, small antirrhinum-like flowers cream-

coloured with a dark purple blotch, *Fritillaria conica*, dwarf with yellow flowers shaded green and *Epigaea x intertexta* 'Aurora', a hybrid between *E. repens* and *E. asiatica*. The Crawford Silver Challenge Cup for most first prizes in Section I was won by Mrs. May Lunn, Drymen. Amongst her winning entries were *Salix boydii*, the little willow of Scottish origin, *Gentiana acaulis*, easily grown but difficult to flower as well as this one, and three well grown and flowered rhododendrons, 'Pink Drift', *microleucum* and *racemosum*.

The George Forrest Memorial Medal for the most meritorious plant in the Show was awarded to the Japanese woodland plant *Schizocodon soldanelloides* var. *ilicifolius*, shown by the writer. It was covered by clusters of pink deeply fringed bells over bronze-green leaves. This plant, nine years old, growing in a peaty soil, requires plenty of water in the growing season and partial shade in summer. It is easily raised from seed, which sets freely, but it takes four years or so to reach flowering size.

Mr. John B. Duff gained first prizes with *Androsace imbricata*, *Cassiope* 'Edinburgh' and *Gypsophila aretioides* var. *caucasica*, all in very good condition, and Mrs. Sheila Maule took awards with very fine plants of *Saxifraga florulenta*, not in flower, but a good rosette some 3 inches in diameter, *Raoulia hookeri*, *Primula aureata*, *Lewisia leana* and two unnamed species of *Fritillaria*, both having green flowers with brown shading. The dwarfier of the two, only some 3 inches high, was particularly attractive. Mrs. W. Maclean, Bearsden, was again amongst the ticket winners with various *Tulipa*, *Fritillaria meleagris*, *Cassiope mertensia* var. *gracilis* and the rare *Rhododendron diacritum*. Mr. Bob Easton, Greenock, also showed the skill with which he grows stonecrops and houseleeks. Amongst his prize-winning exhibits were *Sedum dasyphyllum*, *S. spathulifolium* 'Purpureum' and *S. spathulifolium* 'Capablanca', *Sempervivum ornatum* and *S. erythraeum*.

It was pleasant to note amongst the prize winners Miss Margaret Nicolson, Bearsden, who does so much excellent work for the Glasgow Group. Notable amongst her plants were *Sedum pilosum*, *Sempervivum laggeri* and *Daphne retusa*. Another stalwart of the Group, Mr. Angus C. Small, was also among the tickets with *Vaccinium vitis-idaea*, *Abies balsamea* var. *hudsonia*, *Thuja occidentalis* 'Rheingold' and a container arranged for effect, depending mainly on stonecrops and houseleeks.

In addition to winning the Henry Archibald Challenge Rose Bowl

Mrs. M. Clark gained prizes for *Leucogenes leontopodium*, a very fine plant but not in flower on this occasion, *Meconopsis quintuplinervia*, *Fritillaria meleagris* and *Gentiana acaulis*. Mrs. Ellison Clark, Kirkgunzeon, again figured in the prize list with *Veronica pulvinaris*, *Homogyne alpina*, *Ranunculus x arendsii*, *Corydalis cashmeriana* and a fine fern, *Adiantum pedatum* 'Nana'.

The writer was fortunate enough to win first prizes with *Cassiope wardii*, *C. selaginoides*, three different Sempervivums, *arachnoideum* 'Jubilee', *grandiflorum* and *soboliferum*, *Chamaecyparis obtusa* 'Hypnoides' and the European alpine fern, *Asplenium septentrionale*.

Before leaving Section I, mention should be made of *Rhododendron* 'Carmen' shown by Mr. and Mrs. W. Scott, to whom reference was made earlier. This was a beautifully grown plant with many buds just beginning to open at judging time. By the next day a good number of the dark crimson flowers had fully expanded and had the judges seen it then the plant would have been better placed than third.

As noted earlier, the standard of entries in Section II was high and in most classes competition was keen. All the more credit, therefore, to Mrs. J. Stead, Thorntonhall, who gained the Wilson Trophy and Bronze Medal for most points in this section. Amongst her many good plants particularly note-worthy were *Lewisia howellii*, *Viola grisebachiana*, *Cassiope* 'Clara Muirhead', *Primula longifolia*, *Ranunculus amplexicaule* and *Anacyclus depressus*.

Mrs. Elizabeth Ivey, Dalry, showing for the first time, had entered some well grown plants which indicated that she, as well as Mrs. Stead, has the skill to compete with success in the senior section. Her best plants were *Cassiope* 'Clara Muirhead', *Lewisia* 'George Henley', *L. cotyledon* and *Primula* 'Linda Pope'. In addition she took a first prize for a container in which she had planted, very effectively, lewisias, Cassiope, *Morisia hypogaea*, houseleeks, a conifer and mossy saxifrages.

Mr. Ronald Jewer also had a number of well grown plants amongst the prize winners which would not have disgraced the senior section. Those noted were *Dianthus glacialis*, *Saxifraga aizoon*, a very dark blue *Gentiana verna*, a well budded *Sedum spathulifolium* 'Aureum', the best of this "tribe", and a Sempervivum labelled 'Ornatum' but which was much too dark to be that hybrid. Mr. W. L. Morton had a number of nicely grown plants. Among them were *Salix boydii*, *Anemone pulsatilla* 'Rubra', *Fritillaria meleagris* and *Rhododendron* 'Pink Drift', a very fine hybrid which was well budded.

Mr. B. Kos won all the classes for Auriculas and a Certificate of

Merit for a non-competitive exhibit. The plants were in excellent condition and well flowered. Two which deserve a special mention were 'The Golden Touch', a very fine yellow, and 'Lovebird', a most attractive grey, edged with black.

On this occasion there was only one Trade exhibit, but it was a very good one put up by Miss J. G. M. Izat, Grovemount Alpine Nurseries, Montrose Road, Auchterarder. She made most effective use of synthetic stone which set off her plants beautifully. Among the well grown plants were *Viola rupestris* 'Rosea', *Lewisia cotyledon* hybrids, rhododendrons *pemakoense* and *williamsianum*, primulas 'Faldonside' and *gobelii*, *Dodecatheon pauciflorum*, *Bellis* 'Dresden China', *Lewisia tweedyi*, *Anemone blanda* and *Phyllodoce caerulea*. Miss Izat worthily earned the Gold Medal awarded to her by the judges, Mr. Alfred Evans, Mr. John L. Mowat and Dr. Henry Tod, to whom we were deeply indebted for giving of their time and the benefit of their extensive knowledge of rock garden plants.

A word of commendation is due to the many willing workers who helped to make the Show the success it was, with a very special thank you to Miss Margaret Thomson, our Secretary, who had organised everything down to the smallest detail and who although sorely tried at times by late entries, the writer being one of those guilty, kept smiling and serene through it all.

D. L.

PENICUIK

UP TO a week before the 1969 Penicuik Show was held, the winter had been so hard and prolonged that there was doubt as to whether or not the Show should be postponed. To change the date, however, would have caused very considerable difficulties, so that a sudden spell of relatively warm and sunny weather seemed to make it possible to hold to the original date of 8th March.

Appearances were deceptive, however, for the Show was cut to rather less than half its usual size as many of the regular competitors were still either snowed in or the ground was frozen solid. The result of this, coupled with the very late season, meant that less than half the usual number of exhibitors entered. The Midlothian and Peeblesshire section was worst hit, and the open section, usually well contended, was very much reduced. Those plants which were entered, however, were of good quality and in fine condition, so that the Show, although small, was colourful, interesting and good.

The Forrest Medal was awarded to the same superb plant of *Saxifraga x jenkinsae* which won it last year. It was exhibited by Mr. Duff of Glenfarg, whose *Cyclamen coum* var. *album* gained a Certificate of Merit as runner-up. Mr. Duff also won the Midlothian Bowl for the highest number of points. A very beautiful and well-grown pan of *Iris sindjarensis* won the Midlothian Vase for Mrs. C. E. Davidson for the best plant in Section II, while Mrs. Cormack was awarded the Adjacent Counties Medal.

A Gold Medal was awarded to the Edrom Nurseries for a display of plants in pots. Among a number of delightful pans of bulbs on this stand was a notable one of *Cyclamen*; this was a very good clear shade of red, almost entirely devoid of the bluish tinge which is so often seen in these blooms. Good *Cyclamen* were quite a feature of the Show, ranging from a very small un-named species (or variety?) collected from the Zigana Pass by Mathew & Tomlinson and shown by the Show Secretary, through various forms of *C. pseud-ibericum* to Mr. Duff's large plant of *C. coum* var. *album* mentioned earlier.

Saxifrages were late this year, but some really excellent specimens were exhibited. There was a particularly fine pan of *S. burseriana* 'Major' and some splendid entries of *Iris* and *Crocus*. Very few *Primulas* were on the benches, but Mrs. Simson Hall showed a pan containing notably well-grown and well flowered *Primula allionii* 'Praecox'.

Miss Leven of St. Boswells exhibited a very striking plant of *Hepatica triloba*. This could almost be termed a new colour-break in this species for the shade was nearly royal blue—a really strong colour. The flowers were of good size, form and texture and had what was a suggestion of a pale stripe down the back of each petal; altogether a most attractive form.

Two pans of *Dionysia tapetodes* were shown in full bloom. This must surely be the tiniest of the dionysias, but it is a cheerful-looking little plant with its bronzy-green cushion and tiny brilliant yellow flowers. Another fascinating group of plants which have been recently reintroduced from Turkey and Iran are the fritillarias. *Fritillaria acmopetala* (a gawky plant), *F. kurdica*, *F. pinardii* and *F. sibthorpiana* were all represented at the Show and the last three—neat, small and of strangely beautiful colourings—attracted a lot of attention.

The Penicuik Society's Bulb and Industrial Show filled the rest of the hall, which was nearly jammed to capacity with visitors most of the time and, as usual, the Ladies' Committee teas were much appreciated—and were actually sold out before the end of the Show!

HENRY TOD, *Hon. Secretary and Show Convener.*

PERTH

WITH a season three weeks behind, prospects looked bleak for the Perth Show held on 1st and 2nd May. In vain members looked for plants that should have been forward and might be out in time. The weather did not improve, however, and many potential entries just could not be exhibited. Nevertheless, the Secretary's willing helpers went ahead with preparations and on the first day a wonderful display of plants was put up by members from Perth, Dundee, Aberdeen, Fife and Edinburgh. They provided a Show equal in quality and quantity to those of previous normal years. Invariably the hall has to be kept cool for the sake of the plants, but on this occasion two heaters had to be supplied for visitors. The Judges were Mrs. W. G. Knox Finlay, Keillour Castle, Methven; Dr. Henry Tod, Roslin, Midlothian, and Mr. James R. Aitken, Orchardbank Nurseries, Perth.

The George Forrest Memorial Medal for the best plant in the Show was awarded to an exceptionally well grown pan of *Douglasia vitaliana* (fig. 97), shown by Mr. A. S. Watson, 11 Lawside Terrace, Dundee. The prize for the six pan class went to Mr. J. B. Duff, now of Langfauld, Glenfarg, and his entry consisted of *Primula* 'Marven', *Lewisia tweedyi* 'Rosea', *Pleione pricei*, *Kalmiopsis leachiana*, *Saxifraga diapensioides* 'Lutea' and *Androsace imbricata*. Mr. H. Esslemont of Aberdeen won the three pan class with a particularly good hybrid of *Primula rubra* (collected near Macugnaga), *Draba mollissima* (fig. 98) and *Trillium rivale* (fig. 99); the last plant also received a Certificate of Merit. Second in the three pan class came Mr. J. B. Duff, and Mr. J. D. Crosland of Torphins was third. Mr. J. D. Youngson, Convener of the Perthshire Group, carried off the Middleton Trophy for most first prizes in Section I. He showed a fine plant of *Phlox nana* var. *ensifolia* (fig. 100). Also outstanding in the open section was Mr. Duff's plant of *Cassiope* 'Clara Muirhead' (fig. 101).

Mr. J. H. Rorie of Dundee obtained a Certificate of Merit for *Corydalis cheilanthifolia* (fig. 102). Competition for the Bronze Medal was so disappointing that no award was made this year, but in the classes for conifers rivalry was very keen indeed.

Mr. Aitken's trade stand, artistically constructed, displayed plants of a very high standard and was attended by Ronnie Greer and his wife.

The Show Secretary, Mr. R. J. Brien, put on an interesting demonstration for beginners, illustrating seed sowing techniques. This was done in conjunction with the Club's Seed Distribution Scheme and resulted in a very large sale of surplus seeds.

Despite most unfavourable weather there was a good attendance, particularly of Club members. Thanks are due to all who rallied round, and especially to those competitors not specifically mentioned in this report but without whom the Show would have lost much of its appeal. Also appreciated were the efforts of Mrs. Barrie and the members on the tea stall.

Mr. John Watt, who is a near neighbour of Mr. Brien, has agreed to take over as Show Secretary at the next Perth Show, which will be in two years' time. Mr. Watt has provided the photographs for the *Journal* and records of the more meritorious plants at our last two Shows.

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We understand that this difficulty is not insuperable. Permission has to be obtained from the Exchange Control in the first place and evidence has to be supplied of the existence of the Society and its membership fees. Having secured sanction, the member obtains a draft from his Bank and forwards it to the Society. In practice it would probably be best first to consult one's Bank, which could supply advice and the appropriate forms.

The annual subscription is 3½ dollars, or 10 dollars for three years if paid in advance, and the Secretary, who will send further particulars, is Richard W. Redfield, P.O. Box 26, Closter, New Jersey 07624, U.S.A.

In addition to its *Quarterly Bulletin*, the American Society has a Seed Exchange in operation.
