

The Journal
OF
The Scottish
Rock Garden Club



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of
The Scottish
Rock Garden Club

EDITED BY
KENNETH CHARLES CORSAR

No. 7 - 1950

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THE SCOTTISH ROCK GARDEN CLUB

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CATALOGUE ON REQUEST

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Editor's Notes.

The popularity of Alpine plants and the hobby of rock-gardening continues to increase. This is borne out by the large number of members of the general public who paid for admission to our 1949 Shows, and it reimposes a duty on the Scottish Rock Garden Club. It should be the aim of all our Members to assist others in their choice of plants, and thereafter in their cultivation, both of which can be achieved by welcoming visitors to their gardens. The conception of membership of a society as being educational is, perhaps, novel, yet it is very true. A flower show is, and should be educative as well as competitive. Those who are not intimately acquainted with rock garden plants may often wonder which are the best species to grow, and this information cannot readily be acquired from books and catalogues where the descriptions, no matter how carefully worded, are not always easy to follow. But a visit to a show devoted to such plants generally provides an answer, and, at the same time, will indicate what species and varieties are available.

The educational activities of any specialist society may benefit a very much greater number of people than those who merely attend local shows, and in fact a high proportion of members join societies for no other reason than to receive their publications. Much of the available information on particular subjects is to be found nowhere but in the issued literature of such bodies. The S.R.G.C. plays its part in the dissemination of knowledge through the pages of its Journal, a publication which, we venture to suggest, now occupies a place among the leading horticultural publications of the day. It is, and always has been, the policy of the Club to give to its members a Journal of real quality both as regards the authoritative nature of its articles and notes and in the quality of the paper on which they are printed and the illustrations which go with them. Much effort and no little expense, has been incurred in the attainment of this object, and the thanks of all readers should be extended to the contributors and others who have made our "Journal" what it is. We claim that the expense incurred has been fully justified.

Coming also under the heading "Education" have been the several lectures arranged by the Club, and delivered by some of its leading members. These lectures have undoubtedly brought new rock garden plants to the notice of all who attended, and have presented much valuable information on their cultivation and pro-

pagation. The visits to gardens and the meetings, arranged by some of our County Representatives, have done much to stimulate interest in, and increase knowledge of, the construction, care and maintenance of rock gardens; and in this connection we must never forget the debt which the Club owes to the Regius Keeper and the staff of The Royal Botanic Garden, Edinburgh, for the assistance which they have invariably given in so many ways.

Thus it will be seen that the S.R.G.C. is much more than a collection of enthusiastic plant growers drawn together solely for the purpose of holding competitive exhibitions amongst themselves; it is a body striving, with quite considerable success, to encourage others to pursue their own particular hobby, to learn from practical experience how to grow all classes of rock garden plants, and to pass on this knowledge to others. The object for which the Club was founded, as set out in the first paragraph of its constitution, will be constantly pursued.

Members of the Club will learn with regret of the resignation of its Honorary Treasurer, and it is only right that the very great services rendered by Mr Campbell should be put on record in the "Journal." Appointed to the joint offices of Secretary and Treasurer in October 1938, he carried the whole weight of the administrative work of the Club throughout a period of expansion and difficulty. This, however, became more than one man could find the time to carry out, and in November 1947 the offices were separated, Mr Campbell retaining the exacting post of Treasurer and handing over the secretarial duties to Mr Livingstone; now pressure of work has compelled him to relinquish office altogether. In Mr Campbell the Club had an ideal official—efficient, tactful and punctual in attention to correspondence. His accurate mind enabled him to resolve difficulties and express his views clearly on all occasions when his advice was sought; his enthusiasm was a great stimulus to others. Mr Campbell will be greatly missed in the councils of the S.R.G.C. and we tender our thanks for all that he has done.

K.C.C.

Our Shows, 1950

GLASGOW—Central Hall, 11th, 12th and 13th April.

DUMFRIES—Y.M.C.A. Hall, 19th and 20th April.

EDINBURGH—Waverley Market, 2nd, 3rd and 4th May.

ABERDEEN—Music Hall, 12th and 13th May.

PERTH—Lesser City Hall, 31st May and 1st June.

I Build a Rock Garden

By PHILIP CROW.

WHEN I started to make my rock garden four years ago the idea of introducing water was always in my mind, but the section which I first developed did not lend itself to the introduction of water unless in the form of a series of little falls. I made my valley as a natural feature of the rockwork, and the four foot cliff rising from its apex still cries for its waterfall to cascade into a pool below. Alas, the expense of introducing running water was more than I could afford.

At last I felt I must make my "little stream" picture as a feature on its own. If I could not have a running stream, I could have the pool section of it and the fretted rocks and flowers. It would therefore need to be a pool of unusual shape and, above all, a clear and sparkling pool, not one muddied by earth and green with scum, in which water lilies grow, but one that would sparkle and throw back every shade of blue from the changing skies.

There was only one possible site in my garden for the project which was in my mind. Its formation, let me add, was in no way helpful, consisting of two small lawns divided by a path, the whole on a gentle slope from left to right. To introduce water into any rock-gardening scheme it is essential that it should appear as if nature had placed it there. In other words, there must be a natural fall in the land from various directions which would cup the moisture and drainage and hold it there.

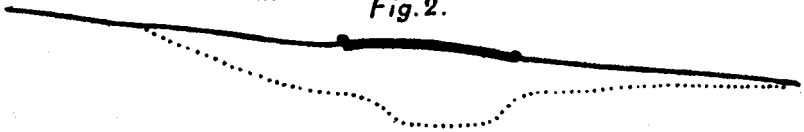
Accordingly I had to reverse the slope of the ground on the right and make it fall from right to left. The old path line was removed, and I continued this fall to as near the *highest* point of the left hand lawn as I could. This gave me not only the land formation to allow the water to appear, but gave me the degree of

boldness at which I aimed. Perhaps the diagram below will assist in conveying to the reader the transformation which I was attempting.

Fig. 1.



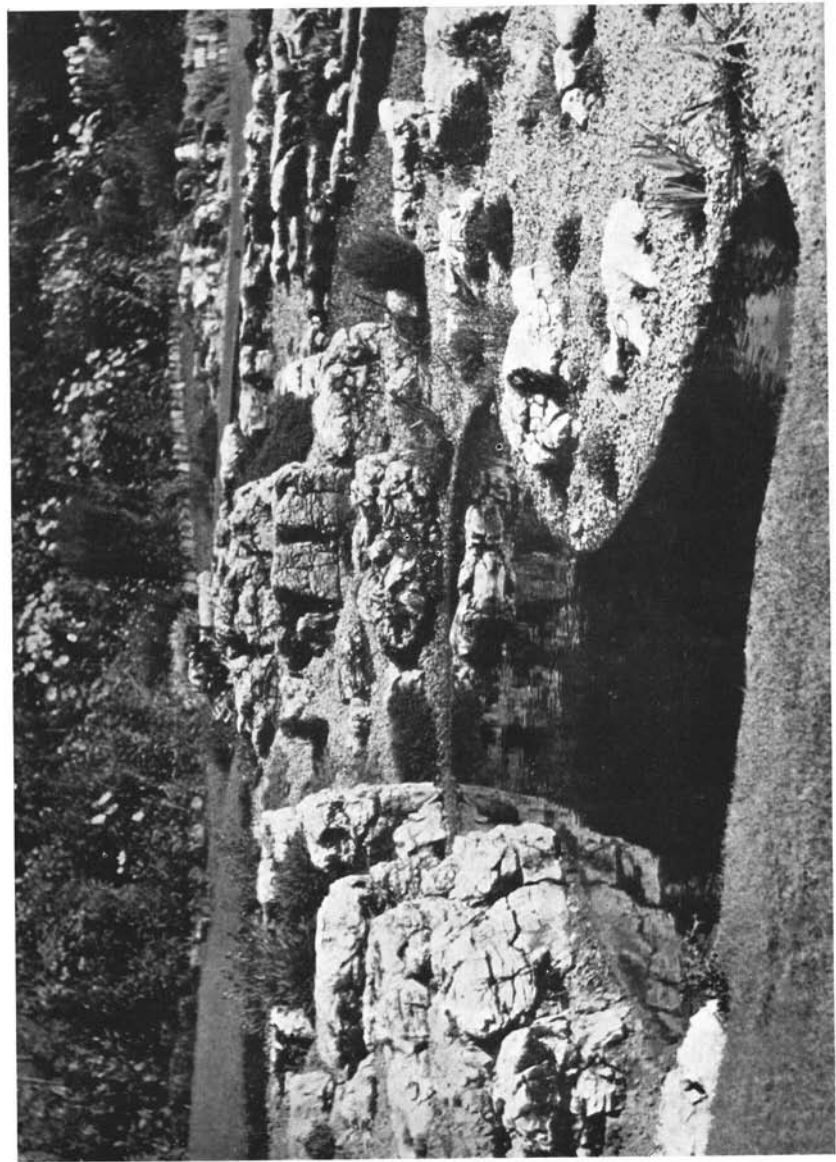
Fig. 2.



The second diagram shows another way in which a natural fall could have been arranged. This would have required much less soil removal, but the result, I felt, would have been insipid, as it would not have allowed that strength or boldness which alone makes pieces of rock-work effective and a pleasing picture, whether clothed with flowers in spring and summer or devoid of them in winter.

Having now reached my new ground levels, I arrived at my most serious problem—the construction of the pool itself. Roughly speaking, the shape would approximate to a figure eight. Now, there are no difficulties confronting the amateur in making a square pool provided he can obtain or borrow the necessary wood to shore up the sides. Concrete, as most readers will probably know, does not adhere to wood, so that with a square pool it is simply a case of dropping the concrete down between the boards and the outer soil of the hole, removing the boards when set, and the sides are complete.

Unfortunately, no such simple arrangement would solve my problem. Firstly I had struck solid rock less than a foot below my new ground level. In this I thought myself lucky at first. I should have a naturally rocky bottom, a much more pleasing effect in a clear pool than a concrete one. I should also save myself a very considerable quantity of cement, which



MR CROW'S ROCK GARDEN

was, and still is, very hard to obtain. What I did not realise was that I was attempting one of the real difficulties of the concrete worker in getting a water-tight joint between concrete and rock. For anyone who might meet similar conditions to mine I should say that the solution lies in starting the jointing surface with pure cement, worked in with a coarse brush. The concrete should be laid on top of this cement paste before it has any chance of drying out.

To form the walls of this irregularly shaped pool I had to find material of a pliable nature to support the curving sides. I found that linoleum, no matter how worn out, was the ideal material. However, I could only find a very small piece of this, and had to improvise with cardboard, and with even the strong paper of the cement bags themselves. These materials, when upright, had to be supported from the inside in order to hold the concrete in place as it was dropped between these flimsy uprights and the earth sides. I found the linoleum firm enough in itself to require only such irregular support as lumps of stone and rough wood. With the more flimsy materials, such as cardboard and paper, it was necessary to build up more solid support in the form of loosely built bricks. It will be recognised that all this clutter of material *inside* the pool left very little room for working, but I soon found how quickly the walls became sufficiently set to be relieved of their supports, and these latter re-utilised for a further stretch of wall building.

Looking back on my poor makeshift materials, and my various processes of trial and error, I feel these few notes may help some reader with an urge to build his or her own pool. A few straight pieces of wood and a spirit level are the only other things necessary. These are required for checking the final levels of the edges.

I was unable to buy any waterproof cement for the final inside wash to seal up the slightly porous concrete sides. I was recommended, however, to try mixing a little linseed oil with pure cement for the purpose, and this has proved entirely satisfactory. If

any reader should wish for guidance on any other detail or difficulty, I should be very pleased to give (within my own small knowledge) any advice I could.

With the finishing of the pond there followed the building of the rockwork to complete the picture. For this work I had ordered limestone ; no stone equals it in character and appearance. I had already put on to paper the rough plan showing the position of primary and secondary joints. I cannot overstress the importance of fixing first these basic principles of nature. If they are followed the final effect will be pleasing to all who look upon it. Not many could explain perhaps why they are thus so pleased, but in following nature we achieve harmony, so that nothing jars in the final picture.

With the aid of my plan I was quickly able to fix with sticks the position of rock and open space on the ground. I was soon rolling my rocks into position, taking care that the tilt of the strata was maintained throughout the building. I found that with two strong boards my assistant and I could roll rocks of even two and three hundredweights into position, the final tilting being done with a pinch bar as lever. It is not easy however to pick a stone from a great heap and be sure it will fit into the building scheme. In this work one has to be very severe with oneself and helper. It is hard, after much toil and labour in positioning a stone, to reject it and try another. I would, however, plead with any builder of rockwork to resist the temptation of leaving a stone unsuited to its position because of the labour involved in removing it—thus doubling and in fact trebling the initial effort. If one wrong stone is left, it will marry up with others and so repeat its own incongruity either of shape or stratification, and again that harmony for which we stress will be lost.

The photograph shows the final effect. It is taken in the wrong light unfortunately, but may suffice to give a fair idea of the general effect.

The planting scheme has only recently been completed. It will take another season for these planted

at the water side to spread over the edges and so cover the hard concrete edges.

I have planted this pool area with late flowering subjects, so that while there is sufficient spring bloom to keep it interesting, the main display is during July, August and September. For this I use, in the main, the yellows of *Achillea Lewisii*, *Patrinia palmata*, the scarlet and crimson of *Dianthus* "Spark" and *Dianthus* "Mars" and *Mimulus* "Whitecroft Scarlet," the blues of *Gentiana Freyniana* and *septemfida*, *Cyananthus integer* and *lobatus*, and *Veronica armena*, while right at the front the eye is startled with the amazing soft Cambridge blue of that beautiful newcomer *Gentian X Devonhall Seedling*. To add to their softer blending tones are the mauve-blue tints of *Campanulas pusilla*, *Jenkinsii*, *Raineri* and *pseudo-Raineri*, *Platycodons grandiflora* and *Mariersii*, the pinks of *Gentiana Farreri*, *Erodium Reichardi roseum fl. pl.* which, incidentally, is still in full bloom with me as I write this on the 17th November. The light colour of the rocks does not call for the extensive use of white flowers, although I use *Campanula nitida alba* and the soft cream of *Astilbe simplicifolia*, while I find the two tones of *Anacyclus depressus* particularly attractive. As a frame to the higher rocks in the background I have successfully used *Incarvillea grandiflora*, *Onosma tauricum* and *stellulatum*, *Oxalis floribunda rosea* (also still in bloom), *Crepis incana*, and, most striking of all, perhaps, *Anchusa caespitosa*.

I have particularly mentioned this group of late flowering and long flowering subjects because too many of us, carried away by the joys of spring, fill our rock gardens with the equally charming early blooming plants, and suffer from a lack of effect and loss of interest later. I hope this list may prove helpful to those who would like to extend the beauty of bloom in their gardens. I have only referred to those plants with late flowering qualities in this one section of my garden. The list could very easily be trebled, which should serve to refute the criticism sometimes levelled that rock gardening is only of interest in the spring.

A Journey in Sierra Nevada

By VERNON H. HEYWOOD, B.Sc.

THE following are some notes on part of an expedition made to Spain during June-September, 1948, under the aegis of the Royal Horticultural Society, in whose Journal a full account will be published later.

I travelled with Mr Peter H. Davis. Most of our time was spent in the Andalucian provinces and at a season which, if ideal for plant- and seed-collecting, was not the most pleasant for travelling. A few words about the climate of Andalucía would be in place here. In June-September it ranges from hot to very hot, with temperatures of 30-40°C., but humidity is low; rainfall in the same period is generally so sparse as to be ignored, although torrential thunderstorms are not unknown, and in the high mountains early morning mists can be quite unpleasant. Andalucía is, after all, "Sunny Spain" *par excellence*, if not so luxuriously fertile as travel-books would have us believe; the famed acres of olives, orange-groves, vineyards and terraces of figs are indeed there, but much of the land is barren, unproductive steppe, as desolate as one would care to see.

The plants of Spain have lost none of their attraction; they still intrigue and excite with a fascination akin to the Andaluz's character. It is always a matter of wonder that such a rich hunting ground as Andalucía, almost on our doorstep, should remain to this day in large measure unexploited horticulturally.

We arrived in Granada by the mail train one breathless day, and having piled our presses and other collecting gear on to a one-horse wagon trotted into the Puerta Real in search of a hotel with plenty of balconies for our prodigious quantities of pressing-paper. This accomplished, we made our preparations for a sortie into the Sierra Nevada, the gigantic snow-tipped range of black schist which towers threateningly

above the town. As our expedition was, in a sense, an official one, we sought out the *Ingeniero Jefe de Montes*—the Chief Forester—and after much delay and argument transport was arranged. Very early on a July morning we boarded a *tranvia* (something between a tramcar and a train) which took us to Cajar, where three mules, each with its inevitable muleteer, awaited us. Well loaded, we set off on the long ascent to the Albergue Universitario at 2, 195 m.s.m. (Granada itself is 670 m.s.m.). The climb from Granada to the heights of Sierra Nevada is, by its very contrasts, a fascinating and instructive experience; at the foot sugar cane, tropical fruits and flowers luxuriate, and after transitions through regions of citrus fruits and olives, of wheat, potato, and rye, of cherries, walnuts, and chestnuts, and above the evergreen and deciduous oaks, one arrives at the Alpine zone. There in the vast micaceous and schistose scree, in the granitic rubble, and in the spongy turf soaked by the melt-water from the perpetual snow sheets, grow rock-plants and Alpines to suit the most discerning taste.

At the beginning of our journey the low walls were coloured by the blue sprays of *Trachelium coeruleum* and pink masses of *Putoria calabrica*; countless Labiates and Scrophulariads—Thymes, Ballota, Teucrium, Linaria, Chaenorrhinum—in crumbly brown fruit were all that remained of the Spring flora. *Catananche coerulea* still showed its violet-blue heads and the dark-green shrubby *Digitalis obscura* covered with orange-red flowers was, in places, quite frequent on the basic soils. Higher up on loose limey scree we saw *Thymus granatensis* var. *longiflorus*—an exceedingly attractive plant, low-growing and almost creeping, with tiny grey leaves, large-bracted spikes from which project very long corolla-tubes of pink or purple, thus rivalling a *Pseudothymbra* thyme. With it grew tiny plants of *Helianthemum Fumana* var. (*Fumana ericoides*) still with a few yellow flowers, the twiggy white-topped *Arenaria armerina* var. *elongata*, and an attractive *Physanthyllis* in fruit.

In a few hours we reached the slopes of El Dornajo, which rises to 2,124 m.s.m. This limestone outcrop

supported a typical calciphilous flora including *Thymus granatensis* var. *longiflorus*—very fine colour-forms—in great profusion, and silvery carpets of *Convolvulus nitidus* just coming into full flower. The large stemless cups of the *Convolvulus* varied from all white to a quite definite and highly desirable pink. I wonder how many gardens possess this treasure nowadays; it is no means as uncommon as Farrer believed, occurring as it does in several Andalucían and Murcian ranges apart from Sierra Nevada. In the Sierra de Cazorla (Prov. Jaén) it can be seen in almost unbelievable profusion associated with that overlooked Scabiosad *Pterocephalus spathulatus* on the steep sun-baked scree of the Cuerda de las Moras not an hour's walk from Cazorla itself. On the slopes of the Dornajo *Phlomis crinita*—a mass of white wool from top to bottom, relieved only by its tawny hoods—was dotted about here and there.

Before long we were off the limestone, and *Digitalis purpurea* var. *nevadensis*, a sure acid-soil indicator, appeared in the piles of slate and schist. This Foxglove is a problem: at times it can look (and probably is!) indistinguishable from *D. purpurea*, at others it appears as a charming dwarf quite suitable for the rock garden. It has an Alpine form which is found at about 10,000 feet below the peak of the Veleta. Here the flowers appear extra long and large in comparison with its diminutive stature, and are rather more pink than in the typical form. How *D. purpurea* var. *nevadensis* behaves in cultivation I do not profess to know, but if grown near typical *D. purpurea* it would, I expect, soon lose its identity by hybridising. Plants which are now being raised in the Royal Botanic Garden, Edinburgh, should answer these problems.

Beyond El Dornajo we followed the Carratera de Sierra Nevada along the heights overlooking the Barranco de San Geronimo. From the edge of the roadway loose schist sweep down the sides of the Barranco where it is stabilised by dwarf Juniper, *Erinacea Anthyllis*, *Ptilotrichum spinosum*, *Genista spp.* etc. There were few plants along the Carretera: *Digitalis nevadensis* was the most frequent and pink



CONVOLVULUS NITIDUS

[Photo., V.H.H.]



PUTORIA CALABRICA

[Photo., P. H. Davis]



DIGITALIS OBSCURA

[Photo., P. H. Davis



SIERRA NEVADA: ALBERGUE, AT PEÑONES DE SAN FRANCISCO

[Photo., V.H.H.

forms of *Ptilotrichum spinosum* were as common as the usual white forms.

By early evening we reached the Albergue sheltered below the Peñones de San Francisco (Fig. 4)—a desolate spot. In the background lies the zeppelin-like dome of the abandoned *Refugio*, and as far as eye can see stretch great screes and mounds and hills of schist, all shades of grey and black. The majestic Picacho de Veleta, black against the sun, lies Sphinx-like in the distance, surrounded by snow fields. Having unloaded the beasts and drunk a glass of *anise* with the muleteers—an invariable part of the bargain—we had a quick look round the Albergue. Soon we were mixed up with the intricacies of *Dianthus brachyanthus* and *Arenaria armerina* vars., but these we left till the morrow.

Next morning we packed a picnic lunch and, complete with flower-presses, vasculum, cameras, and trowels, we made our way at a leisurely pace to the Laguna de las Yeguas. Beyond the Albergue extends a vast scree of schist and limey rubble where a profitable hour was spent collecting some of the countless Alpines that covered our way. The lilac-pink tassels of *Jurinea humilis* arising from stemless rosettes looked quite attractive, although the genus as a whole has not produced much for the rock garden. It was at this locality that Boissier first discovered *Erodium cheilanthifolium*, a species common also on several other southern Spanish ranges. Here the silvery leaves are quite free from glands and the whitish or pale-pink flowers veined with purple, the upper two petals blotched a dark carmine, appear from June onwards. *Tanacetum (Pyrethrum) radicans* crept about the screes sending up its bright lemon-yellow rays on slender curving stalks. Its finely divided leaves are a silky grey merging into the schist, and the whole plant is only a few inches high. This Nevadan Composite deserves more attention than it gets from Alpine enthusiasts, although sources for it must be rare. In its native habitat it is frequently shy of setting seed, but in cultivation this does not appear to be the case. A charming miniature Crucifer which hides among the

schist is *Ptilotrichum* (*Alyssum*) *purpureum*. The silvery patches, which may be as small as an inch across, are topped with modest heads of dull purple or brighter pink. I doubt if it has ever been in cultivation, but seed collected last year should establish it as a "highly desirable." Further colour was provided by *Teucrium flavescens* var. *aureum* and other species, by *Armeria splendens*, a dwarf pink-flowerer, various Thymes and Toadflaxes, as well as the ubiquitous varieties of *Dianthus brachyanthus*, *Arenaria armerina* and *Arenaria tetraquetra*.

A gentle incline led up from the scree to moister ground watered by the melting snows. At one point a yellow colouring on the hillside caught the eye: on investigating we found the withered yellow flowers of what looked like a *Douglasia*, quite unexpected on this southerly range. It did, in fact, prove to be *Douglasia Vitaliana*, the only European member of this Primulaceous genus. As we neared the snow, *Plantago nivalis* appeared in the moraine as thousands of silvery-white rosettes flecked with black and yellow flowers. With it grew *Viola nevadensis*—perennial clumps of rounded leaves which flourish in fairly dry rocks, screes, or even, as here, in slow-moving melt waters. This Alpine pansy is another of Spain's neglected treasures; late fruiting (about September) probably explains its absence from our gardens. The flowers, which are profusely borne, are generally a shade of deep lavender or blue with a distinct yellow eye, but I have noted all-white and all-yellow forms.

Higher up at 10,000 ft. we came to the Laguna de las Yeguas, a magnificent Alpine lake lying below the slopes of the Veleta. The emerald-green waters, surrounded by an amphitheatre of snow-edged mountains, cascade south to become the Rio Dilar, joining the Rio Genil after the latter has flowed through Granada. Carpets of buttercups grow here: *Ranunculus acetosellifolius*, a choice species with fleshy leaves like Sheep's Sorrel, and quite large solitary white or pink-flushed flowers; *Ranunculus alismoides*, a smaller species with narrow pointed leaves and snowy white cups borne on short stalks; and *R. demissus* var. *hispanicus*, equally

as small as *R. alismoides* but yellow flowered with pale-green divided leaves.

By the edge of the torrential waters of the young Rio Dilar, *Gentiana verna* covered the seeping turf with sheets of the most unbelievable intense blue stars centred with white. There was "questioning" this form—one could not hope for better. *G. alpina*, growing not far off, failed to impress after this spectacular show, although it is, in itself, a handsome enough plant.

There are other Gentians in Sierra Nevada, among them being *G. Pneumonanthe* and *G. glacialis*, but the most elusive is *G. Boryi*. The first difficulty about finding it is that it hardly looks like a Gentian at all: so small are the plants that they scarcely make themselves visible in the Alpine grass; as to the flowers, Farrer's "not very large" is an understatement—they are positively tiny. Their colour is pale blue or whitish with a yellow tube, and the folds between the five lobes are so produced as to give a ten-pointed appearance. This weak colouring is deceptive, giving the whole plant the appearance of an Alpine Arenaria.

I will not describe the long and, at times, ridiculous search for the Gentian with ten points—it is sufficient to say that about twenty Spanish holidaymakers formed search parties for it, an ancient shepherd was not dismayed ("ten points?—I will find you one with twelve, thirteen, even fifteen points!"), the Professor of Botany in Granada was drawn into consultation but did not know the plant, and finally, when the now famous *Genciana de diez puntos* was run to earth in the Borreguiles de San Juan, there was a great rejoicing. A few days later there appeared on the back page of the Granada daily paper "Ideal" a headline: "REMARKABLE DISCOVERY BY ENGLISH PROFESSOR OF BOTANY . . ." To this day I do not know who supplied the press with the wildly-exaggerated account which filled two long paragraphs below this headline; three days' search had become three years, and I had become Professor of that mythical establishment, the Royal Botanic Garden of Great Britain . . . But Spain is like that.

Yet another miniature found on these high meadows was *Vaccinium uliginosum* var. *nanum*, a creeping pale pink-flowered Whortleberry with blue fruits, which is supposed to grow also in Greenland and Iceland. I think myself that the Nevadan plant has been confused, but whatever its identity it would make a welcome addition to cultivation.

Two more plants of the schistose areas of Sierra Nevada must be mentioned: *Chaenorrhinum glareosum* and *Linaria glacialis*, both growing on the roadway immediately below the peak of the Veleta. The former makes a perennial compact fleshy-leaved mass of a few inches high, covered with disproportionately large violet purple or pink two-lipped flowers. It is exceedingly rare, occurring in isolated groups here and there, making bright patches on the scree. The *Linaria* is unfortunately an annual, but a most bizarre creation, with giant flowers lying more or less sessile in whorls of fat leaves. The colouring, if not beautiful, is quite intriguing—silvery blue glaucous leaves, sordid mauve or lilac corollas with a yellow lower lip.

Standing on the summit of the Veleta you can see on a fine day across the Mediterranean to the mountains of the Rif, their peaks projecting above the haze. Looking inland, a panorama of mountains stretches to Gibraltar, to the Sierra Morena, and to the coastlands of Murcia. The few plants growing on this imperial viewpoint included the endemic *Saxifraga pubescens* ssp. *nevadensis*, making neat clumps of pink or white, and *S. oppositifolia*.

After a few days the presses were filled with plants too numerous to mention, and we regretfully hired mules to take our swollen baggage down to Granada. It was still dark when we left the Albergue at six o'clock in the morning, and it was some time before plants became discernible. The route we chose led into the Barranco de San Geronimo and up the other side to the Cerro Trevenque, an impressive dome of white limestone darkened on one side by *Pinus sylvestris* f. *nevadensis*. It was not easy going, and the mules had to be dragged up steep inclines of loose red sand and clay, and piloted over treacherous limestone gravel,

where paths were few if they existed at all. Two more presses were stuffed with *Verbasca* and various Labiates before we crossed on to the limestone for good and approached the slopes of the Cerro Trevenque. The surrounding hills were covered with *Salvia*, *Erinacea Anthyllis*, *Vella spinosa*, *Berberis*, *Paeonia*, and the giant stalks of the fruiting *Asphodel*.

On the Trevenque itself the landscape was of a dazzling white brilliance; the substrate is best described as loose marble overlying chalk and extremely difficult to climb on. But the flora was an ample reward for our exertions: on the steep North of the East ridge *Coris monspeliensis* was a blaze of colour, accompanied by *Thymus granatensis* var. *longiflorus* and three choice *Anthyllis*—*A. tejedensis*, a magnificent low-growing white-leaved plant with large clustered heads of yellow pea flowers, another undetermined yellow-flowered species, and a third of rare charm with large flat silvery leaves and ample crimson heads. Another illustrious member of this noble company was *Helianthemum pannosum*, densely covered with white wool and its yellow flowers just over. It is endemic to these slopes along with the greatest of the Trevenque's treasures, *Scabiosa pulsatilloides*. The genus *Scabiosa* has provided little for the rock garden, most species being rather coarse and on the large side, but *S. pulsatilloides* is not just a species which can be admitted with bad grace, but something to be welcomed as beautiful, exclusive, rare; nothing less. The leaves of the caespitose clumps are silver, the flower stalks only three-four inches tall, and the flowers in very large flat heads of violet-blue.

After this feast we had eyes for nothing more, and stumbled mechanically, engrossed in thought, through river beds long since dried up; down the gentle seemingly endless sun-baked incline to Cajar, the tranvia, and leisurely civilisation.

Habitats of Himalayan Alpine Plants

By ROLAND E. COOPER, F.R.S.E., F.R.S.G.S.

THE highest places of the earth are covered in snow which tends to creep slowly down sloping ground with a rotary motion and wears hollows in the rocks. These in time accumulate great depths of snow—glaciers—and so are their valleys or beds.

Their motion grinds grit of all sizes from the rocks and mixes it with the glaciers, close pressed snow till this looks like a greyish sedimentary rock. Its grinding power is increased by the grit. Glaciers extend down their beds in series of cold years, their ends or noses pushing rock debris in front of them like a bulldozer. In spells of hotter years the glaciers get shorter and recede up their valleys, leaving behind ridges of rock debris where the noses stopped, which are called terminal moraines, and also more inclined ridges of debris thrust to their sides as the glaciers move along. These are lateral moraines. Water from the melting glacier streams away down the valley and keeps terminal moraines permanently sodden. Lateral moraines from their positions are seldom as sodden as terminal moraines.

Other forces than glaciers affect rocks and break them down. Alternate frost and thaw of water in rock crevices flakes off fragments of all sizes up to a ton or two in weight, and these fall to make aprons of rock debris—called scree—which extend for hundreds of feet from the base of the cliffs from which they fall. It does not follow that there is any water running below a scree, and conditions here are quite different from moraines. Yet in time both are covered with tiny plants making up a turf.

In strong contrast to exposed habitats are the corries with their sheltered hollows, fissures and ledges containing pockets of rock debris and later a soil with little humus, but moist and well aerated.

There are no plants on the perpetually snow-bound ground, or, at first, on rocks scoured by glaciers, on

rock fragments of screes or ice-cold water soaked debris of the moraines. How does vegetation ever begin in such hopeless conditions?

The snowfields and glaciers (and the climate) of the Himalayas have been operating for many thousands of years, and as during that time the glaciers have retreated from positions overlooking the plains of India to their present positions about the major peaks, it is possible to study all stages of the development of their present vegetation literally from scratch—glacial scratch. From this study, particularly of the vegetation from the summer snow-line about 18,000 feet above sea-level to the higher limit of tree growth at 11-12,000 feet, we may get some clues to help us grow the rarer items of the flora, which prove so difficult to keep, with more success than at present.

Though one may not have been on the higher Himalaya, it is possible to understand something of their conditions because the skirts of snow-covered mountain land in all countries have many features in common in structure and conditions. If one has an acquaintance with the Scottish highlands, it is easier still because certain of their plants are found in the Himalaya. These notes of personal observations in the moist east and dry west Himalaya, together with areas recognised as Tibetan, are supplemented by other reliable recorded observations in these fields.

One observer considered that "Kinchenjow" (E. Himalaya) rises before the spectator just as the Jungfrau, Moench and Eiger alps do when seen from the Wengern Alps. European genera found on the Himalaya close to snow at 16,000 ft. include Primroses, Gentians, Forget-me-nots, Ground Orchids, Wormwood, nettles, grasses and sedges, Edelweiss, Buttercups, Monk's-hood, St. John's wort, Androsace, Saxifraga, Parnassia, Draba, Sagina, Ephedra and Pedicularis. The common English swamp marigold—*Caltha palustris*—is abundant in N.W. Himalaya, though rare in Sikkim. By way of contrast there is a group of Primulas in the high east Himalaya at 14,000 ft. that links the Auriculas to the Primroses and at one place only a Lobelia at 14,000 ft., akin to one of the giant

Lobelias on "The Mountains of the Moon" in equatorial Africa.

"Generally speaking, the Alpine plants of the moist high Himalaya are quite unprovided with protection in the form of hairs. The prevailing genera—Arenaria, Primroses, Saxifragas, Fumitories, Gentians, grasses and sedges have almost uniformly naked foliage. It is the conspicuous nature of exceptions like *Saussurea gossypiphora* which form great clubs of cotton wool up to a foot high, its flowers and leaves heavily clothed in the warmest fur that nature can devise, that allow the contrary observation." If that is so, the contrast should apply—that the plants of the dry, high Himalaya (and of Tibet) are furnished with hairs, scattered, glandular, or matted. There are exceptions to this, too, that may seem to prove it. It may be as well at this stage to leave generalities and to consider particulars. How does vegetation commence on cold, wind-swept rock faces newly freed from snow, and develop into the turf that covers adjacent slopes?

The pioneers of vegetation are lichens and xeropytic algae. They are the most arctic, antarctic and universally diffused plants of cold places. They are able to withstand almost complete desiccation yet absorb water when it is available and resume active life in the Himalaya. "At 18,300 feet grows a fine Scotch lichen, a species of *Gyrophora*, 'the *tripe de roche*' of arctic voyagers and the food of Canadian hunters." The lichens make patches of humus in which grow moss spores (carried on the upper air with many other things). A soil is gradually formed and deepened by their growth and decay; the lichens and mosses are succeeded by higher types of larger size, greater complexity and more exacting requirements, conditioning their progress as the soil deepens, develops more humus, and holds water evenly.

The temperature of ground covered with snow all the winter remains fairly constant about 0 degrees C., and the vegetation is not subjected to the alternations of frost and thaw of our winters where the soil is exposed. A low growing form of plant (rosette or cushion) ensures that it is covered with snow. It may

have a relation to the strong winds of high altitudes during the growing season. The wind velocity is less close to the ground and the streamlining ensures relief. When the snow melts, the soil warms up quickly in the sun and the rise of temperature of the surface and the air above it stimulates rapid growth of the perennating buds.

On the barren slopes of the Lachen hills (E.H.) " I found at 17,000 feet a curious plant allied to the *Cherleria*—*Arenaria sedoides*—of the Scotch Alps forming great hemispherical balls on the ground eight to ten inches across altogether resembling in habit the curious Balsam-bog (*Bolax glebaria*) of the Falkland Islands, which grows in very similar scenes." (H.J.)

This plant is *Arenaria* (*Thylocospermum*) *rupifraga* and is common as far north as the Karakoram at elevations between 16,000 and 18,000 feet. It is figured as *Periandra caespitosa* in " Jacquemonts Voyages aux Indes Orientales " by Decaisne and Cambessedé.

On perpetually soaked moraines (and the vicinity of glaciers is blanketed with driving mists throughout the growing season to add to the waters of the glacier's stream) the lichen moss stage is rapidly developed and a thin spongy soil is formed which is very acid. A dominant plant among the immigrants to the lichen-moss soil pads is a small sedge allied to the British *Carex pilularis* which thrives and multiplies. There is a larger sedge which builds foot high clumps of frost burnt stems, but this grows in isolated clumps. These hummocks seem to be preferred by certain small *Primulas*, notably *P. pusilla* and *P. sapphirina*, which develop stalks of many years' duration and as much as six inches or more in length and stud the hummocks with flowers. It is a logical development from such perennial herbs to dwarf *Rhododendrons*, *Cassiopes*, etc., which can endure the acid soil and can root up their stems like the mountain willows of the Scottish hills. The hummocks, although rather wet, are not so sodden as the ground. All plants growing in such wet conditions have a shallow root system of delicate fibres as though they could not get any food from the deeper ground of sodden unweathered rock debris. In time,

however, lower elevations drain, become aerated, and the soil deepens and sweetens so that at 13,000 ft. elevation Geraniums, Fritillaries, Poppies, Potentillas, louseworts and swamp Primroses (*P. involucrata* and *P. sikkimensis*) become features of the sward. About this elevation shrubs become dominant and Alpine plant forms do not occur. Petiolarid Primulas have only one representative in this true Alpine area, the others are all plants of woodland, some thousands of feet lower, and not Alpines at all!

Hill tops rounded by glaciers in the wet zone develop their vegetation in the same way. Screes develop differently. Their structure is more open. They also receive fresh scatterings of rock debris in the spring and this damages colonised areas so that on active screes the complete succession from rock surface to turf is rarely completed.* The lichens and mosses carry on, but the colonised areas are scattered, a typical plant on them has a rosette form, a long tap root, and is biennial—*Meconopsis aculeata* is a case in point. Perennial plants with deep roots probing for the soil washed down deeply among and under the stones act as stabilisers to screes as they fix smaller fragments of rock in position and build colonies of plants around themselves over them.

On more stable screes progressive colonisation occurs. A grass is more evident than a sedge in the early stages. It is the common Scotch mountain pasture grass, *Festuca ovina*. Plants seeking to grow from seeds dropped in deep holes among scree stones must be able to make stems capable of reaching the surface, and with this faculty can emerge again if they are covered with fresh drifts. They become rhizotomous and creeping, and being so will work to the edge of the scree where humus collects in deeper and more stable layers. (Ferns and Potentillas are best known for these capabilities.) Such types help to cover a scree and make a more continuous layer of surface humus in which many annuals can grow until it is deep enough to make a stable pasture.

In contrast to the exposed habitats are the corries with their sheltered hollows, fissures and ledge con-

* See Journal No. 6 (1949), page 15.



Fig. 6.—PRIMULA BOOTHII



Fig. 7.—RHODODENDRON PATULUM

taining pockets of mineral debris and soil with little humus, but moist and well aerated. Rock ledge conditions vary according to exposure and sunshine, the width and slope of the ledge and its watering being constant or periodic. *Isopyrum grandiflorum* in the west Himalaya is a crevice plant of moist, almost vertical, limestone rocks. *Meconopsis bella* of the eastern Himalaya is a crevice plant of like faces of moist acid rocks. The common feature to both is the frosty dry spell preceding the deposit of winter snow. Open crevices may get colonies of tiny plants making a cushion overlapping the crevice, or a plant hanging down the face of a rock like a *Dianthus* or *Campion*. Unusual plants like *Rheum nobile*, *Saussurea gossypiphora* and *S. obvallata* seem to grow where humus from an Alpine pasture has been washed from above over a ledge into a pocket which thus contains a soil very light, porous, and weathered sufficiently to mollify its acidity.

Glaciers make moraines; these dam the glacial streams making lakes. The waters flow on through the Alpine area, through the shrub belt and into the woodland. The lakes themselves at high elevations have no water plants, partly from the coldness of the water and partly from the poverty of the rock bed floor and banks. There is no gentle stepping into the water of the land plants or *vice versa*. Yet about the limit of the shrub belt at 13,000-14,000 ft., flat places are to be found with distinctive plants in them. *Primula sikkimensis* can grow and thrive with water running all round it, but it is usually situated on a tussock of soil so that its crown is high and dry. *Primula involucrata* grows under similar conditions and shows its ability in a first year seedling when the roots tend to hold the crown above soil level. The problem it has to meet is drought—physiological drought—when there is so much water that the plant cannot breathe under it. Strangely enough, a bulbous plant, *Allium sikkimensis*, grows with *P. sikkimensis* in the same watery places, and if a bulb is a sign of a plant's solving a drought problem, it is here. Is that a clue?

The growing season of the moist Himalayan high elevation plants, with the prevailing cool mists and driving rain of day and night, is stopped by their cessation. The days become bright and sunny, the nights are frosty, the day winds get keen. Growth ripens to crowns, seed is dispersed from wind-shaken capsules. The cool waters over-running flatter areas are frozen and the areas themselves drain and dry, the plants in them going to rest. After ten to fourteen days of this, the first of the winter snow comes flaking down and soon the wind and sun dried ground, with its plants reduced to dormant buds, becomes covered in snow. Note that ripening of the plants and drying of the soil for the winter rest, for it is worth paying much attention to. It is the garden practice to plant Lilies in such a way that they are well drained in the winter, yet can get plenty of moisture and nourishment during the growing season. Shallots and Dahlias are two other cases for points that seem equally worth paying attention to in this connection.

Knowing the conditions which plants must have for survival in this country, it is possible when building a rockery to know the conditions which are required ; whether for moraines, screes, clefts, for wet or dry meadow, or for water edge plants. That makes building a rockery something much more fascinating than it was before. Incidentally with defined conditions, one can experiment according to the range of a plant or its allies in different parts of the world. *Primula sikkimensis* is a versatile plant, and a good one to play with. George Forrest sent home from China seed of *Primula pseudo sikkimensis* which grew on limestone soil and was pronounced by less lush in all its parts. In cultivation it tended to revert to type and is now forgotten. *Primula Florindae* is a "sikkimensis," lush to the extreme in all its parts. In the Himalaya *P. sikkimensis* grows by stream sides (preferring running water) at 13,000 ft., and grows well, tending at times to have one or two extra heads (or whorls) of flowers above the main one. At 16,000 ft., in an adjacent and drier valley where conditions approximate to Tibetan, it becomes a dwarf plant with a rosette of

high flower stem upon which not only are the flowers foliage less than six inches across with a three inch very much fewer, but they are sessile upon it, and their normal cup shape is modified until the horizontally poised flowers look like a little golden "Birdseye Primula," suggesting kinship with our *Primula scotica*. This form, too, shows linking stages down the valley to the normal form at 13,000 ft. Else where, not so far away, nor at so high an elevation, is a white form of *P. sikkimensis* called *P. Hopeana*. Remembering the behaviour of *P. malacoides* in developing new forms in cultivation, what else can *P. sikkimensis* do?

If examples of plants and their habitat seem to be mostly of Primula, it is because this is a widespread and very variable genus, and the study of the Himalayan species has been intense. As a case in point, the genus is divided into two classes as they fold their leaves in or out. In Europe are the Auriculas and the common Primrose. If they are really related, there should be a linking form somewhere. There is a reason for the two types of folding. It links with their breathing. An intermediate type having to contend with no problems in either way could only be found where there was no daily range of temperature, humidity and illumination during the growing season. These conditions only exist on the moist areas north of certain east Himalayan peak clusters. There grows a Primula belonging to a group called Amethystinae whose leaf folding is neither in or out. It can do both together, making an "S" formation, this ability marking it as the linking group. The members of Amethystinae do not thrive for long in cultivation. It is very difficult to give them the conditions they are used to, but one may try, and to try with different kinds of conditions. *Primula sessilis* grown in acid soil, alkaline soil, and a neutral soil gave some most astonishing results. It is a pity that such work get little credit on the show bench, but it keeps a flower in our gardens.

It is not possible to slavishly copy Himalayan conditions in our gardens, but it is possible to find out what they are from the descriptions and pictures given

by plant collectors. From these also the conditions governing the habitats of plants can be learned. It remains to determine which of these can be supplied in the garden, and to arrange something to provide comparable conditions for those that can't be, and so reduce attack upon a plant's vulnerability. Our plants may be moist moraine plants, dry scree plants, sheltered or exposed crevice plants, stream side plants, or just plain pasture plants. Those are the main groups.

Every plant hunter notes the conditions under which the plants of which he sends us seed grows. On the whole, about forty per cent. can be kept going for a year or two. Really lucky people can get ten per cent. of the balance to do the same ; it is a matter for trumpets if the remainder, which are always the finest plants, are persuaded to thrive.

Plant hunting can be a particularly hazardous job, and it seems only fair that the hunter's notes and writings should be studied for the hints that they undoubtedly give with a lively and discerning eye. With that knowledge the "miffy" may become "mighty," and our pleasure the more. It is suggested that "hints of the habitats" may be gleaned during the "dead days" or, rather, long evenings of the year, from many works which should be in every good library. The Editor will excuse, I trust, the mention of a few of them. It is to be hoped he can give us a page of such references in a later Journal. Here then are the few:—The George Forrest Book (S.R.G.C.), Hooker's Himalayan Journals ; The Alpine and Sub-alpine Vegetation of the Himalaya (W. W. Smith) ; Selected Items from the A.G.S. Bulletins and R.H.S. Journals ; Proceedings of the Botanical Society of Edinburgh (by R. M. Adam on Scottish Alpine Plants); Farrer's writings, and a few of Kingdon Ward's many books.



EPHEDRAS IN CAMBRIDGE BOTANIC GARDEN

All the Plants shown are species of Ephedra

Plants and Problems.

OXALIS FLORIBUNDA ROSEA

One is always on the lookout for plants with a long flowering season, and when these are endowed with particularly attractive flowers they are well worth a place in the garden.

Such a plant is *Oxalis floribunda rosea*, whose flowering season commences early in June and continues well into October or even November. On any sunny day during these four or five months this *Oxalis* will be covered with its large bright pink flowers. Moreover, the lush clover-like leaves are by no means unattractive.

A. W.

EPHEDRAS

The genus *Ephedra* is one which seems to be full of pitfalls and headaches for the botanists, but the rock-gardener need not worry himself unduly about the finer points of their nomenclature ; it is sufficient to know that they are a hardy genus of plants which will thrive in poor soil and dry conditions.

Perhaps the finest collection in the country is in the University Botanic Garden at Cambridge, where they have some ten or so species. The Superintendent there told the writer that arguments are still going on (and have been for thirty years or more !) as to which the species *are*, but they show a wide variety of size and habit, from completely prostrate mats to bushes five feet high, some with white fruits, and some with scarlet. They all form tangled masses of rush-like branches, the leaves being reduced to tiny scales. The general effect is, as has been said, that of a shrubby rush, but they show marked differences in the colour of the green, some being deep while others are of a silvery pale green with a range of intervening shades.

They seem to be indestructibly hardy and revel in baking heat and tolerate extreme drought. Since they flourish at Cambridge they must be very tolerant of lime in the soil. Seed is occasionally available in Alpine

nursery seed lists, and is worth buying, as they germinate quite freely. Their growth is slow but steady, and one, *E. vulgaris*, is on a number of nursery lists, and, if not a beautiful plant, it is an interesting and striking one, and useful for a barren bit of the rock garden where little else will grow.

HENRY TOD.

CONTROL OF BISHOPWEED,

To those who have a flower border against a hedge from which Bishopweed delights to encroach, here is a tip to keep it in check.

Obtain, if you can, the necessary number of sheets of corrugated iron. Cut these in half lengthways and sink them so that only an inch or so is above ground. This allows the sheets to be buried about 1 foot deep, which is sufficient to prevent the roots of Bishopweed from burrowing underneath. Of course it must not be allowed to seed over the barrier.

A. W.

PRIMULA WIGRAMIANA.

In my book "Primulas in the Garden," at page 115, I expressed doubt as to whether *P. Wigramiana* was now in cultivation. Since making the statement it has come to my knowledge that this very lovely species is to be found in gardens in the United States of America, where it appears to flourish. Mrs A. C. U. Berry, of Portland, Oregon, grows and exhibits this Primula, and has been fortunate enough to collect seed from her plants, generously sending some of it in 1949 to members of the S.R.G.C. who are particularly interested in the genus. From this source it is hoped to reintroduce *P. Wigramiana* to British gardens, from which unfortunately it disappeared some ten years ago. There can be no denying that this Primula is rather difficult to manage, especially in its seedling stage. It is notoriously intolerant of moisture on its hair-covered leaves, and these will certainly damp off if allowed to get over wet. But when complete protection from over-

head moisture is afforded, and if great care is taken with watering, the prospects of bringing plants to their flowering stage are reasonably good. *P. Wigramiana* is worthy of all the care which it demands, but is without question a species for the experienced grower.

K. C. C.

SAUSSUREA STELLA

This plant was given an Award of Merit by the Royal Caledonian Horticultural Society when exhibited by the writer at the Autumn Show in Edinburgh, in September 1949. The following is based on a plant note contributed by him to 'My Garden,' and reproduced by kind permission of the Editor of that magazine.

The genus *Saussurea* contains some extremely ugly and dowdy species, but it also includes some extremely fascinating ones. Many of these, particularly the high Alpine members of the genus, are quite impossible either to obtain or grow, and these are, unfortunately, much the most desirable and attractive.

One distinguished species which is grown is *Saussurea stella*. This plant on germination is indistinguishable from a little tuft of grass, but gradually assumes a more leathery texture. By the time it is a year old it has become a tuft of deep green leathery leaves, which subsequently move down until they lie flat on the ground, rather like a narrow-rayed starfish.

When the plant is ready to flower—by which time the rosette is about nine to twelve inches in diameter—the centre of the rosette begins to expand into a hump, and a dull red flush creeps along the leaves toward their tips. The hump gradually shows the formation of buds, which later open into a hemisphere of royal blue florets, each with an upstanding ring of white stamens. As the flowers fade they are replaced by the tufts of pappus attached to the seed, and the blue hemisphere becomes a silky white one. As with most Composites, a large number of non-viable seeds are produced, but the good ones germinate quite freely. Planted in a light loam with free exposure to sun and wind, *S. stella*

flowered in three years from sowing, while in "rich scree" it took seven years, and it seems likely that those in ordinary scree will require eight years at least.

It is, of course, monocarpic, i.e., it dies after flowering and setting seed, but it is well worth waiting for, and, in addition, protecting from slugs, which are quite inordinately fond of it.

This plant was collected by Yu in 1938 in NW Yunnan, on the Tibetan border. It grows in boggy pastures at an elevation of 12,000 to 13,000 feet. Since in its natural habitat it is covered with snow and hence kept dry all winter, it will probably benefit by a piece of glass over it in winter to check any tendency to neck-rot.

HENRY TOD.

PRIMULA BOOTHII

At long last it would appear that the true *P. Boothii* has come to grace our gardens. Hitherto plants introduced under that name have proved to be *P. gracilipes*, but the plant Fig. 6 conforms to the herbarium material of *P. Boothii* in the Royal Botanic Garden, Edinburgh. This new plant was introduced to Britain by Lord Aberconway, and was shown by him at a Royal Horticultural Society Show on 29th March, 1949. It was shown as *P. petiolaris*, but Dr H. R. Fletcher had no hesitation in naming it *P. Boothii*. This species is a vigorous grower, and at the time of writing (9th December 1949) is a handsome foliage plant. Its petioles are long, distinct and stained deep red as are its large cluster of buds. The flowers are somewhat similar to *P. scapigera*, but are of a stronger shade of pink and of a better texture. At flowering time there is a short scape, about two inches long. The botanical differences between *P. Boothii* and *P. scapigera* are slight, but living plants can easily be distinguished. A reliable guide to the two species is to be found in the calyx lobes; in *P. Boothii* they are rather short, blunt on the tip and tend to curve inwards, while in *P. scapigera* the calyx lobes are long, narrow and pointed and reflex to quite an appreciable extent. Like

P. scapigera, *P. Boothii* is devoid of farina, and, it too, can be raised from leaf cuttings. This latest addition to the Petiolaris Primulas is a real acquisition and well worth its place in the frame, Alpine house or rock garden

D. L.

RHODODENDRON PATULUM

This species was found by Captain F. Kingdon Ward in 1928 growing at 11,000-12,000 feet in the Delei Valley in the Mishmi Hills, Assam. It was assigned at first to the Lepidotum section, but Dr J. Macqueen Cowan and Mr H. H. Davidian in an article in the Rhododendron Year Book for 1948 put it in the newly created section, Uniflorum, along with the better known *R. imperator* and *R. pemakoense*; *RR. Ludlowi*, *pumilum* and, of course, *uniflorum* itself are now in this same section. Botanically *RR. patulum*, *pemakoense* and *imperator* are close to one another, but the rock gardener having seen the plants once, would not confuse them. *R. patulum* has stiff, stout little branches bearing rose-red flowers about $1\frac{1}{2}$ inches long and 1 inch across the mouth. *R. pemakoense* has thin flexible branches, its flowers are slightly larger and are pale mauve. In addition the *R. pemakoense* which I grow is stoloniferous and can be increased easily by stolons when repotting, *R. imperator* has stiff little branches, is semi-prostrate, and therefore more squat than the other two, and its rose-red flowers are slightly smaller than those of *R. patulum*. The plant, Fig. 7, is growing in a 5-inch pot and was photographed in April. *R. patulum* never grows really tall, and is thus an excellent subject for the Alpine frame or for the rock garden.

D. L.

MECONOPSIS NAPAULENSIS

This Meconopsis (*syn. M. Wallichii*), both in the blue and wine-coloured forms, is a lovely thing at its best, but too often it is disappointing; frequently the blues are "wishy-washy" and the reds of a dull purple-pink. As

one has to wait three years for plants to flower it is doubtful if the species is worth growing unless a reasonable proportion of good colour forms may be relied upon to come from seed. Might I suggest that it would be a paying proposition for our enterprising nurserymen to work on this *Meconopsis* with a view to producing, and fixing, a strain in which really good colour forms would predominate; *M. napaulensis* would then be a more valuable and more satisfactory garden plant.

M. L.

MOLES.

Moles can be most annoying and very destructive, particularly in a rock garden, but I think I have found a control—Cynag Gas. This preparation certainly kills moles, though unfortunately it will kill plants also, as I have learned to my cost. Even so, Cynag Gas is useful, though a search should be made for mole runs through ground in which there are no very precious plants, such as a piece of woodland or under a path. It is quite simple to apply the remedy; put a tablespoonful of the powder into the run and close it in with soil, making the whole firm. Try to locate a “cross-roads” in the run for the placing of the poison, for here the vermin may be most readily caught; try also to seal off a whole area in which moles are working. A dead mole in a run will be a complete block, as live animals will not pass it.

M. L.

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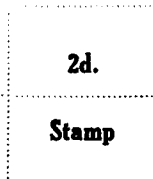
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