The Journal
OF
The Scottish Rock Garden Club

Editor—J. L. MOWAT, University Botanic Gardens, St. Andrews

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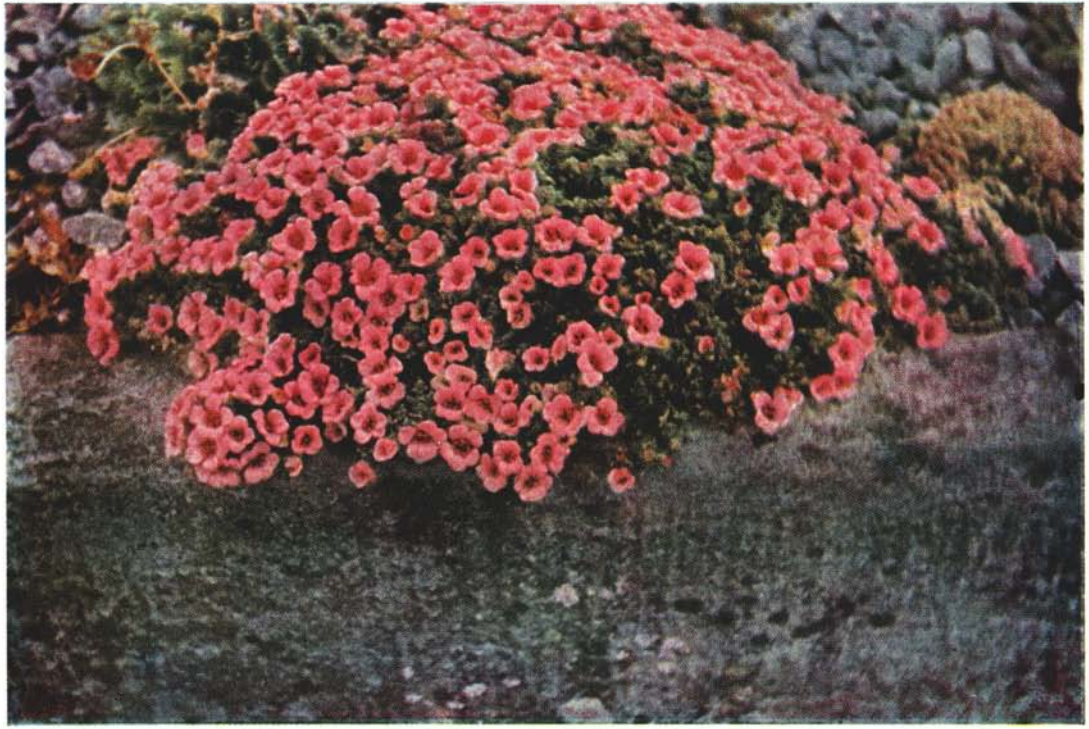

SAXIFRAGA OPPOSITIFOLIA VAR. LATINA
(*By courtesy of Messrs. Jack Drake, Aviemore*)

J. C. Lawson

The Journal

OF

The Scottish Rock Garden Club

Editor—J. L. MOWAT, University Botanic Gardens, St. Andrews

Chief Contents

VOL. VII. PART 1 No. 26—April 1960

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Editor's Notes

AN OLD gardener once remarked to us many years ago : "It's an awfu' pity guid weather does sae much harm." With this old saying we feel sure that many Club members must have agreed when last year's wonderful summer finally came to an end in mid-October and was followed by two months of almost incessant rain. As one month of sunshine followed another gardens got steadily drier and the faces of rock garden enthusiasts longer, but they met with little sympathy from the mass of their less garden-minded neighbours and friends. Except for the golfers, who regard the grass of their golf courses with the same single-minded affection that rock gardeners give their alpine treasures, and perhaps those public officials responsible for water supplies, the population as a whole enjoyed the long unbroken spell of brilliant sun.

There was no reason to expect that they should be aware that in gardens all over the country were plants unused to such heat and drought which were steadily being shrivelled to death. In addition to the smaller plants of the rock gardens, many flowering shrubs, and in some parts of the country even trees, suffered severely and even died.

When at last the heat broke in mid-October and the first rains came even the least understanding must have felt refreshed and relieved, and to the parched and thirsty plants the change must have been even more welcome. However, after the months of November and December the story changed again. By that time those tight little cushion plants of the scree, dense mat-forming plants, and those with masses of soft, close, hairy or woolly foliage were beginning to look very sorry for themselves except in cases where they had been protected from the worst of the wet by covering pieces of glass or cloches.

And yet—that many Club members were able to combat successfully at least some of the ravages of the long drought is well shown in the report (on a later page) of the Club's Autumn Show at North Berwick in early September. The Joint Rock Garden Plant Committee visited this show for the first time and certificates of varying degrees were awarded to no fewer than fifteen of the plants submitted for their judgment—a truly meritorious performance.

In a letter received from a much esteemed member of our Club the remark is made that if we had been concerned with 'fauna' instead of 'flora' an interesting note could have been contributed. But, judging by many remarks (mostly, we admit, unfavourable) received, a great many members are keenly interested in fauna and have found it necessary to devote considerable thought and time to the habits of certain birds and some of the lower forms of insect and animal life. It is all very well to talk of 'singing for his supper'—but when the said supper consists of the hearts of some rare primulas or other choice rock plants it takes a lot of most melodious singing to repay the account.

Our correspondent, however, was not referring to slugs, mice, or blackbirds, but to garden visitors which must be almost unique. He said that his resident pair of pheasants had been joined in the garden this winter by a black cock and grey hen. A diet of acorns supplemented by the fruits of berberis and cotoneaster sounds very good fare, and one not likely to be begrudged by a garden owner.

There must be few members can boast of such visitors to their gardens, but since New Year many in this area have had visits from migrant bullfinches which have been seen feeding on the two shrubs above mentioned and also on the few holly berries there have been this year, and have been mentioned several times as seen picking at the seeds of hypericums and other dry-seeded shrubs. In January waxwings joined the party, and a month later a number of redwings appeared. We, for the first time so far as we remember, between the two snowstorms of February had the good fortune to hear redwings singing, the tone rather like that of the blackbird.

While many members realise what an asset the Club has in its Seed Distribution and the work which has been done by Mrs. C. E. Davidson and her voluntary team of helpers, very few can know fully the vast amount of painstaking detail and sustained effort necessary to bring it to such a successful conclusion each year. The cataloguing of the seeds as they come in, the checking of names and compilation and issue of the List, and the subsequent despatch of seeds requested, all demand a sustained concentration of effort and care which calls for the Club's gratitude to all concerned. We are sure that those members who participate in the opportunity provided by the Seed Distribution experience an interest unrealised by those who do not avail themselves of the privilege.

We must all regret that Mrs. Davidson has found it necessary to give up this onerous duty, and tender our warmest thanks for all she has done, and at the same time express the Club's thanks to Mrs. B. B. Cormack for taking on the task, especially since, as one of Mrs. Davidson's team of helpers, she has had experience of the amount of work involved. Gratitude is also due to all those donors, abroad and at home, without whose generous sacrifice of time and effort throughout the long season of seed collecting the Seed Distribution would not exist.

This seems the right place to say how wholeheartedly we would endorse the introductory sentences of the article "Rare Plants from the Seed Distribution" appearing later in this *Journal* (p. 53). It is indeed a privilege which deserves to be recognised by the best possible care and attention being given to the seeds so received. The article itself should be of great benefit to many members, and may perhaps help some to appreciate the Club's activities in a new light. Of course, many already realise just what a privilege they do have in having an opportunity of obtaining seeds which are as yet in no nursery catalogue and will probably not appear in one for some years to come. Very truly these seeds do merit the very best of unfailing care and attention.

Members who have already experienced the interest and pleasures of one of the Club's Discussion Week-ends, or the Summer Week of last year, will need no encouragement to study the programme of the Discussion Week-end to be held in Pitlochry in October this year. It is a programme full of interest and variety, and the team of speakers are all recognised authorities on matters relating to rock gardens and plants. Added to this, one can hardly imagine a setting in the whole of Britain more fitting to such a week-end gathering of rock garden enthusiasts than Pitlochry with its magnificent surrounding scenery and its many interesting local gardens. For some years we had great pleasure in attending a conference in Pitlochry in October, a time of year when the autumn colouring in the surrounding district was an unforgettable sight. Perhaps we were fortunate ; usually the weather was mild and the sun was bright.

1961 will bring another important date in the rock gardener's calendar when the International Rock Garden Conference meets again in the latter part of April, the last Conference having been in 1951. Quite a few Club members took part in that one and will still remember what an enjoyable occasion it was, but for many others 1961 will provide the opportunity for an exhilarating new experience when one can meet fellow enthusiasts from other parts of the world and indulge their hobby to the full for either a week or a fortnight as their own circumstances permit.

Some Club members have recently moved, or are in process of moving, to new gardens, while others are facing the problem of rehabilitating old and neglected gardens. In many ways the problems of either group are very similar—the eradication of persistent, deep-rooted perennial weeds and the thorough preparation of the ground before building, or rebuilding, their rock gardens. From personal current experience we are prepared to maintain that no new garden, broken in from either agricultural or simply vacant land, can pose anything like so difficult a problem as a garden which has been allowed to return to the wild over the years. Notes from members engaged in this task or helpful advice from those who have overcome successfully such problems would be of interest to many of their fellow members.

The *Journal* still suffers from that all too prevalent tendency to leave the contribution of material to its pages to a small band of members—without whose unfailing loyal support there could be no *Journal* at all. As the editor whose job it is to try to make bricks with an insufficiency of straw, we cannot thank enough those who so willingly do more than their share : readers have every cause to be grateful to them. We extend a warm welcome and the Club's thanks to those new contributors whose names appear in this issue and express the hope that their most worthy contributions will inspire others. We appeal to those who at one time wrote fairly regularly to our pages to write again and give newer members the benefit of their knowledge

and experience in the growing of rock plants with its many problems and compensating pleasures.

Another problem has now developed which is seriously affecting the Club *Journal*; this is the great swing over in popularity to colour photography in the garden in place of black and white. Reproduction costs are so prohibitive that colour can only be used to a very limited extent in our pages, but now-a-days few—very few indeed—black and white photographs are submitted to accompany interesting articles or notes on plants. We feel that this is a serious omission, which may become even more serious in a few years. A half tone block from a good black and white photograph provides a permanent record of rare or outstanding plants, whereas a colour transparency, though ideal for lecturing purposes, is liable to fade with time and, at any rate at present, its reproduction is an exceedingly costly matter. The editor will be more than grateful to members who care to submit any black and white photographs they consider suitable for use in the *Journal.*

April 1960.

International Rock Garden Plant Conference 1961

As the Editor mentions above, this Conference will be held in London and Edinburgh in April 1961, in London 18th-22nd April and Edinburgh 24th-28th April all inclusive. This is a short preliminary notice and it can be said that the speakers in London will include Dr. Worth, U.S.A., Professor May, France, Mr. Eliot Hodgkin, Mr. Ogilvie Grant, Greece, and Mr. Roy Elliott of the A.G.S. In Edinburgh the list includes Mr. Kemp, Mr. Wilkie, Mr. F. P. Knight of Wisley, Mr. Joe Elliott, Mr. H. C. Hillier, Mr. Hoog of Holland, Mrs. Tweedie, Mr. E. B. Anderson and Mr. Roy Elliot of the A.G.S., Mr. Will Ingwersen and Dr. Schacht of Munich. In the Edinburgh section there will be two Symposia, one on Shows and Judging and one on the Cultivation of Tricky Rock Plants. There will be Conference Shows first in London and then in Edinburgh, and the whole programme is aimed at the ordinary member and not at the "expert" or the specialist. It is hoped that there will be strong support at both sections of the Conference.

Henry Tod, Convener, Edinburgh

Annual Subscriptions 1959-60

All members who have not already paid their Annual Subscription of 10/-, due on 1st September 1959, should do so as soon as possible. Members should pay their subscriptions direct to Miss G. Currie, 39 Oxgangs Road, Edinburgh, 10. You are invited to renew your subscription by Banker's Order—which saves much trouble to yourself and the Subscription Secretary. A form is enclosed with this *Journal.*

Prize Vouchers

A REQUEST BY THE HONORARY TREASURER

WOULD winners of Prize Vouchers please utilise them (if they intend to do so) sufficiently early to enable their suppliers to claim in time.

Last year a number were sent in so late that payment had regretfully to be refused. We did not like doing this, but rules and regulations can only be stretched so far.

So please do not leave it too late this year.

Club Christmas Cards

IT IS INTENDED that four attractive colour illustrations will be published in the September *Journal* and that from them Christmas Cards will be available to members at the usual charge of 9/6 per dozen, including envelopes and post paid. This is only a preliminary notice and orders should not be sent to Hon. Treasurer until the colour plates to be used have appeared in the September *Journal.*

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AN INDEX for *Journals* 1-19 is now in print and may be obtained at 3/- post free on application to the Editor.

Discussion Week-end

29th-30th OCTOBER 1960

FISHER'S HOTEL, PITLOCHRY

PROGRAMME

Saturday 29th	2.30 p.m.	Opening Address
	2.40 p.m.	"Pools in the Rock Garden" T. C. Clare, Esq., Ascot
	4.00 p.m.	Afternoon Tea
	5.15 p.m.	"Plant Hunting in Yugoslavia" Dr. James Davidson, F.R.C.P.
	7.00 p.m.	Dinner
	8.15 p.m.	Brains Trust
Sunday 30th	10.30 a.m.	"Saxifrages" David Livingstone, Esq., Dunbartonshire
	11.40 a.m.	Break
	1.00 p.m.	Lunch
	2.30 p.m.	"Some Plants that do well in my Garden" Major Alan Walmsley, M.C., Wigtownshire
	4.00 p.m.	Tea
	5.00 p.m.	Close down

AUTUMN COLOURS

If sufficient people are interested, a bus trip up Strath Tummel and back by Trinafour, Struan, Blair Atholl, and Killiecrankie will be arranged for Saturday morning.

SUNDAY MORNING BREAK

During this time visits to one or two local gardens will be arranged for those who would care to visit them.

CHARGES

(A)	RESIDENTS for the whole week-end, including full board and accommodation from 2 p.m. Saturday till 5 p.m. Sunday	£3 3 0
(B)	NON-RESIDENTS for the whole week-end, including meals, but WITHOUT Bed and Breakfast	2 2 0
(C)	NON-RESIDENTS—All lectures but NO meals	0 17 6
(D)	NON-RESIDENTS—3 lectures on Saturday—NO meals	0 10 6
(E)	NON-RESIDENTS—2 lectures on Sunday—NO meals	0 7 0

These charges include share of expenses but do NOT include the fare for the Bus Trip on Saturday morning.

RESERVATION FORMS

These may be obtained from Mrs. T. A. Stuart, Tigh-a-Chladaich, Moulin, Pitlochry, and should be completed and returned to her, accompanied by the appropriate cheque, as early as possible.

N.B.—The number of single rooms is limited ; they will be allotted to applicants in the order in which their reservation forms are received back.

Those who wish hotel accommodation before and/or after the official week-end (i.e. other than Saturday night) should state their requirements and the accommodation will be booked for them. Such EXTRA accommodation will be paid for *direct* to the hotel by the person concerned.

QUESTIONS FOR THE BRAINS TRUST

Members who have any questions they would like to have answered by the Brains Trust should send them in, on a post card, with their Reservation Forms, or later.

Seed Distribution, 1959-60

THIS HAS been a fairly satisfactory season for Seed Distribution. The number of donors, nearly all of whom apply for seed, remains the same as last year at 160. There has been a substantial increase in applications from other Home members. It is, however, a curious fact that about 40% of these requests for seed come from England ! Applications from Overseas continue to increase, and now number 180.

It is with great regret that I make my last report on Seed Distribution. I have found the work intensely interesting, and in many ways very rewarding. It has, however, been carried on under rather difficult conditions, and it has become obvious that the distribution centre should be moved to a place less affected by weather conditions, and where help is more easily obtainable.

Mrs. B. B. Cormack, The Cedars, 199 St. John's Road, Edinburgh, 12, has been appointed **Seed Distribution Manager,** and donations of seed, and all correspondence connected with distribution should in future be sent to her.

Mrs. Cormack has given much valuable help during the last three years, and has a thorough knowledge of the work. I wish her every success in this interesting, if arduous task.

I should like to express my grateful thanks once more to members who have, year after year, taken the trouble to send seed for the benefit of the Club ; to all members who have given unstinting help with distribution ; and last, but not least, to those who have written such kind and encouraging letters.

Linton Muir, West Linton.

Scottish Plants for the Rock Garden

By Professor J. R. MATTHEWS, C.B.E.

TWO QUESTIONS are implicit in the title I have chosen for the Clark Memorial Lecture this afternoon.[1] Firstly, how is a Scottish Plant to be defined, and secondly, is it an appropriate subject for the rock garden ? The second question need not detain us, since the answer will depend upon the likes or dislikes of the grower.

The first question may also arouse some difference of opinion, but presumably a Scottish plant should at least be a native. If, however, it must also be aboriginal to the country, then there are few from which to select for garden purposes, since not many species are endemic to Scotland. By way of illustration, *Primula scotica* is perhaps the most satisfactory example. A member of a large and popular genus, this dwarf and dainty plant is not without its own peculiar charm. It was first discovered in Caithness in 1819 and is, in fact, confined to the north of Scotland, being found only in Orkney, Caithness and Sutherland. All the evidence suggests that it is a genuinely endemic species and worthy of specific rank, although undoubtedly closely allied to *P. farinosa*, one of the gems of the British flora and, unlike *scotica*, widely distributed beyond the boundaries of Britain.

Described as a perennial in its natural habitats, *P. scotica* does not as a rule behave as such in cultivation. Even when transported in its native turf it seldom survives more than two or three years, but it is easily propagated from seed. Uprooting the plant from any of its localities in the north of Scotland is to be deplored. The species has little claim to be called "alpine," nor is it a "rock" plant in the generally accepted sense of the term. Yet it plainly bears the stamp of alpinity and this may be one reason why the plant has been much sought after by growers.

If I have referred to *Primula scotica* at some length, it is because the species is not only of considerable merit in itself, but its geographical isolation raises questions of much interest to students of the Scottish flora. As already mentioned, it is endemic and therefore Scottish in a special sense. But if it has been derived from *P. farinosa*, what is its evolutionary history and how did it reach the north of Scotland where *farinosa* does not occur ? Similar questions could equally well be asked about many of the species that are often described as Scottish, and in order to take a broader view of our native plants, we must look beyond those that are endemic.

One of the pioneers in the study of plant distribution in Britain was H. C. Watson. Long ago he described as "Scottish" those plants that are found predominantly in Scotland, although they may extend into the north of England. He also described another type of distribution as "Highland," a term applied to species which are restricted

[1]*Lecture given at the A.G.M. held in Glasgow on* 21*st October* 1959.

to mountain areas, especially the Scottish highlands, although sometimes occurring on the mountains of England and Wales. These mountain plants are among the characteristic constituents of the alpine or sub-alpine flora of the country, a rather remarkable element in our native flora which has attracted the attention of generations of field botanists to say nothing of those who indulge in the sport of plant-hunting.

But what is an alpine plant ? The literature on the subject makes it abundantly clear that the views expressed by different authorities are not always in agreement. If the term be restricted, as it sometimes is, to plants which grow on the Alps of central and south Europe, then very few of them qualify as members of the alpine flora of Scotland. One such species, however, is *Alchemilla conjuncta*, a plant of the Swiss Alps and of rare and local occurrence in Scotland. It is not infrequently seen in cultivation, however, in preference to the much more common *A. alpina*, but neither species is noteworthy for floral beauty, although both are of interest as foliage plants in virtue of the silky covering of hairs on the leaves.

Another European species found on the Pyrenees, Alps and Carpathians is *Cherleria* (*Arenaria*) *sedoides*. It is by no means a rarity on some Scottish mountains and in Sutherland it reaches the northern limit of its distribution. A dwarf plant, forming moss-like yellowish-green cushions, it may measure up to ten or twelve inches in diameter. Its frequent occurrence on wind-swept summits gives some indication of the plant's ability to tolerate severe climatic conditions and in such exposed situations, in the absence of root competition from other plants, *Cherleria* may be found growing on very acid soils with a pH as low as 3.8. Elsewhere it exhibits a preference for calcareous soils.

The flowers of *Cherleria sedoides* have little to commend them from a horticultural point of view, but its dense cushions would not be inappropriate if given a place in the scree. Of greater horticultural merit is *Saxifraga hypnoides*, one of the familiar mossy saxifrages whose slender stems carry small sprays of pure white flowers. In one form or another it usually finds its way into most rock gardens. As a wild plant it is of very limited occurrence on the continent in contrast to its frequent appearance on our own hills, where it is not uncommon on rock ledges, screes and stony upland pastures, almost invariably showing a preference for calcareous soils. This soil preference is repeated at sea-level, for *Saxifraga hypnoides* is occasionally found on calcareous sand dunes, a behaviour which it shares with *Saxifraga oppositifolia* and *Dryas octopetala*, the Mountain Avens.

Reference to *Dryas* brings me to another and larger geographical group of mountain plants, for the Mountain Avens is both alpine and arctic in its range. The truth of the matter is that very few of the hill plants of Scotland occur only on the Alps of Europe. On the other hand, many of them which occupy the alpine zone of the mountains of Europe and Asia are to be found also in the far north, in the

arctic territory of Eurasia and arctic North America. Such species, which frequently exhibit wide gaps between their centres of distribution, are conveniently described as arctic-alpine. A visit to the land of the midnight sun might be as rewarding botanically as a climb to some towering height in a southern latitude.

Both in arctic and alpine regions the limit of tree growth is a rough guide to what is meant by an arctic or an alpine plant respectively, the latter normally inhabitating that part of a mountain which rises above the altitudinal limit for the growth of trees, while a species may be admitted as arctic if it occurs in any circumpolar area north of the tree limit. For Scotland the limit of tree growth may be taken as approximately 2000 ft. and for the Swiss Alps it is, of course, much higher. But altitude is only one factor in the growth of alpines and many of our native mountain plants grow profusely, well below the tree limit. On Ben Hope (3040 ft.), for example, the flora and vegetation of which have recently been studied in detail by Dr. Ferreira (*see* Trans. Bot. Soc. Edin. 1959, vol. 37), nearly all the arctic-alpine species are confined to crags between 1500 and 1700 ft. on the great west escarpment and not many reach the summit. In this case, and in many other parts of the Scottish highlands, the distribution of species is determined primarily not by altitude or climate but by the occurrence of a band of schistose rock which runs across the crags of the entire escarpment. The rocks are relatively soft and more or less calcareous, giving rise to mineral soils rich in calcium and relatively rich in magnesium. On these basic soils the mountain flora of Ben Hope attains its greatest profusion. Similar observations apply to other Scottish mountains. It would appear that while climatic factors play an important part in the life of alpine plants, the edaphic conditions are equally significant and may indeed modify the effects of climate. There is good reason to believe that in the recognition of this fact lies one of the secrets of the successful cultivation of alpines at low altitudes. We should not overlook their frequent occurrence at sea-level in arctic regions and even within the British Isles.

About 75 species of the British flora can be described as arctic-alpine, many of them occurring only north of the Border. For the rock garden, however, only a few call for notice and first place may be given to the Mountain Avens, *Dryas octopetala*. Almost circumpolar in distribution, it is found also on the mountains of Eurasia and America. As a British plant it was first discovered in Galway in 1650, an historical event which did not preclude it from becoming the emblem of the S.R.G. Club ! Its trailing, tortuous habit is well known, and while it is essentially a lime-lover it does well on any good loam. It will grow even in a peaty soil if calcium carbonate is added to bring the pH value to about 7.0.

Among other more or less prostrate shrubs are some of the willows, perhaps the most attractive being *Salix reticulata*, again a plant having a preference for calcareous rocks, while *S. herbacea* is of interest as being the smallest of the willows. Other dwarf undershrubs which

may be mentioned are *Empetrum nigrum* and *Loiseleuria procumbens*, both of which will respond to an acid soil. This is true also of the dwarf birch, *Betula nana*, but if something taller and more robust is required then the downy willow, *Salix lapponum*, may be suggested.

Shrubs large or small are not, however, the choice of every grower, although their value in the rock garden can scarcely be disputed. Unfortunately, most of our Scottish representatives lack the beauty of flower possessed by many of the introductions from other lands, so let us turn to an arctic-alpine species which must, I think, be a universal favourite, *Saxifraga oppositifolia*, the purple saxifrage. As a British plant it was first found on Ingleborough and recorded in 1677, but when its known world distribution is taken into account, it affords an excellent example of an arctic-alpine. In his recently published book "Circumpolar Arctic Flora," Polunin describes the purple saxifrage as one of the most familiar and ubiquitous of arctic plants, occurring in almost any more or less dry and open spot where it can obtain a foothold. It reaches the most northerly land in the world. A plant so well known in cultivation requires no description ; as a rule it is not unduly difficult, but like most British saxifrages it should be given a calcareous soil. Very distinct from the trailing mats of the purple saxifrage, however, is the rosette-forming *Sax. stellaris*, and a starry saxifrage it is. This plant, whose flowers are of exquisite beauty, is not difficult in cultivation, but it must have abundant moisture, and in contrast to most saxifrages, an acid soil. I have grown it successfully in a pan filled with sphagnum peat. In its native habitats among the hills it is not uncommon in wet places and on sphagnum hummocks in the vicinity of springs it may occur where the pH is as low as 3.5. Requiring moist conditions also is the yellow mountain saxifrage, *S. aizoides*, a typical arctic-alpine well worth growing in a cool, moist spot in the rock garden. Of greater rarity and seldom seen in cultivation are *S. nivalis* and *S. cernua*, the former being more predominantly an arctic plant than an alpine, for it is widely distributed in circumpolar regions and in central Europe reappears only in the Sudeten mountains. Here then is a problem for the plant geographer.

So far, I have mentioned only one good cushion plant, *Cherleria sedoides*, but it is seldom seen in cultivation. Of essentially similar habit is the more familiar moss campion, *Silene acaulis*, well worthy of a place on a rock ledge or in the scree. Yet in some ways it is disappointing, since in cultivation it tends to be shy in flowering, a feature not unknown among other alpines. In the Swiss Alps, where it ascends to over 11,000 ft., it prefers limestone and in general it exhibits a preference for basic soils in the Scottish highlands, but is not unknown on exposed mountain summits and elsewhere where the soils are acid and where competition with the roots of other plants is negligible. Belonging to the same family as *Cherleria* and *Silene* is *Arenaria verna*, not common in rock gardens, but certainly worth growing. It is an attractive plant when its rather loosely woven cushions are be-

spangled with delightful white flowers, and for the best results it should be grown in a calcareous soil under rather dry conditions.

If, however, one were limited to the choice of a single native alpine it is reasonably certain that for some the choice would fall on *Myosotis alpestris*, the alpine forget-me-not. It is one of our rarest species and one of the most beautiful. In Scotland it was first found near the summit of Ben Lawers by George Don and originally reported by him in 1804 under the name *M. alpina*. In literature dealing with rock garden plants it has also laboured under the name *M. rupicola*, but any dubiety about correct nomenclature can never detract from the loveliness of the plant in the height of its flowering season.

While most of our so-called alpines are in reality arctic-alpine, there are others, fewer in number, which inhabit arctic or sub-arctic regions, where they are often widespread, but are unknown in the mountains of central or south Europe. Their restriction to northern lands is at least presumptive evidence of a boreal origin, whereas for an arctic-alpine species it may be difficult or impossible to decide whether it originated in the "Arctic" or in the "Alps." Whatever the details of the story may be, it is evident that the hill plants of Scotland have had a strange eventful history.

In the British flora there are some twenty-five species which may be described as arctic or sub-arctic plants, and they are predominantly Scottish. A few are circumpolar, such as *Diapensia lapponica* and *Saxifraga caespitosa*, the former being known in cultivation long before it was discovered in Scotland, where in its isolation it must be left undisturbed as a good example of an essentially arctic species retaining but one foothold in our own country. Among these northern plants there are not many to make an appeal to the rock garden enthusiast, but the oyster plant, *Mertensia maritima*, must not be allowed to pass unnoticed. Here is a species which is widely distributed in northern regions growing on gravelly or shingly sea-shores, and in similar situations it occurs on certain stretches of the Scottish coast. It is one of a small number of maritime plants which find their way into the rock garden, but not the easiest to maintain in cultivation as judged by my own experience. But others have met with more success and I have seen the plant growing well, side by side with dwellers of the hills. In the cultivation of the rock garden, therefore, there is abundant opportunity to indulge in the spirit of adventure and even from a small selection of Scottish plants it is possible to bring together representatives whose natural habitats vary from the sea-shore to the summit of the higher hills.

I have not mentioned a large number of species by name and many have been omitted because they are of no horticultural merit. So far, also, I have referred only to flowering plants, but I would like to suggest that there are several native ferns which could well help to adorn the cracks or crevices of an old wall, especially if there be some well worn mortar available. In the rock garden one might with interest

replace Tennyson's "Flower in the crannied wall" with a species of *Asplenium*, or *Cystopteris* or the unusual scaly fern, *Ceterach officinarum*, and there are others from which to choose according to sites available. Even the common polypody is not unworthy of a place, though the greater delicacy of the oak or beech fern may make a wider appeal. For many years on an old familiar wall I have watched the annual unfurling of the finely textured fronds of *Cystopteris fragilis* with as much interest as the opening of a flower.

In the short time at my disposal I have been able to make no more than a passing reference to the different parts of the earth's surface where some of our native hill plants are to be found, alpine and arctic regions being noted especially. But I hope I have said enough to indicate the astonishing diversity which characterises the mountain plants of Scotland, where they commingle together despite the remoteness of their original homes, some having apparently arrived from the south, others certainly from the north.

From this point of view they can only be regarded as relics from the past—a past which has to be reckoned in terms of some 30,000 years, a period covering the concluding phases of the last glaciation as well as the post-glacial time. It is thus very true to say that the hill plants of Scotland are part of an ancient heritage of Nature, and their continued survival should be the desire of all who value that heritage. It is not enough to single out rare species for preservation and protection. What is needed is conservation of the mountain flora of Scotland as a whole.

A consideration of the history of even a few of the plants I have mentioned would take me far beyond the scope of this lecture, yet it certainly adds to the interest of our flora if we know something of its historical background, an outline of which I have given in my book entitled "Origin and Distribution of the British Flora." In all probability most of the species of plants now found as natives in this country were in existence by the end of the geological period known as the Pliocene, although there is no reason to suppose that evolutionary changes among plants are not still going on. But events during the succeeding Pleistocene or Glacial Period played a good deal of havoc with the pre-existing flora of the country, in that climatic conditions became sufficiently severe as to make survival of plants all but impossible except perhaps in the south of England. It is unlikely that mountain plants persisted throughout a period of maximum glaciation in their present habitats, although a few may have retained a precarious foothold. Even this is doubtful. If the last glaciation, and it is the only one which concerns us, brought about even a partial extermination of our flora, we must look to post-glacial events for its restoration. The evidence suggests that the present flora of these islands did in fact unfold itself and attain its present distribution during the later phases of the last glacial epoch and throughout post-glacial time, a period of some 30,000 years or more.

The evidence comes from the recognisable remains of plants discovered in glacial and post-glacial deposits of varying age in different parts of the country. Of particular interest are those situated in south-east England, since in this region the older deposits belonging to Full Glacial and Late Glacial times have yielded such species as *Betula nana*, *Cherleria sedoides*, *Dryas octopetala*, *Loiseleuria procumbens*, *Primula farinosa*, *P. scotica*, *Salix herbacea*, *S. reticulata*, *Saxifraga hypnoides*, *S. oppositifolia* and *Silene acaulis*. This small selection alone provides a remarkable picture of the plants inhabiting the lowlands of England in late glacial times. At the present day we should look for these same species, not in south-east England, but in alpine or sub-alpine habitats, among mountain rocks and ledges, while the plant with which I commenced my lecture, *Primula scotica*, has its present home in the north of Scotland. The astonishing changes in the range of our mountain plants, involving some from the Alps and others from the Arctic, are to be explained in terms of changing climatic and edaphic conditions, which affect the life of plants throughout their long, eventful history. It is a long story, the telling of which must be left to another time.

Diavolezza-Pontresina

By H. ESSLEMONT

TEN THOUSAND feet is always an exciting altitude at which to commence plant hunting, but it is seldom attainable without considerable effort.

Pontresina (altitude 6000 feet) was chosen by the Alpine Garden Society for the first week of their 1959 Tour, and it proved an ideal centre for those who did not want to be too strenuous. The Rhaetian railway, with its numerous halts, enables one to explore such well known and interesting plant centres as the Heutal Valley, Val Minor and Bernina Hospice without undue effort. Other aids such as chair lifts and funicular railways take one up a further 1500 feet or more before commencing to climb.

Perhaps the most spectacular of these lifts is the Bernina-Diavolezza cable railway whose cabin, holding 62 passengers, takes only ten minutes to reach the Diavolezza summit 10,000 feet high. We were advised that, although the view on a clear day was magnificent, there was unlikely to be much of interest to the plantsman as most of the area was under snow. We entered the cabin and, rapidly gaining height, soon saw below us a number of small figures whom we identified as members of the party. They had made an early start and were toiling up the steep 2,000 feet ascent to the Diavolezza lake in the hot sunshine. Soon the green alp below us changed to white snow and in a few moments we stepped out into the cold clear air at the summit.

The panorama facing us was really magnificent, the long massif of the Bernina range with its towering ice peaks glistening in the sun.

Conditions were ideal for photography and a telephoto lens proved its worth. We found the summit almost completely under snow, but a survey showed that a rocky ridge to the North appeared clear. We decided to explore it.

Our first discovery was a few large flowing plants of *Primula viscosa* apparently thriving in the stony scree, and on a steep slope nearby grew a colony of *Potentilla frigida.* The length of their root system surprised us and we had to content ourselves with one or two small seedlings. Further on in the rough scree some fine clumps of *Ranunculus glacialis* made good subjects for the camera and large plants of *Geum montanum* and its more distinguished relative *Geum reptans* were deeply entrenched in crevices between large boulders.

We saw some magnificent plants of *Gentiana imbricata* grown really hard in full exposure. On one of them we counted over fifty flowers. What a sensation it would have created at any Rock Garden Club show ! Further on a brilliant splash of blue caught the eye. Yes, it was *Eritrichium nanum,* a fine form covered with flowers. Others were observed not far away. How variable this plant seems to be in nature ! Unfortunately at this stage rain interfered with photography and an upward glance showed that the cloud level was descending ominously.

Immediate and hasty retreat was inevitable and before long visibility was reduced to twenty yards. It was not without a sense of relief that the hut was reached an hour later, and a lesson that a sharp eye should be kept on the weather at high altitudes had been learned. My only regret was that the opportunity to collect some *Eritrichium* seedlings had been missed.

My luck was in, however, for on returning to the hotel I found that kind friends who had done the long walk at Val Minor had brought me two very nice little plants which, I am pleased to say, are doing well. I believe that many of the failures with this plant are due to trying to establish large specimens. These have a very extensive root system and, when it is damaged, plants seldom survive the shock. Few find that "The King of the Alps" takes kindly to captivity and seed or seedlings appear to offer the best chance of success.

What gardener worth his salt can resist a challenge ? Is there not the almost legendary plant at Edrom which has been grown in a trough for five years to encourage us ?

At home with Japan's Alpine Gardeners

By GEORGE SCHENK

IN TOKYO in the autumn I had the good luck to meet two of the foremost Japanese alpine gardeners at their homes. I believe that both these men, Mr. M. Ozawa and Dr. T. Rokujo, are members of the S.R.G.C. They are constantly reaching farther round the globe for new contacts, and by now more than a few of us in the western world have benefited from their earnestness and ambition through an exchange of letters, plants and seeds.

In presenting these men and their families I find myself involved half with people and half with plants. The nature of Japan itself gives immediacy to such an alliance in thought. Where in the world do plants and people grow more closely together? Consider what we may learn of the Japanese through a study of the characteristic plants of the land. Pines and bamboos spring first to mind. Perhaps it was those old monks, with their brushed pictures and brushed words, who taught their countrymen to emulate the grace of the bamboo and the sufference of the pine. But certainly the reed and the tree did intergrow with the nation's way of life, giving a multitude of utilities and a constant food for soul. Pines and bamboos, then, became first loves. And the nation's love embraced cherry trees and plum trees, camellias and all the shrubby wealth of the land. This people had a love sufficient for all the little life that the world usually passes over—love for the fragile footlings of the forest, and for the huddling gnomes of the hills. They are all inseparably a part of the painting, design, architecture, the legends, the poetry, the religion—in a word the *life* of the Japanese. The gardener in Japan must work at his venerable soil accompanied by feelings profound and awesome. After all, it is not merely soil but history that he cultivates, tradition that he plants, his own heritage that he harvests.

These two families that I present to you should be known against this background, yet they are fascinating to know just for themselves.

First I met Dr. Rokujo, a specialist in internal medicine, lecturing at Tokyo University, and his wife, a pediatrician. They are busy people, as are doctors everywhere, but they gave me freely of their time. To reach their home I took a mad ride in one of the tiny *kamikazi* (suicide) cabs. We spurted through the arteries of Tokyo traffic, squeezed along the veins, and came creeping into the very capillaries —the *chome*. These dirt lanes of mazy twist kept my driver hopping out to raise his cap and question passers by. We found Dr. Rokujo standing at the curb, a young man dressed in western clothes except for sandals. I shook hands with him and then, inside, I bowed to his wife. Her flowered kimono and the warm light in her eyes made me smile easily. They have two gentle little girls, one of whom, eyes downcast, disregarded her father's soft protest and presented me with a sketch of an elegantly kimonoed lady. She had signed her art work

twice, as MARIKO ROKUJO in Romanized Japanese, and then in calligraphy. I have it still.

Her father and I walked among the thousands of containers in which he grows most of his collection. The pots and pans are filled with coarse, black pumice from Mt. Fuji, with a pinch of sphagnum added, and nothing more, except a solution of fertilizer from time to time. This mixture looks about like the cinder track of an athletic field, yet alpines take hold in it in a way they seldom do down from the heights. Many of his plants hugged that volcanic rubble as dearly and closely as they would their own chosen screes and crevices. Especially did the alpine violets, which are a specialty of Dr. Rokujo, keep all their alpine character. But it disturbed me to think how unfailingly he has to water all those thousands of containers.

His Japanese collection, he told me, wants re-stocking, having been traded off in large part to overseas correspondents. Yet Japan was still well represented, as with these : a Lilium sp., a pure yellow tigrinum type newly discovered on Tsushima Island ; *Angraecum falcatum*, an intensely fragrant, white epiphytic orchid ; shrubby *Quercus dentatus*, var. *pinnatifolius* ; the rosette habited *Chrysanthemum weyrikii* from Sagahlin Island in the Kurils ; the cyclamen foliaged *Viola variegata.*

He has extensive collections of Australian, New Zealand, and South African plants. The winter usually is civil enough in Tokyo to allow these southerners safe passage in a frame. I lingered over these : the Tasmanian *Sollya fusiformis* of blue flowerlet ; the upright *Brunonia australis*, with an amusing little brush of petals rather like the extended "tentacles" of barnacles transformed into sharp blue ; one of the smallest conifers, the Lycopodium-like *Dacridium laxifolium* of New Zealand ; the South African *Dobrowskya tenella*, a campanula relative with rather violet-like flowers. (Dr. Rokujo's delight in the colours blue and violet is shown by every second plant in his collection.)

Many of his plants come from unheard of places, which the doctor named with wonder and emphasis, as all of us do who collect the geography of our plants as an added curio. From Sokotra Island in the Arabian Sea, the doctor has *Exacum affine*, of gentian foliage, glossy and basal, and the flowers of an African violet.

Fearing that my questions might become tedious, I began to scribble names without asking about lands of origin : *Fabiana violacea* of the Solanum Family, with tubular white-ish flowers on skinny branches like those of some juniper seeded in a cavern and gone etiolated ; *Sinningia pusilla* with little 'gloxinias' held once inch high.

After many such mysteries, I was asked in for tea. Angularly, I compressed myself onto the bamboo floor mats beside a foot high table. Mrs. Rokujo set the teaware. I watched delicate hands place the handleless ceramic cups, the lacquer trays of tradition, that seem to have been glazed once by the artisan and once again with the patina of centuries. These unfamiliar objects startled my mind's eye with a

strange sense of recognition. These were objects for which I had always been searching, without having known quite what they were until I saw them, objects whose design seemed perfect, substantial to use and yet at the same time imparting the feeling of fragile beauty.

How often in Japan I found myself, as I did now, arriving at the unknown, and feeling as I did, my memory awaken. I would think : "Yes, this is it. This is as it should be." There was a wattle fence that seemed an old friend ; a garden nook of stone and water and angled branch, which I must have known before ; the cups that came familiarly to my hand. These foreknown meetings were endless—and endlessly varied. Yet my greater wonder was that all these varied things were artistically related, as if there had been a single author of their ancient invention. They all had a look about them that was, like the cups, a perfect balance of substantiality and fragility, a look unmistakably Japanese. One might look at most any man-made thing from roof tile to rain basin, from bath stool to clog shoe, and see a visual link one to the other. Here was that same flowing unity which pulses life into any work of art. And indeed, my ultimate wonder was in feeling that I was walking about within a work of art of a Godly scale.

But I left myself, when fancy took flight, perched on Dr. Rokujo's floor. It would seem that my cup of tea held the soul of Japan.

We drank *cocha*, the light brown tea, and then (and not until the tea was gone) we ate sweets made of chestnut paste sandwiched between camellia leaves. *Nashi* followed. This round and crisp pear is more a refreshing drink than a solid.

We laughed together, the three of us. Mrs. Rokujo is musical, but her husband can't hear music ; on the other hand, she can't see plants. So they phrased it.

I spread out some woodblocks of Japanese alpines that I had brought for him to identify. Each print had a few squiggles of calligraphy which I supposed were the names of the plants. To my amazement these calligraphic characters translated to the sub-species. A photograph of one of the prints accompanies this article (see Fig. 1). It is of *Dicentra peregrina pusilla*, the emblem of the Tokyo Rock Garden Club, a group that makes monthly trips in season into the mountains to study and collect. As for the Dicentra, Dr. Rokujo said that the plant was difficult even for the specialists in Tokyo, but can be treated successfully by repeatedly drenching it with mild organic fertilizer all the while the leaves unfold.

Toward the last of our meeting, Dr. Rokujo wrote out a list of certain plants, mainly American considering my nationality, for which he has made a long and tireless search. These are some of them : *Primula cusickiana*, of the Wallowa Mtns. ; *Eustoma andrewsii*, of the Colorado Rockies ; *Viola nephrophylla* ; the larger Pinguiculas, except for *vulgaris* ; the white form of *Calopogon pulchellus* ; *Brodiaea terrestialis* and *B. stellaris* ; *Brunfelsia calycina*, especially in a deep violet form ; a dwarf, violet *Fraseria* ; *Gentiana platycarpa* ; *Eunomia oppositi-*

folia. I believe that he would send most any plant in Japan in exchange for any plant on this list.

The day of my appointment with Mr. Ozawa there was a drumming rain. I debated having my hotel desk call and ask for another time. No, I thought, he may have gone to considerable preparation. Maybe I had better call anyway to find out if it's still all right. But those middle-man telephone conversations are so devilishly difficult. While in this vacillating state of mind, I stood at the curb under an umbrella —testing the day. (Now when my fellow American males read this and snicker over the umbrella, I must remind them that it is only in the United States that we he-men thrust our lapels into the storm.) A cab pulled up and I more or less automatically got in. I handed the driver the two note pages of characters which were Mr. Ozawa's address.

After the usual thrill ride, the driver deposited me on a busy street. He pointed and explained in voluble Japanese that I was to enter a certain opening between little shops. At the end of the drive I fumbled a high and blank gate of weathered cryptomeria wood. I shut the street noise behind me and discovered a splendid, traditional house, an intricately utilized patch of ground, and two people—a gray lady sitting fold-legged in an attitude of Buddhistic repose—under the wide eaves—and a lean man, tall for a Japanese, standing with his back toward me. He stood in his short sleeves in the rain, and his clothes clung rain-soaked to his skin. Startled, he turned and faced me. He was holding several potted plants. His hands were the toughened hands of a man of the soil. I supposed that he was a gardener. Indeed, he was.

"*Ozawa San* ?," I inquired.

"*Hai,*" he replied, and showed me to a receiving room. He left, sliding the *shoji* behind him. The lady I have mentioned came in and explained something at length in a cultured, modulated voice. But I do not speak Japanese. We lapsed into a silence that stung at me like hornets. We sat for perhaps 15 minutes. Then the screen was opened by the same man transformed into a western-suited gentleman.

We met formally.

I wrote notes apologizing for the inconvenience of my visit, and asking him to accept the small gift that I had brought (in accordance with Japanese etiquette). Like most educated Japanese, Mr. Ozawa reads and writes English workably well. But he has had little opportunity to speak it. At first he was self-conscious about using his English at all. Then his subject took possession of him. He talked of plants with pell-mell eagerness, grimacing and fuming when the words would not come. He introduced his mother, who had welcomed me in his absence. he explained that an interpreter would arrive at one p.m. It was now eleven in the morning. I wondered (on note paper) if it might be better for me to return at one.

"Please stay. I will show you slides."

Some hurried telephoning brought our interpreter ahead of schedule. Mr. Ozawa introduced her as "Miss Sumi, the daughter of an intimate friend." Miss Sumi, pretty and graceful, had just graduated from the Sacred Heart University. To make her excitement double, her family had arranged for her to be married within the month.

Mrs. Ozawa came in. I bowed to a petite lady. Her kimono, dark, and diminutively patterned, contrasted with her facial features, which were characterized by what I judged to be a life-long habit of good humor.

The first series of slides was of cultivars of *Adonis amurensis*, Mr. Ozawa's specialty above specialties. He has spent thirty years gathering a complete collection of the thirty-five varieties, some of which had been for one hundred years the guarded family property of their discoverers. The various forms include beauty of the highest order, and also monstrous forms that Mr. Ozawa grows less with enjoyment than with a collector's drive for completion. He shares the distinction of possessing this complete collection with one other man in the world, one other Japanese.

First he showed the wild form, its little waxen-gold 'waterlilies' bursting from the sodden February soil. Following this, as though they were conjured up mutations, came a procession of gorgeous color forms and petal variations. Miss Sumi translated : "Golden Word," "Scarlet Sea," "Happiness."

I was invited to another room for lunch. By this season in my visit to Japan I had learned to sit on my legs with almost the aplomb of a bronze Buddha. There were individual casseroles of wheat noodles, wild mushrooms, pink-colored fish, topped with egg custard. This mixture was eaten bubbling hot. The long noodles, Mr. Ozawa explained, heralded our long friendship.

I learned that this property had been an ancestral posession for three hundred years. The house is new. He had been bombed out during the war, but he had saved the irreplaceable from among his plants by taking them into the mountains and replanting them. Most of his present collection has been gathered since the war.

After lunch, the schedule which had been most thoughtfully prepared for my visit, called for a tour of the garden. I was helped into my plastic traveller's raincoat, and then handed plastic leggings to cover my trousers. Mr. Ozawa prepared himself similarly. Miss Sumi put on the rubber boots which are quite usual street wear in this rainy land. We all opened umbrellas.

Gray sheets of rain slapped at us. No time to linger. Among many pan-laden tables there was one of Japanese Campanulas, including cultivars rare to Japanese collectors, and unknown to us. Another table was devoted to terrestrial orchids. There were numbers of potted rhododendrons. After *Adonis amurensis* these three groups comprise Mr. Ozawa's specialties. I saw row upon row of specimens of exhibition

quality. All this at a glance. I prevailed upon them to stand long enough for me to learn about a bonsai grown Rhododendron of especially disciplined beauty. It was *Rhododendron makinoi*, for twenty-five years the occupant of the same bowl. (I must confess my covetness for the hand-turned bonzai bowls of Japan, and my redoubled loathing for our own mass produced pots.) I examined what I thought was the foliage of an *Artemisia* in tight, basal growth, and in doing so I mistook the frosty leaves of *Dicentra peregrina pusilla.* I was fascinated by a huge porous stone grown over with a miniature forest of *Selaginella involvens.* The plant is like a miniature of a tree from out of the Carboniferous.

There came another selection of slides. Mr. Ozawa's elder son, home from his dental office, joined us for the viewing.

Mr. Ozawa showed pictures of a dream in the process of realization. He has set himself the task of landscaping a mountain with an international collection of alpines. He has spent the last three years on this task, which is to be the cultural sum of his life. He allows himself another nine years for the garden's development before he will consider it worthy of public inspection. His mountain rises stone headed from green shoulders. Tongues of the sea lap about its base, and Fuji lords over all.

First come Japanese trees, shrubs, and alpines : already he has carried up great numbers. Then he will add an international collection. (Mr. Ozawa has great hope and dependence upon foreign correspondents to supply him the latter. He cannot send currency abroad.) Much will be preserved in the natural state. The lava outcroppings support a growth of *Shortia uniflora* and *Schizocodon soldanelloides ilicifolius* almost lichen-like in its close adherence. There are autumn-golden lawns of the bamboo, *Sasa veitchii*—lawns wind clipped to ankle length and dotted with deep green *Pieris japonica. Tsusiophyllum tanakae* and *Primula reinii* (''The best native primrose'') grow about the peak. Lower on the mountain a centuries old forest of *Stewartia monadelpha* has attained a height of 30 to 50 feet.

Mr. Ozawa considers this mountain the ideal site for his work. It is less than a mile high—no more than a stiff hike, yet high enough to give the plants alpine atmosphere. The mountain is within Hakone National Park, where he works by special permission. His aim is to make the garden public property, with governmental support.

I should turn aside to remind you that all this time we had made of Miss Sumi a harried dispatcher, guiding the trains of our thought. Between my insatiable questioning and Mr. Ozawa's intense replies, she remained soft voiced and poised. Only the twisting handkerchief in her hands hinted that it was not easy for her, as indeed it could not have been for anyone. . . . In my heart I bow to her.

The afternoon tea, a company tea, featured ''*sushi* in a bag.'' This consisted of vinegared rice mixed with sesame seed, tuna, and a special mushroom from the trunks of oak trees, all enclosed by a bag made of

egg batter and tied with a cord-like seaweed. The "*sushi* in a bag" rested on a bed of bamboo leaves, some of them left natural and some decoratively cut. The platter, and much of the other pottery, had been turned by the contemporary master, Shoji Hamada. There was again a proverb connected with the food. I was to carry from Japan a rich store, material or spiritual, just as the bag held its riches.

Mr. Ozawa's son conversed with me about his favorite composers, and about his growing appreciation of plants. The father hopes that some day the son will be as deeply absorbed as he. At present the son is concentrating on bulbs, especially *Narcissus*, *Fritillaria*, and *Erythronium*. He has not the patience, his father scoffed, to do the watering necessary for plants in pots. Mr. Ozawa must water the entire potted collection twice a day in the heat of the summer. His plants are his full-time work now that he is retired from the insurance business.

The dessert of white bean paste impressed with sliced chestnuts was eaten with bamboo sticks of about one and a half match lengths, and carved as Equisetum flowers. These were the work of a family friend.

For the next group of slides my host handed me five hand-written pages of Latin names. Ordinarily he refers to his plants by their Japanese names. This list had been prepared for my benefit.

Now I was shown the floral wonder and delight of Japan's mountains, as grown in Mr. Ozawa's garden : the fantastic *Arisaema thunbergii*, var. *urashima*, with its spathe that attenuates into a thread two feet long ; an exceptional reddish form of the Manchurian *Iris tigridia*, two inches at flowering ; a white *Anemonopsis macrophylla*, one of Mr. Ozawa's "private plants" ; a six petalled form of the white *Trillium kamtschaticum* ; fern leaved *Parnassia foliosa* ; opulent *Utricularia bifida racemosa*, in deep purple and in pure white ; *Pectilis radiata*, with petals like egret plumes ; *Cypripedium macranthum*, var. *ventricosum*, glowing like red wine held against the light ; *Dicentra peregrina pusilla*, *Iris*, *Aquilegia*, *Schizocodon*, *Rhododendron*, *Orchis*, *Shortia*, *Campanula* . . . It was a staggering display.

Like Dr. Rokujo's, Mr. Ozawa's is a connoisseur's garden. These men feel emphatic taste or distaste for this or that plant. Dr. Rokujo is preoccupied with the colors blue and violet, while Mr. Ozawa specializes in plants that are especially rare cultivars. Theirs is a rarified appreciation sought by the Japanese in all their cultural pursuits.

Our supper was a *sukiyaki* party. *Sukiyaki*, of course, has become part of the *haute cuisine* of the world. But what a memory it was for me to learn the original truth of the matter—*sukiyaki* made with Japanese beef (which in my opinion as a meat man is unsurpassed), and wild mushrooms, and other irresistibles, and laced with *sake*, and each burden of the chopsticks dipped before eating into raw egg. The best beef for this is killed with kindness. On its last day it is fed *sake* to make it peaceful. Then it is massaged to utterly relax its muscles. And then when it reaches a condition of ultimate bliss, its throat is cut.

Our table held *saki* cups like enlarged thimbles, but my host lost patience with these and called for two tumblers. He filled one for me and one for himself. I received a special dish of tuna fish formed into balls, glazed with a sauce, and impaled on a bamboo stick. The dessert of assorted fruit included persimmons fresh from the garden.

Conversation took on camaraderie. Mr. Ozawa's mother and wife asked about my home life and about my trip. Mr. Ozawa confessed that he had gained the ominous impression in letters of introduction sent on my behalf from both the United States and Canada, that he was to be visited by two foreigners at the same time. He gave a terrible outcry of mock madness, and made the motions of a distraught man knuckle scrubbing his head. If any self-consciousness remained between us it dissolved in the laughter of that moment.

It was late—past nine. As I prepared to go, my host handed me a beautifully inscribed book on Japanese alpines, his parting gift.

I rode to my hotel oblivious to outward sensation. I tried to give some order in my mind to the tumbling impressions of this day. On one point I felt settled and sure—and this was that the mountains of these little Islands are scarcely less wealthy in alpines than the continents outside, that the floral tapestry of these Island-Mountains is an interweave of glowing and matchless material.

The Button

THIS STORY has nothing to do with gardening, only with a gardener, if I may claim such a distinction. Anyhow, I believe that gardeners, unlike fishermen and golfers, always tell the truth.

My wife and I drove down to London for Christmas and, except for one occurrence, it was an uneventful journey, just the ordinary sort where husbands and wives take turns to drive. As usual I got into trouble quite soon for going too fast. Then I bumped a curbstone as I went round a corner which made me even more unpopular. Later, when my wife was driving, I thought at one moment that we were doing 60 in a built-up area. It is an odd thing that our speedometer reads quite differently from the driver's seat to what it does from the passenger's seat. But all this is just by the way, because the only real incident of importance was that somewhere on that journey I lost a trouser button.

Definitely that button had to be replaced. First I tried in Chelsea, where I went to a small "Gent.'s Outfitter" in Kings Road. He was a prim and conscientious little man. As there were two ladies in the shop selecting ties as presents for their husbands I had to wait quite a while, especially as I was not sure of the size of the button I needed and I was wearing that pair of trousers. In the end I did find an appropriate moment and showed the little man another button on the same row. He said he did not sell buttons and I would have to go

to the Fulham Road to get one. I protested that I was old and decrepit and the Fulham Road was a long way off. Thereupon he relented and from a little box produced two buttons which he said were the right size. What is more, he flatly refused to take payment, even the penny I offered him. When I got home I discovered to my horror that the buttons were too small.

Next day I tried again. I went by bus to one of those large emporiums which sell everything. This time there was a girl behind the counter, which slightly complicated the situation. However, I had with me the two buttons I had acquired the day before, so I asked for the next size larger. She brought out something at least twice the size and blandly assured me that nothing of an intermediate size was made. She told me to enlarge the buttonhole and do some sort of stitch round it. She also charged me threepence each for the buttons. Accepting defeat, I paid up and slunk away.

Out in the street my courage revived and passing a shop labelled "Civil and Military Tailor" I went boldly in, to be greeted by a terribly smart young man wearing a black coat and striped trousers. I enquired whether he could sell me such a humble thing as a trouser button. He said : "Yes Sir, Brace or Fly ?" My reply was that I did not care one little bit what it was called provided that it was the right size, and I produced my samples, one too small and one too large. He was an efficient young man, and after only two or three minutes of search he was able to lay on the counter two buttons of the halfway size I was seeking. Unfortunately they were blue and I wanted brown. However, they would serve the purpose, especially as here again there was no charge for them.

When I got home I took all the buttons out of my pocket and laid them out in a row on the mantelpiece, but now there were seven instead of six. The seventh was an exact match of those still doing duty on my trousers.

So now I am more than ever a firm believer in fairies at Christmas.

Should hate to think that it was just old age.

"LOCUM TENENS"

Jottings from Northumberland

By R. B. COOKE

LAST YEAR, on arriving home about the middle of March, there were signs that there had been very cold drying winds earlier in the year which had browned the exposed parts of many hardy plants. There also appeared to have been no severe frost. In confirmation of this a bush of *Tricuspidaria lanceolata* in an exposed position had lost a lot of its leaves, but not many of its flower buds, so later on it flowered well. In addition *Eccremocarpus scaber* in a sheltered place was undamaged and flowered early. *Rhododendron* 'nobleanum' was in flower and had no frost-killed buds or flowers, a very unusual thing for this early flowering hybrid, which is sometimes in bloom at Christmas.

The Spring continued rather cold to the end of April, though the frosts were only slight. Despite this, such easily damaged flowers as those of *Rhododendron forrestii* and *R. chamae-thomsonii* got killed when not protected. In passing it may be said that in this garden it makes no difference for Rhododendrons if the sun shines on the frozen flowers or not ; it is entirely the amount of frost which does the damage Other Rhododendron flowers which can stand, say, up to 4° of frost, were unharmed, such as those of *R. thomsonii. Omphalogramma* spp. in their shady bed, with plenty of leafmould, flowered more freely than usual, probably owing to the wet summer of 1958. They were *Omphalogramma elegans, Omphalogramma elwesiana, Omphalogramma soulei,* and *Omphalogramma minus. Omphalogramma vinciflora* was a failure, as here it never seems to have been given a position which it really likes. *Cassiope* spp. did well, except *C. hypnoides,* which though healthy had only one flower among three plants. *C. wardii* and its hybrids were especially good. *Orphanidesia gaultherioides* made a fine show in its well sheltered bed, covered by a sheet or two of glass as a protection against early autumn and late spring frosts. *Silene acaulis,* with full exposure to sun or wind, flowered as well as in the Alps.

Later in the spring and early summer *Briggsia aurantiaca* in a cave made in a north-facing retaining wall flowered freely. This *Briggsia* with its ramonda-like leaves and golden yellow flowers was found at 12,000 feet in S.E. Tibet by Messrs. Ludlow and Sherriff in 1947. From this elevation it should be hardy, but here it requires protection from severe frosts. *Streptopus simplex,* another plant raised from L. & S. seed, in a similar situation, also flowered freely. The light peaty soil in which it is growing and the shelter from wind seemed to be to its liking. There is a good illustration of it in the *Journal No.* 8, page 109.

As the summer went on the drought and high temperatures began to have their effects, and by the middle of July many plants were decidedly unhappy, as evidently the water which they had received from the watering-can had not been enough. This especially applied

to some of the Primulas, such as *P. bhutanica* and *P. sonchifolia.* Thunder rain in the latter part of the month somewhat revived them, but not for long. For in August and September when it became even hotter and dryer all the *P. sonchifolia* died and most of *P. bhutanica.* This latter had done well and had been greatly increased by division in the past 19 years, so this was a sad loss. If they could have had a sprayer turned onto them two or three times a week there is no doubt that would have saved them. Others which resented the conditions were the perennial Meconopses, especially *M. grandis* and *M. quintuplinervia,* but the losses among these were not so serious. *M. sherriffi* had disliked the excessive rain in 1958 and only one plant was left with several crowns too weak to flower and on account of the weather conditions it did not seem safe to divide them. Also seedlings of this species raised earlier in the year had to remain in their boxes for the same reason. So it looks as if for another year the dainty pink flowers of this Meconopsis will be missing from the garden. *Triptilion spinosum,* which for over 20 years has regularly displayed its bright blue milfoil-like flowers in the latter part of August, very nearly died. This native of Chile is now a very scarce plant, so it is doubtful if it could have been easily replaced. It is a shy seeder and that may partly accoune for its rarity.

Turning now to some of the plants which took no harm owing to the dry sunny weather—and in some cases did all the better—*Arisaema flavum* from S.S.W. seed had a number of its small yellow arum-like flowers, followed by spikes of red berries like those of our wild 'Lords and Ladies,' but much smaller. *A. candidissimum* also did not seem to mind the drought. The form of this with flowers striped with pink on a white ground was lovely. It is certainly one of the best of the Arisaemas, if not the best. The tall, green-flowered *A. triphylla* made up for its sober colouring by having a big spike of scarlet berries, instead of just green ones as in previous years. *Androsace lehmanii,* also from S.S.W. seed, took no harm, though it did get a little water once or twice. So far it has not had many of its pink flowers, but it has formed nice compact cushions.

Primula dickieana, L. & S. 13285, came through unharmed in its shady bed after being divided in early spring. Frequent division for this seems to be necessary and a cover over it in winter to keep it a bit dry. *P. deuteronoma* from the late Colonel D. Lowndes seems to be an early Petiolares, but division here also seems to be advisable every year, as it makes so many new crowns. Both these Primulas, of course, were watered once or twice a week, like *P. gracilipes* and *P. aureata,* and all four took no harm. This also applied to *P. bracteosa* and others. On the top of a dry stone retaining wall *Perezia recurvata,* raised from Falkland Islands seed in 1938, was occasionally watered and did not suffer. *Leucogenes grandiceps* on the same wall top also took no harm. Both flowered well and seemed to like their well drained windy position. *Codonopsis dicentrifolia,* S.S.W. 9084, with its large bells hanging on thread-like stems, was given some water, but not the other

spp. of this genus grown here. This may not have been necessary, as in the field notes for *C. dicentrifolia* it says "11,000 ft., crevices of S. facing cliffs." One which got no water at all and seemed to revel in the drought was *Zauschneria californica*. In its narrow, well drained, sunny bed it was a blaze of scarlet from early August to October. It is rather invasive and it has had to have its shoots pulled up when they trespassed too far, but it can be so good that this drawback can be overlooked.

Nerine bowdenii was another which got no watering. It flowered very freely, and usually it loses its leaves before its flowers open, but it did not last year. It also ripened a lot of seed, as did the *Zauschneria*. Finally, *Dianthus nardiformis* must be mentioned. It is a native of sandy ground in Bulgaria. Its flowers are rather poor, but they are produced so late in the year that they are of value on that account. Its leaves are very narrow and like those of the grass—*Nardus stricta*—and hence the name. For 25 years it has been on the wall top where the *Perezia* grows and in all this time it has never been observed to ripen any seed till last year, when it died. Unlike many plants on the wall top, it got no water.

All the water used was rain-water, or lime-free well water, which was pumped into the rain-water tank, so it got warmed up before it was required.

Leaves from Ferny Creek, Victoria, Australia

By B. WATSON—NOVEMBER 1959

CONSPICUOUS in the language of the keen horticulturist is the word "hope." His conversation is studded with it ; likewise my own as I set a plant, or sow more seed, or watch for the appearance of that first shoot or bud. But that is the essence of gardening ; it keeps hope alive.

The Spring season here is almost over, and a gay and riotous time of colour it has been. The glowing loveliness of the Mollis azaleas and rhododendrons received much acclaim, but for sheer daintiness and unobtrusiveness it is the rock garden which offers choice little gems and harmonious little pictures.

One of the lady members of our Group has developed a delightful rock garden ; a mound of builder's rubble, by chance suitably orientated, provided the inspiration which, combined with an artistic gift and some hard work, has produced a most praiseworthy result. There is an abundance of native rock here at Ferny Creek as originally this was a volcanic region, the colour shades from warm brown to neutral, and in this particular rock garden the rocks have been so placed as to have the appearance of a natural outcrop, heightening the colour effect as the various rock plants bloom. It is in an open, sunny position almost surrounded by green lawn, and in the early Spring the groups of bulbocodiums and crocuses look charming in such a setting, and

just now the dianthus are their most floriferous, notable varieties being *Dianthus alpinus, D. freynii, D. plumarius, D. neglectus, D.* "Mars," *D. caesius,* and variations, *D. deltoides* and "Wisley variety," *D. arvernensis,* D. "Highland Fraser" and "Little Jock." The pinks and mauve-pinks against their own blue-grey foliage have a soft, tranquil effect. Some have formed neat round cushions in the crevices of the rocks, particularly *arvernensis,* while others, of taller habit, have grown more loosely. The two outstanding varieties are "Highland Fraser" with its painted red and white faces, and "Little Jock" of a rich red hue. From 1952 Scottish seed distribution "*D. caesius* X" is blooming, and of German origin *D. campestris* and *D. tergestinus* have germinated well.

The soft pink of *Aethionema coridifolium* and two or three different Armerias, and the silver and white *Convolvulus cneorum,* all nestling down among the rocks, claim their share of notice.

One dark velvet seedling viola has shown no inclination to stay by its parent, but without restraint has wandered off to mingle with a soft grey clump of Santolina, peeping up here and there to rest poised above like dark-winged butterflies.

In our own garden, which is on a slope, it became necessary to construct a dry retaining wall about 50 feet long and 4 ft. 6 ins. high, forming a gradual curve. This we had carried out in rather large, warm-coloured rock, and in the process inserted various rock plants, such as several varieties of *Phlox subulata,* sedums, saxifragas, the showy little primrose "Julie," *Alyssum saxatile citrinum, Daphne cneorum, Gentiana acaulis* and *G. septemfida, Erica* "Springwood White," *Campanula isophylla, C. pusilla* and *C. carpatica* and others. They all love it, probably on account of the cool root run they can establish ; it is rewarding to see the various patches of colour spreading and creating a fabric ; and whereas we felt slightly dismayed when we first decided that a rock wall would be essential, now it is not only serving a useful purpose, but has become a garden feature. Up to the present pests have been singularly absent, even C.E.D.'s wood louse —I hope !

Stout Cortez

By "PIERRE"

"—for though the camomile, the more it is trodden on the faster it grows. . . ."—*Shakespeare.*

"The Chamomel is so well known every where, that it is but lost time and labour to describe it."—*Nich. Culpepper, Gent. Student in Physick and Astrology.*

I CANNOT cry with John Keats "Round many western islands have I been . . ." because for upwards of fifty years I have been faithful to the one island of Arran. But this year my wife wearied by this long fidelity insisted that we holiday elsewhere. And so it was that one morning in July we set sail for the remoter island of Colonsay and at evening leapt with what grace and agility we could muster into the ferryboat which landed us upon a rocky barren shore. As we cycled across the island to the distant croft which was our destination, this impression of rocky barrenness was not mitigated. None of the hills attains 500 feet and yet by some peculiar optical illusion their beetling crags look like mountains thousands of feet high.

Next morning, however, in the sunshine of a new day the island took on a less forbidding aspect, and very soon we were completely in its thrall. It was immediately apparent that the island was by no means barren, and indeed I soon began to suspect it to be a paradise for the lover of wild flowers. On that very first morning, as with my son I wandered back from the shore up a slope which was ablaze with Ragged Robin and Purple Loosestrife, Eyebright and Vetches and Trefoils, I was gazing in delighted wonder when I heard an irate roar upon the horizon and, looking up, saw our host gesticulating wildly. I doubt if I made matters better, when we came up to him, by explaining that I had not realised it was hay. . . .

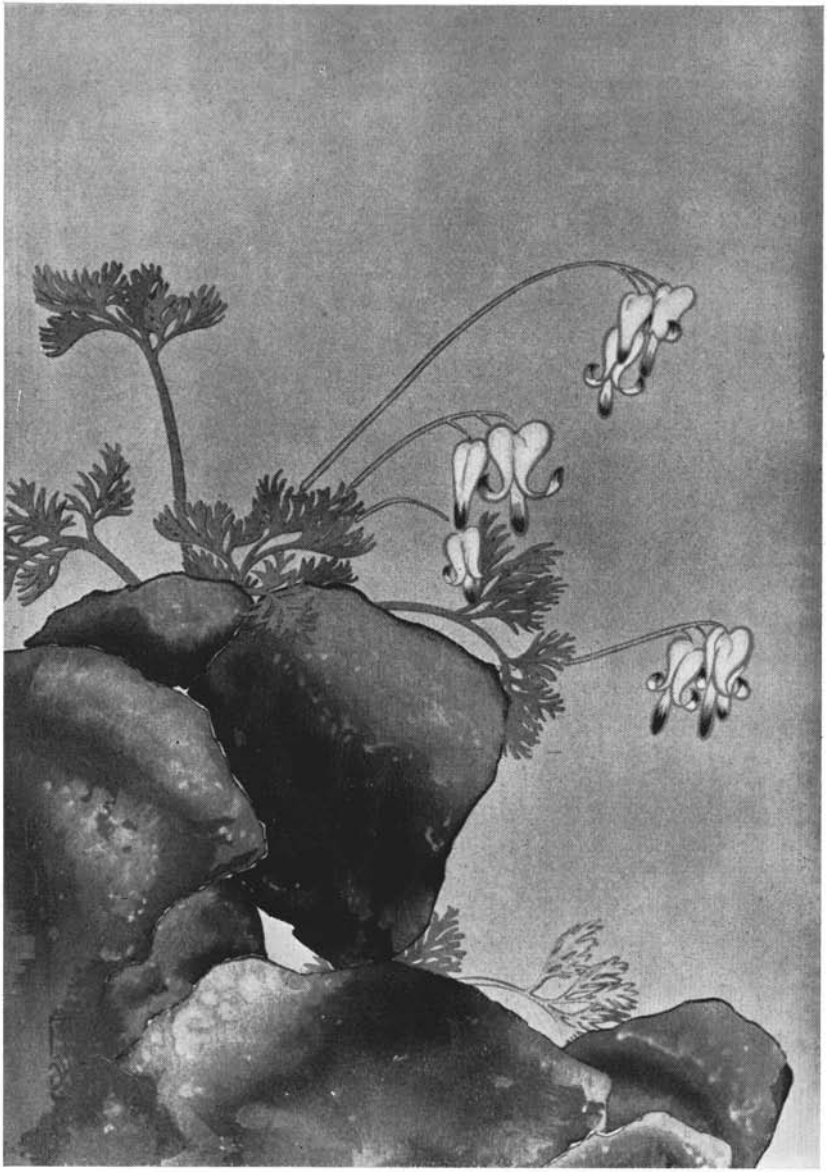
When one stepped abruptly from those gay entrancing hayfields on to the moorland, the flora changed at once. But the moors had their gaiety also. They were covered with a very lovely orchid, much lovelier than the ones I am accustomed to in Arran. It was pale pink, or more rarely white, with a pleasant spotted pattern. I was later told that in one field on the island can be found the rare American Lady's Tresses Orchid, but I did not go to look for it, as the family showed no enthusiasm for purely botanical excursions and my flower-hunting had to be done as best I could in the course of walks and bicycle runs and bathing expeditions. (Indeed, the only time in my life I remember taking part in organised botanical excursions was when I was a very small boy at school. We would set sail in "The May Queen" or "The Fairy Queen" from Port Dundas and, disembarking at Kirkintilloch, would hastily stuff a few flowers into our vasculums, before giving ourselves over to the serious business of finding how many pre-1914 bottles of lemonade, the kind with the glass marble stopper, we could scoff in the afternoon).

On the moors, besides orchids, there were vast quantities of *Arctostaphylos uva-ursi*, which I had only met before upon Holy Island. There were also large quantities of white heather, scattered here and there among the ordinary variety, and visible at once by the much paler green of its foliage. One also came upon white bell heather, but this was much more rare. There was, of course, also the Bog Asphodel, and everywhere the Bog Pimpernel lifting its pink trumpet from the damp turf.

When one came down from the moors to the machair one found a different flora again. The first thing that struck one was a colour scheme of truly barbaric splendour. I am sure it would have interested the author of that excellent article in last year's Spring *Journal*—"Taste and Colour in the Rock Garden." This colour scheme was provided by vast carpets of thyme in full flower besprigged all over with an extremely dwarf form of Lady's Bedstraw. This was strikingly effective, but I came upon a second scheme by the roadsides which was also delightful, and perhaps subtler in its appeal—high green banks of rough grass spangled all over with the fairy gold of Tormentil and no other flower. It would be hard to find anything more delicately lovely.

I am no botanist (if I may be pardoned this blinding glimpse of the obvious) and when my eagle eye chances upon some plant new to my experience, I can only stare at it with a wild surmise until I get back to my McClintock & Fitter. So it was with a pretty little white flower which I found in colonies in the short turf of the machair, especially at the northern end of the island. I immediately diagnosed a sandwort, but on comparing it carefully with all the illustrations, I think it is more probably Knotted Pearlwort. At the northern end, too, with high excitement I found piercing the turf with its pointed flower-buds what seemed an indubitable gentian. And I do believe this particular wild surmise is quite correct, and that it is the annual *Gentiana campestris*.

While I was making these discoveries I was lamenting to myself and to my wife that the island seemed entirely devoid of my darling *Parnassia palustris*. But then one day I explored a wide flat-bottomed valley that opened from the southern shore and which I think at some time must have been an arm of the sea, and behold its floor was bright with my parnassian grass. On the fringes of that valley also I found another aristocrat, the Royal fern, and at its mouth, on the sand dunes, I found a tiny yellow pansy which I take to be the annual Heartsease. Everywhere on the sand dunes was my other darling, *Campanula rotundifolia*, and what struck me about it was its really extraordinary variety of shade, shape and size. One found it in shades ranging from dark purple to palest blue. One found it with beautifully out-turned bells as large or larger than *C. olympica*. One found it with exceptionally slender bells, with rather shapeless bells without the out-curving lip, but the one I found especially entrancing was a squat, tubby bell something like the one Jack Drake calls "Patience



Photo—Geo. Schenk

Fig. 1—Dicentra peregrina pusilla (see page 20)
(from an old Japanese water colour)

Photo—D. Wilkie

Fig. 2—Iris innominata (see page 74)

Photo—D. Wilkie

Fig. 3—Gentiana kurroo (see page 78)

Photo—D. Wilkie

Fig. 4—Campanula mirabilis (see page 76)

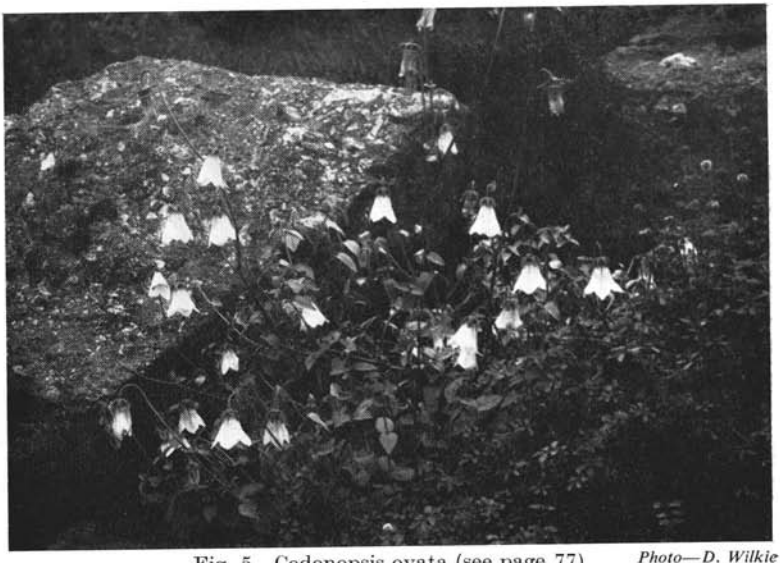


Fig. 5—Codonopsis ovata (see page 77) *Photo—D. Wilkie*

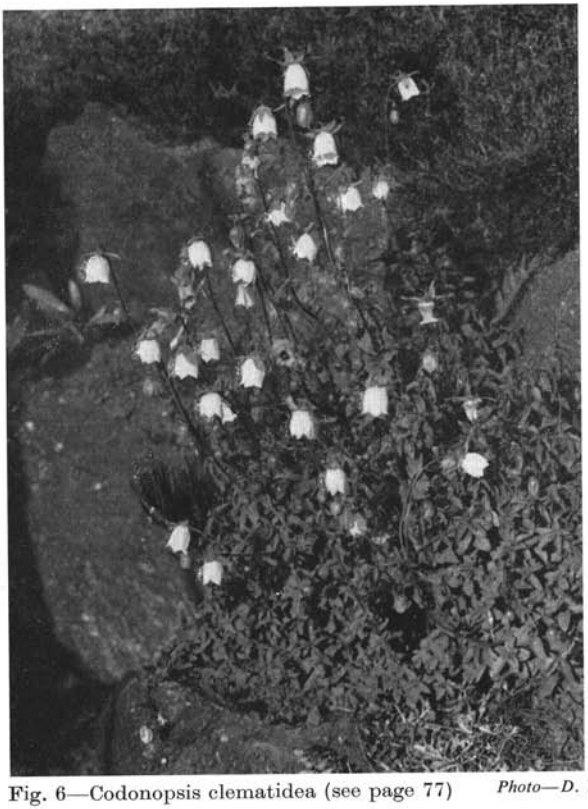


Fig. 6—Codonopsis clematidea (see page 77) *Photo—D. Wilkie*

Bell,'' but much larger. This form occurred quite frequently in the rough grass of the dunes and much more rarely on the moors. It would, I think, be quite an acquisition to the rock garden. Widespread also was an *Erodium*, which I would have guessed to be *E. moschatum* if the book did not say that it is not to be found in Scotland. So I suppose it must be *E. cicutarium*—quite a pleasant plant, although the flower is rather small compared to the coarse ferny foliage.

Colonsay has wonderful beaches of glorious sand, most of them golden in colour, vast in extent and quite deserted. One we called Seal Beach, because when we bathed there seals would pop up their heads around us, gazing at us with friendly curiosity. Among the rough grass of the dunes here I found a pleasant little 'maidenhair fern' about four inches high which I take to be *Thalictrum minus* only because it can surely scarcely have been *Thalictrum alpinum* in that situation.

But the most magical of all the magical island beaches was near the northern tip, and there we came upon what must be a glorious sight in spring. We had followed the rough road until it changed into a cart-track and then to a marshy path before petering out completely in the heather of the moorland. At last we came to little marshy runnels that threaded their way through the sand dunes to the shore. These little marshy valleys were aflower with a St. John's Wort which I think must have been *Hypericum tetrapterum*, but everywhere one could see masses of Kingcup plants and then right down to the edge of the shore tucked in the lee of rock ridges, great drifts and masses of primroses, and beyond that the sand and the long line of lacy foam of the spent waves. The thought of that spring glory made me long to come back to the island at all the seasons of the year to see it produce all its treasures.

In the centre of the island round the laird's estate are the only woods of forest trees, while his gardens are crowded with exotic shrubs, most of which I had never heard of. There are also the two largest of the island's lochans, which like the others have patches of white water lilies glorious in their waxen loveliness.

These were exquisite, but the plant which it gave me the greatest joy to discover was one much humbler *Anthemis nobilis*, the plant of my quotations. I discovered it carpeting a rocky road that climbed the northern ridge of the island and I thought to myself that this was surely an exceptionally dwarf form of the may weed. But when I got back to the croft and my Pocket Guide, I wondered : ''could it be the Camomile ? 'The more it is trodden on . . .' Where could it have a better chance of being trodden on than on the centre of a road ?'' So at the first opportunity I hurried back, and verified to my delight that the plant had indeed a strongly aromatic smell. I have brought back a few rooted fragments and planted them in one of the paths of my garden. If Falstaff proves right and the plant grows rapidly I might try to make a lawn of it, for my Pocket Guide remarks ''Now rarely used for lawns.'' How pleasant to have an aromatic lawn !

And then my neighbour who jests about my present splendid crop of daisies would surely be shocked into silence by my camomile lawn ! As can be seen my Mr. Culpepper has nothing to say of the appearance of the plant, although he expatiates upon its virtues as a cure for everything from stitches in the side, to weariness, and all Pains and Torments of the Belly. But of course after looking up what he had to say about the camomile I dipped here and there into his volume. And so I chanced upon the following enchanting piece of information about what he calls the Perwincle. "Venus owns this Herb, and saith, That the leaves eaten by Man and Wife together, cause love between them." I find this of great interest, for I have often wondered why this invasive and only sparsely flowering plant should be found in practically every garden in Pollokshields. I hasten to emphasise that Culpepper says "Man and Wife," for I should hate to be responsible for an outbreak of Tristan and Iseult tragedies among those of our younger members who may be tempted to indulge in dangerous experiments. Was it not Harry Graham who

". . . . in early life
Fell in love with Doctor's wife,
And ate an apple every day
To keep the Doctor far away."

Archivistic Rock Gardening

By W. D. DAVIDSON

I HAVE a strong dislike of labels of any description in the rock garden. However discreet they may be, they tend to suggest a botanical collection rather than a pleasure garden. In early years, when my collection of alpines had barely attained its century and my enthusiasm was unlimited, I had no need for any artificial aid to memory and could identify any plant at sight. But collections grow and memory—if not enthusiasm—fails, and I could not now undertake to put an immediate name to every one of several hundred plants in my garden. I have also felt the need to have ready to hand a note of what conditions a plant likes, what treatment it should be given, when it should be in flower, and how it can best be propagated. Can there be any answer but a card index ? It may seem a bureaucratic intrusion into the garden, but at least it can be kept out of sight, yet be ready to hand. It is much more informative than any labelling system, it costs very little, and it is less likely to get lost.

Here then is my system, still in an early stage of evolution, and no doubt imperfect and capable of much improvement. In the first place I have made a plan of the garden on squared graph paper. Excluding buildings and paths, the garden is approximately a quarter of an acre, and on the plan it is divided into some sixty squares each of about twenty square yards. The plan is lettered along one margin and numbered along another, so that each square may be identified as e.g. B6 or G8. By marking prominent features in the plan it is quite easy to determine the approximate position of any plant without resorting to the tape measure, and, in fact, in compiling the card index I have been able to identify the position of most plants from memory without even going into the garden.

The index cards measure 5 inches by 3 inches. Here is a specimen card :—

Front.

DIANTHUS ROYSII (seedling)
(Caryophyllaceae)

Situation : B8
Origin : Seed—SRGC 1959
Flowers : July-September
Description : Large flowers of rose pink with buff reverse on stiff 4 in. stems : Grey-green foliage (may be a variety of *D. neglectus* but probably a first hybrid).
Culture : Sunny scree : Probably better without lime.

Reverse.

Propagation : Soft cuttings in June : normal frame ; pot limy soil ; ready to plant spring.
References : Ingwersen, p. 79.

The description and notes on culture are usually taken from the Standard reference books, e.g. Farrer, Sampson Clay, Mansfield, etc., and the propagation notes from Hills' "Propagation of Alpines," but in some cases one has to look elsewhere, e.g. in the above case to Ingwersen's book on "The Dianthus." For plants which have only recently come into cultivation one has usually to be content with the description in the Nurseryman's Catalogue. It is convenient to note on the card a reference to where a good description of the plant, and possibly a photograph, may be found. One can also note on the card information gleaned from gardening periodicals (including the *Journal*) from time to time, and the index should "improve with keeping."

So far as identification of plants is concerned, the main fault of the system is that one may well have a large number of similar plants in one square. For example, the whole of my scree, with perhaps thirty plants, falls into one square, another square contains about twenty different iris, and two adjoining squares hold some thirty heaths. The description on the card has therefore to be pretty meticulous, and it is not, for example, very easy to differentiate in writing among a dozen different erica carneas. A perfectionist would have a greater number of smaller squares, but personally I prefer to run the risk of error.

Once the index is in being, it is a comparatively simple matter to compile from it a month-to-month diary of what one should be doing in the way of treatment—mulching, pruning, etc.—and of propagation. Those rock gardeners who have room in their affections for other plants than alpines can, of course, extend the index to include them, and when time permits I propose to have differently coloured cards for shrubs and for roses.

Finally, when one comes to sell the house (and garden), what a boon the index will be to the new owner—in the unlikely event of his being a keen gardener—after, of course, one has abstracted the cards appropriate to the plants one cannot bear to leave behind.

A Beginner among the Meconopses

By G. E. BARRETT

ONE IS OFTEN advised in books and magazines dealing with gardening matters to grow only those plants which are especially suited to one's own particular district. While this is, of course, eminently sensible advice, it does appear to me to savour of defeatism and to be lacking in that spirit of adventure and experiment which has brought horticulture to its present high level.

Apart from the fact that a good deal of trial (and sometimes error) is necessary in order to find out just which plants will or will not be easy to grow in a particular garden, the gardener is often attracted to a particular plant or genus and will strive even against apparently unfavourable conditions until he is either able to grow it reasonably successfully or is finally convinced that for him it is just not possible.

In such a spirit I decided to devote a small corner of my garden to the cultivation of various kinds of meconopsis, although one is sometimes told "they can only be grown in Scotland," "it is too warm for them in the South," or simply "they won't do round here." While being quite prepared to accept the fact that in Scotland they can be grown more easily and will attain a state of perfection not possible here, my hope was (and is) to grow them sufficiently well to be able to enjoy and admire reasonable specimens of these wonderful plants.

My previous attempts to grow meconopses had been confined to *Meconopsis betonicifolia* (mine are mostly the form *pratensis*) which has grown well and produced flowers of a really good blue, and *Meconopsis cambrica* which is rather **too** easy, although quite attractive, especially in its taller yellow form. Incidentally, I have so far seen this plant growing "wild" in Scotland only, chiefly around the Borders. Perhaps it is naturalised there ?

Now, however, I wished to "branch out" and began to make my preparations. My site, measuring only eighteen feet by twelve feet, had previously been the bank of a ditch and was covered with couch grass, bracken, wild raspberries, bluebells (English) and blackberry (brambles), which all had to be cleared before even a start could be made. It also contained two quite large trees, a crab apple and an oak. These were to be my 'shade.' I have since been horrified to read of the probable effects of "drip" on meconopsis and have had considerable trouble due to my plants being bombarded by falling acorns and crab-apples ! Fortunately the crab tree, although prolific, appears to be only biennial bearing, so in its case I hope only to have this trouble in alternate years.

The site is in a corner of my small (quarter acre) garden. It is sheltered on the south by a hedge and on the east by some wattle fencing and is open to the north and west. I first dug fairly deeply, taking out as much as possible of the weeds and scrub. It was then "trenched," stones being put in the bottom of the trenches for drainage, followed

by some turves, manure and old leaves and then topped up with the local soil (Bagshot sand) mixed with peat and small gravel.

The top layer was something of an accident. Finding that my hundredweight bags of peat did not go very far, I ordered a yard of peat from a well-known nurseryman specialising in rhododendrons. Upon arrival this "peat" was found to consist almost exclusively of pine needles ! Here was a dilemma. Should I use it or not ?

Only a short time before I had listened to the B.B.C. programme "Gardeners' Question Time," when strongly opposed views had been expressed by two members of the team as to the poisonous effect (or otherwise) of pine needles. However, I decided that while I risked losing all my hoped-for plants, I should at least be a martyr in the cause of science and would be able to solve this vexed question once and for all, so in they went !

The ground now prepared was still above the general level of the garden, so was next edged with tree trunks (which fortunately happened to be lying nearby) in the manner of the raised beds to be seen in the Savill Gardens in Windsor Great Park. This lovely garden, my favourite in the South, was an inspiration to me during my work, since many beautiful *Meconopsis* species and hybrids are grown there. A few small rocks of the local, rather porous, brown sandstone were added to form miniature terraces, and some more broken sandstone mixed with the top layer of soil largely in deference to Farrer's instructions in "The English Rock Garden." Finally, the surface was sprinkled all over with small ($\frac{1}{4}$ in.) gravel, chiefly to deter the local cats, which are abundant.

I wanted results quickly (a normal failing of gardeners) and it was obvious that I should not be able to afford to purchase enough plants to stock my new garden. With a beginner's optimism I therefore decided to apply for meconopsis seeds as the bulk of my allocation from the Scottish Rock Garden Club's seed distribution. Some of these I put into pans and others (being cautious, if not knowledgeable, I sowed in drills in part of my prepared site, my reasoning being that if they were to grow in this mixture they might as well start there !

The seeds in the pans germinated satisfactorily but gradually the seedlings all died off. Those in the outdoor seed bed, though much later, came up and continued to grow and by August I was able to transfer them to other positions in the bed, which was by now tolerably full.

The young plants included *Meconopsis paniculata*, *M.* S.S. & W. 9405, *M. nepaulensis* white, *M. grandis*, *M. simplicifolia* and *M. dhowjii*. I also purchased a plant each of *Meconopses quintuplinervia*, *integrifolia*, S.S. & W. 8481, *betonicifolia alba*, also three plants of S.S. & W. 9493 and three forms of *Meconopsis grandis*. Two of these last flowered in their first summer, the flowers being quite a good blue.

In their first season (1958), which was very wet, the plants developed well and many formed most attractive winter rosettes. Most of them

were protected during the next winter with pieces of glass or windolite, which largely solved the problem of drips from the trees. Being on a slightly raised bed appeared to help in preventing them from becoming too badly frosted. All the plants came through the winter safely but were not uncovered until mid-April. The perennials start into growth here at the beginning of March or even in February and the new foliage is liable to be blackened by frost.

Early in the season (1959) there were some alarming attacks by moles and damage was also caused by severe gales in May, but in spite of this and the very hot dry summer the plants did well (they were sprayed almost daily with ordinary tap water) and most of them flowered.

The monocarpic species, of course, died off after flowering. Their places have largely been taken by seedlings of *Meconopsis paniculata* and *M. regia rosea*, where most of them have survived the winter without any protection.

The rosettes of the monocarpic species, though very beautiful, have not reached anything like the proportions one hears of their attaining in the North, but this may be due to some extent at least to their comparative youth.

Now seeds have been sown from plants which flowered last summer, so it is hoped that a regular cycle has now been established. At any rate the experiment has so far proved to be well worth while.

The American Rock Garden Society

Probably most members are aware of the existence in the U.S.A. of a Society comparable with our own. Some members may have wished to join this Society, but have been deterred by the apparent difficulty of transmitting their subscription.

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 Edgar L. Totten, 238 Sheridan Avenue, Ho-Ho-Kus, N.J., U.S.A.

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

THE NATIONAL TRUST FOR SCOTLAND

A MODIFIED Corporate Membership Scheme of the Trust has been inaugurated to encourage a closer relationship between the Trust and those organisations with gardening interests. The cost is no more than that for ordinary Corporate Membership (£2 2s) but certain items are included which it is thought will prove attractive to those clubs and societies who arrange visits to gardens of note, and will be an encouragement to other societies to do so. A subscribing society may take a party of up to 30, free of charge, into any one of the Trust's gardens once in a year. Under the scheme it is proposed to issue 'Trust Notes' quarterly to keep members in touch with development in Trust gardens, as well as providing a means of exchanging views and experiences. It is also intended that these Notes should help the enthusiastic amateur by including articles dealing with such subjects as plants for small gardens and an account of some of the gardens which open under Scotland's Garden Scheme. Members will be encouraged to contribute articles on their own experiences.

The three Trust gardens in the north-east do not awake so early in the year as those in the west, but the variety and interest to be found in these later in the year can make a visit a fascinating adventure. From the wonderful collection of plants at Crathes on Deeside, one has only to travel some 15 miles to see the 17th century formality of Pitmedden with its glorious spectacle of colour. The herbaceous borders and rock garden at Leith Hall are just as near to hand and here the woodland setting seems to emphasise the wealth of colour in the seclusion of this charming garden.

It is the work of the Trust not only to preserve these gardens but to promote interest in them. Membership of the Trust costs as little as 10/- a year and gives free access to these gardens as well as the many other properties of the Trust throughout Scotland. Members also have the privilege of free admission to properties of the National Trust in England, Wales and Northern Ireland They are given advance information on all Trust tours and cruises and have priority in making reservations for these activities. Trust members also have access to the propagating centres which have been established at Culzean Castle in Ayrshire and at Crathes Castle, where plants are available for sale to visitors. The interest of all gardeners is asked for in helping us to maintain some of Scotland's most beautiful gardens.

The Habitats of Scottish Mountain Plants*

By D. H. N. SPENCE

Department of Botany, St. Andrews

ON 5 JULY 1959 I was collecting seed on the summit of Meikle Kilrannoch (2850 ft.) above Glen Clova in Angus. The low temperature, driving rain and high wind showed well, by contrast with the floor of Glen Clova, one aspect of the climate of mountain plants. Meikle Kilrannoch illustrates, at any time, another feature of the habitat of mountain plants—how soil type may vary abruptly and how certain plants may be confined to each soil type. By far the greater area of the bleak summit plateau is covered in peat, occupied by a grass-heath in which occur such species as *Rubus chamaemorus*, *Vaccinium uliginosum* and *V. vitis-idaea*, all plants typical of highly organic soils. Now there are on this plateau two outcrops of serpentine, an unusual rock the soil of which is alkaline in reaction but where magnesium replaces calcium as the principal 'base' or metal ion. Some 100 acres or less of these outcrops are composed of serpentine debris. This debris comprises a flat surface of small stones overlying finer material low in organic matter, to which on this plateau a few species are confined, including *Armeria maritima*, *Cherleria sedoides* and *Viscaria alpina*, the last actually being restricted to this outcrop in Scotland, and with only one other locality in Britain. *Armeria* and *Viscaria* raise a third point about Scottish mountain plants, the historical aspect. Was *Viscaria* always so rare, and why does *Armeria maritima*, a predominantly maritime plant, grow on an inland hill like Meikle Kilrannoch? Each of these features will now be discussed in relation to the present day distribution of Scottish mountain plants.

One must first define a mountain plant: perhaps by saying "all plants which, in Great Britain, occur mainly or only above 2000 ft. to 2500 ft." Many species may be thus confined in the central Highlands but, unhappily for this definition, they also occur at lower altitudes, even at sea-level, in the north and west of Scotland. So one must look initially at the distribution of these species beyond Britain.

From his study of the British flora in and beyond Britain, Matthews (1955) has placed about half of it in geographical 'elements,' only five of which need concern us here :—

*A paper read to the Summer School of the S.R.G.C. at St. Andrews in July 1959.

TABLE I

Matthews' element	*No. of species*	*Distribution*	*Examples*
Northern montane	30	N. Europe-subarctic : mountains in centre and south of range. In Scotland up to 3000 ft.	Rubus saxatilis Trollius europaeus
Oceanic northern	23	N. Atlantic, 17 maritime-montane. Mainly N. & W. in Britain	Armeria maritima Silene maritima Thymus drucei
Arctic-sub-arctic	27	Exclusively boreal in Europe —mainly North of Baltic. In Britain, mainly Scottish	Cornus suecica Rubus chamaemorus Arenaria norvegica
Arctic-alpine	75	Mainly north of tree limit or, in Alps, above tree line	Loiseleuria procumbens Dryas octopetala Alchemilla alpina Vaccinium vitis-idaea Juncus trifidus
Alpine	10	In Alps above tree limit : not arctic	Cherleria sedoides

While many predominantly lowland species reach considerable altitude in the highlands, there can be little doubt that the last three elements comprise the true Scottish mountain plants, while the other two elements also contain a fair proportion of them.

The mountain or montane climate is considered next. The Scottish mountains lie wholly within the altitudinal range where increasing altitude brings increasing precipitation. In this they differ markedly from the Alps, where increasing altitude brings, eventually, decreasing precipitation. Strong insolation and water shortage is more likely to be a persistent problem with most true alpines than with our own mountain flora. There are other variations in precipitation ; thus the west Highlands, lying in the path of the prevailing winds, receive more than twice the precipitation, and have a warmer winter than the Cairngorms—the least oceanic Highland area. In general it is probably true that precipitation is greater than evaporation so that water shortage is less likely to be as great a problem in most habitats as poor drainage or waterlogging.

Now where, in ascending a hill, does the montane climate begin ? The tree line may be taken as a reasonable point. Trees can grow in dense stands only where the mean temperature of the warmer months exceeds 50°F. for at least two months in a year (Supan, in Ward 1918 ; Köppen 1923). In the central Highlands this is somewhere near 2500 ft. but we look in vain for a "tree line," here or elsewhere in Scotland, since deforestation has been so extensive. It serves, however, as a hypothetical departure point and is broadly valid throughout the northern continents.

Mean temperature of the warmest month (MTWM) at Dalwhinnie (1176 ft.) is equal to that at sea-level in Shetland, our northern extreme. It is possible to calculate the temperatures at higher altitudes if one knows the lapse rates, i.e. the rate with which temperature falls with altitude. Using the Ben Nevis-Fort William lapse rate for land above Dalwhinnie, and a higher lapse rate in Shetland (see Spence 1960), one finds that MTWM at 2500 ft. in the central Highlands = MTWM at 1000 ft. in Shetland. This figure takes no account of wind. At 1000 ft. in Shetland the mean annual windspeed is probably equal to that on the summit of Ben Nevis at 4400 ft. (Spence 1957). The decrease in MTWM, enhanced by exposure, which occurs as one travels north and north-west through Scotland, has been related to a continuous drop in the potential tree line and shown to agree with the altitudinal evidence from existing scrub vegetation into which forest grades climatically above the tree line (Spence 1960).

This is one way of expressing the descent of the montane climate towards the north of Scotland. Since there are close correlations during the 'growing season' as a whole in Shetland and at Dalwhinnie one may also say that Shetland at sea-level has a sub-montane summer climate, a climate you would encounter in the central Highlands at 1100 ft. ; or the summer climate of a north Highland summit of 1500 ft. is equivalent to that of a central Highland summit at 3200 ft. So one may on this basis expect some altitudinal descent of tree line and of even strictly montane species towards the north and north-west. This connection with MTWM seems to apply to two such arctic-alpines, *Juncus trifidus* and *Loiseleuria procumbens*, of exposed habitats in Scotland : Table 2 (Spence, unpublished data). They may be intolerant of high summer temperatures and one wonders if this has anything to do with the difficulty of keeping *Loiseleuria* in cultivation.

TABLE II

Species	*Locality*	*Lowest known altitude (ft.) in that locality*	*Calculated MTWM (°F.) at that altitude*
J. trifidus *Loiseleuria*	Shetland	1000	51.0
J. trifidus (no *Loiseleuria* in Rhum)	Rhum	1900	51.6
J. trifidus *Loiseleuria*	Cairngorms	2200	51.0

There are several other arctic-alpines such as *Alchemilla alpina* and *Dryas octopetala* which occur at lower altitudes than *Juncus* or *Loiseleuria* in the central Highlands and at or near sea-level as far south as Skye, Raasay and Eigg. One cannot see how the winter climate of such localities, near sea-level, resembles that of the central Highlands even around, say, 1800 ft. One may assume that summer temperature

in some way controls the lower altitudinal limits of these species also, but that they have a greater tolerance of heat energy than *Juncus* or *Loiseleuria*, since they descend in the central and west Highlands well into sub-montane summer climatic rèmes.

Both *Alchemilla* and *Dryas* are readily cultivated, on suitable soils, in lowland gardens.

TABLE III

Plateaux and Slopes				*Ledges*	*Flushes/Springs*
high altitude → low altitude					
exposed → sheltered					
fellfield	moss heaths	grass heaths	dwarf shrub heaths	tall herb, fern and shrub communities	bryophyte communities
flowering plant and lichens	(Rhacomitrium, etc.)	(and snow-beds)			

Diversity of habitat and the extent of each on any mountain (Table 3) depends ultimately on the geology. Fellfield or erosion areas result from the action of wind and frost-shattering upon a suitable substrate ; this action produces a surface of small stones, or debris, keeps it unstable and hinders colonisation by most plants. The distribution, in relation to the geology, of these sparsely colonised areas of debris is well shown in Rhum : on the basalt of Orval they are far less frequent at a given altitude than on the peridotite of Ruinsival or Barkeval. Again, depending on the geology, the substrate may be acid or alkaline. Thus the arctic-subarctic *Arenaria norvegica* occurs exclusively in its five Scottish stations on serpentine or basic substrates of unstable type while *Juncus trifidus* is typical of the more acid examples. Conversely, the moss-heaths containing *Rhacomitrium* or the grass-heaths containing, say, *Nardus*, *Rubus chamaemorus* and the arctic-alpine *Vaccinia* can only develop on a stable, organic substrate.

The ability to form numerous ledges and crevices is again an expression of the geology and this affects the vegetation in two ways. Firstly, the presence of crags provides freedom from sheep and deer grazing so that many plants survive there to create a luxuriance lacking on adjacent smoother slopes from which they have often been almost exterminated. Contrast the 'tall-herb' ledges in even small corries or by steep burn-sides, covered with *Luzula sylvatica*, *Angelica sylvestris*, *Trollius europeaus* (p. 42), *Alchemilla alpina* and occasional willow or rowan, etc., with nearby slopes of similar soil type in which all these herbs are, if present, cropped and flowerless and from which the shrubs are usually absent.

Secondly, the chemical nature of the rock is important for there is no doubt that the floristically richest habitats are those influenced by the presence of calcareous rocks : hence the floristic richness of Ben Lawers, Corrie Caenlochan in Angus, and the Durness and Inchna-

damph areas. Extensive work by Ferreira (1959) on Scottish mountain vegetation in relation to the geology has produced an important generalisation. This author concludes that only calcite ($CaCO_3$) and dolomite ($CaCO_3.MgCO_3$) are sufficiently soluble to be of any significance in the formation of calcium-rich soils.

Most of the species in Matthews' arctic-alpine. arctic-subarctic, alpine and northern montane elements have been placed by Ferreira (1959) in three groups based on his field-observations of their soil preferences.

(1) Basiphilous (base-loving) species. All found to occur only on substrates within the influence of calcareous rocks although some also occur on certain magnesium-rich soils (e.g. serpentine) and sodium-rich soils ; e.g. *Dryas octopetala, Arenaria norvegica* (see this paper, p. 42), *Saxifraga oppositifolia*, etc. The basiphilous nature of the last species is one of those for which Ferreira says he has experimental evidence. There are 37 arctic-alpine, arctic-subarctic and northern montane flowering plants, and a number of ferns, in this group.

(2) Sub-divided into

(*a*) Species normally found near calcareous rock and in sparsely colonised acid habitats : viz., *Armeria maritima* and *Cherleria sedoides.*

Four of the five species in this group, including the two above, also occur on sparsely colonised serpentine (Spence, 1957) while *Armeria* is found in short turf on sea-cliffs but can be eliminated from this habitat when grazing is experimentally prevented by fencing (Spence, *loc. cit.*).

(*b*) Six species of wet habitats found most often near calcareous rock but also where no such influence can be detected.

(3) Acidiphilous (acid-loving) species, restricted to mineral or organic acid substrates : and species apparently indifferent to soil reaction. There are 40 arctic-alpine, arctic-subarctic and northern montane flowering plants in this group, including some of the most widespread mountain plants such as *Rubus chamaemorus, Vaccinium uliginosum* and *V. vitis-idaea* (this paper, pp. 41), as well as *Juncus trifidus* and the rare *Artemisia norvegica.* Six montane ferns and club-mosses also occur in this group.

While the mountain flora of the Scottish Highlands includes some rare acidiphilous or indifferent species, the chemical nature of the substrate is less likely to be limiting for them than for a higher proportion of the mountain flora comprising the basiphilous species. The floristically rich vegetation of which they form a significant part is limited by the restricted distribution of soft calcareous rocks and even perhaps by the shortage of ungrazed habitats on them.

Many mountain plants are confined in the mountains, and at lower elevations in Scotland, to poorly colonised habitats : viz., *Viscaria alpina* and a mountain population of *Armeria maritima* on serpentine debris in a surrounding 'sea' of peat (p. 41) ; *Arenaria norvegica* on limestone gravel and scree at Inchnadamph, surrounded by grass-

heath ; *Dryas octopetala* on a narrow strip of gravel at the top of basalt cliffs on Eigg, with the peat of the summit plateau behind. In the last two cases the species grow only a few hundred feet above the sea (although the summer will be cooler than in inland areas of similar latitude ; see p. 43). All these species, however, apparently depend on exposure, rapid weathering, soil instability or all three to maintain the open conditions and/or mineral soil in which they occur in so isolated a fashion.

They may well have survived there since the period of open conditions immediately following the last Ice Age. As the climate improved, such open vegetation was largely supplanted by tundra, and eventually, beyond the present climatic limit of trees, by forest. Pollen of many arctic-alpine and arctic-subarctic species now confined in Britain to the mountains, or to the north of Scotland, has been recovered in the south of England from peat formed soon after the last glaciation (see Godwin 1956). Many such as *Dryas octopetala* or *Viscaria alpina* have been recorded from peat laid down in isolated non-glaciated areas *during* the last glaciation. *Arenaria norvegica* is found today most typically on a sparsely colonised exposed habitat called fellfield, which covers much of central Iceland, and on scree or debris in Scandinavia. As well as being strictly maritime plants of the North Atlantic region, *Armeria maritima* and *Silene maritima* (p. 42) are likewise plants of fellfield in Iceland and in the Faeroes. In Britain they must once have been widespread when fellfield itself was abundant. With the improvement there of climate and the spread of closed vegetation around the coasts and to ever higher altitudes, one can visualise *Armeria* and *Silene* becoming split into their present-day large, almost continuous maritime populations and their small, and often isolated, montane populations.

Having once had a far wider distribution in this country, our Scottish mountain plants have become restricted by long-term changes in climate and in soil, and even in many cases within historical times by grazing but, if these broad effects are now understood, much has still to be done to unravel the factors controlling the distribution of this interesting group of plants.

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A Selection of Dwarf Shrubs—*continued*

By A. EVANS

Satureia (Labiatae). There are quite a number of species of this plant native to Southern Europe and some are worthy of a home in any collection of rock garden plants. They are low growing shrubs with a maximum height of 12 inches and they certainly favour the warmer sunnier sites in the garden. Planted when small, in the joints between the stones, they soon screen these fissures with their small evergreen aromatic foliage. Evergreens, at least they are supposed to be, in some winters the frost may kill much of the above ground shoots while favourable summers see these miniature shrubs flower so profusely that few leafy vegetative growths are produced. This contributes to keep these plants dwarf, however, and as they flower on the current year's wood the loss of the top growth in autumn or winter is not so important.

Satureia montana is a fairly common plant and, in sun-drenched clefts, is one which will rarely exceed 6 to 9 inches. During August and September the flowering spikes appear, smothering this shrublet with bloom, but, as the colour varies from pale to not so pale lilac, it is advisable at the outset to obtain the best form. This species has a distribution extending from S. Europe to N. Africa.

Satureia repanda is a white-flowered species which has a squat yet spreading habit. It is highly unlikely that its height will ever be more than 4 inches. In this instance the leaves are quite minute and this character permits an unrestricted view of even the lower clusters of flowers.

Spiraea (Rosaceae). This is a well-known genus with species of all dimensions. A few are of limited growth, nevertheless, and it is with these dwarf species we are concerned here. Certain herbaceous species are often erroneously included amongst the spiraeas, but these really belong to other genera such as *Aruncus*, *Astilbe* or *Filipendula*; all true spiraeas are shrubby. Some species may develop sucker shoots annually, or rarely have stems older than 2 years, but these shoots are truly woody with healthy buds in the axils of all the leaves. These plants are all fond of the sun, but due to the vigorous annual growth of most species the drier parts of the garden should be avoided. In some instances severe pruning is to be recommended so that sturdy well formed shoots develop, otherwise the presence of a thicket of weak spindly shoots can only result in a poor display of small flowers.

Spiraea bullata is an ideal rock garden shrub which will fit into the scene in even the most modest of rock gardens. Its rate of growth is extremely slow and a small plant takes many long years to reach sizable proportions. The passing of 20 or even 30 years might still see a shrub scarcely 15 inches high and through. The twiggy branches, fastigiate by nature, are short jointed, and during the flowering period, which extends from early May until mid-July, many tight

heads of small deep pink flowers brighten the plant. The dark green, crinkly leaves are slightly glaucous on their undersides. *Spiraea bullata* is not an uncommon shrub and was introduced from Japan as long ago as 1881.

Spiraea caespitosa, perhaps more accurately named *Petrophytum caespitosum*, hails from the United States of America, but here it must only look for a home in a pan or the rock garden scree. This species is completely hardy despite its diminutive height of barely 2 or 3 inches, but unfortunately it is shy to flower in many gardens. The cream-coloured flowers appear during July and August and are borne in tightly packed heads which closely resemble a small fluffy tail. If perchance this species were a non-flowering plant, it would still be in demand by the enthusiast, for the grey-green, evergreen foliage forms a handsome carpet overlying the soil.

Spiraea hacquetii has a suckering twiggy habit and in winter is wholly devoid of foliage. In summer, however, when the shoots are clothed with the coarsely toothed oblong leaves, there is quite a transformation. And, during May and June, once the flat panicles of small creamy flowers expand as a canopy above this foliage, more notice is taken and few interested rock gardeners pass it by without closer inspection. This spreading suckering habit is ideal in some situations, but naturally, due to this tendency, no rare slow growing plant should have *Spiraea hacquetii* as a neighbour, even although careful watch can to some extent curb its colonial ambitions. Nine to twelve inches is a generous estimate of the height of this Tyrolean native.

Spiraea japonica v. bumalda is only one variety of a number in a useful decorative species. It is not so rampant and does not require the same type of pruning as that dealt out to the stronger growing *Spiraea japonica* "Anthony Waterer." In fact, if left to its own devices, a regularly shaped hummock of vegetation will develop which from June until August will be decorated by numerous small balls of even smaller flowers, but hundreds of clusters go to making up this plant's flower power. Similar to the species, these are rosy red. It is not difficult to increase stocks of *Spiraea japonica* and its varieties, as suckering and natural layering are common. It is only necessary to remove and transplant these rooted portions when the shoots are dormant, to add to the plant population.

Skimmia (Rutaceae) is a small genus of fruiting shrubs and herein lies their major attraction, although the glossy evergreen leaves can contribute to the usefulness of the plant by acting as a screen or background for some precocious flowering deciduous shrub. In most cases the species are dioecious, so that a male and a female plant must be planted together to ensure pollination and eventually fruit production. All species grow well in open situations in full sun.

Skimmia reevesiana (Syn. *S. fortunei*) is really the only species worth recommending to the rock gardener and his rock garden, where its low stature of scarcely 2 feet should not upset the balanced planting.

Its other virtue is that *Skimmia reevesiana* is the exception in that its flowers are bisexual. This means that, if there is only room for one plant, there is no fear of it being fruitless, although cross-pollination still produces more prolific berrying. As a rule birds do not appear to be interested in the berries of Skimmia, at least not during the early part of the fruiting season, in fact it is not uncommon for fruits to remain for the better part of a year. Whatever the weather conditions opaque red berries are guaranteed for the winter. *Skimmia reevesiana* was introduced from China by Fortune in 1849, yet despite this long domicile it is still only met with infrequently. Its hardiness is not in doubt. *Skimmia reevesiana argentea* will appeal to certain enthusiasts because the long lanceolate leaves, which are medium green in the species, are here embellished with white or cream margins.

Syringa (Oleaceae) is the common name by which some gardeners know *Philadelphus*, but here it is used in its proper place and refers to the Lilacs. It is hardy possible to name a more widely grown and appreciated group of plants, but hardly, one would say, suitable for the alpine collection. There is one plant, however, which has laid claim to such a place in the nurseryman's list. In point of fact it has not the dwarf character with which it is often credited, for in approximately seven years on Scotland's cold east coast it may reach four feet. On the western seaboard the rate of growth will obviously be higher.

Syringa palibiniana is the epithet under which this so-called dwarf lilac is sold, although authorities more or less agree that it is a form of the Korean *S. velutina*. The leaves and purple floral trusses are scaled down replicas of the larger growing species and hybrids. It has exceptionally twiggy growth which may to a certain extent induce this dwarf habit. Like its larger relatives, *S. palibiniana* has a large root system, and it is therefore inadvisable to plant shallow rooted or moisture loving species too near lest the competition from the stronger growing lilac be too much for them. An open situation in full sun and good garden soil are the requirements of this plant. It is not uncommon to see *S. palibiniana* on the show bench in a class for rock garden shrubs.

Ulex (Leguminosae), probably better known as Whin or Gorse, is a spiny shrub which in nature colonises open and exposed places in the poorest of soils. Flowers appear intermittently over much of the year, but of course the main flowering period is no longer than that of any other plant. It is important, however, to provide conditions no better than the species seeks in nature, otherwise lush growing flowerless plants will be the result.

Ulex nanus is the only species of alpine garden dimensions ; being prostrate in habit, it gradually spreads over the soil by sending out long slender stems. These are ably protected by numerous needle-sharp spines which actually replace the leaves in mature plants. *Ulex nanus* flowers during September, when its display does much to brighten

up the rock garden during that month. Although native to these islands this species, in alliance with other shrubby legumes, does not take kindly to transplanting and only relatively small plants can be expected to become re-established.

Verbena (Scrophulariaceae) includes a very large number of plants which add much to the garden flora generally. They are mostly herbaceous, but there are a few which are decidedly shrubby. Only one of these need be considered here.

Verbena thymifolia is an ideal rock garden plant. It is completely hardy and seems to prefer the more arid and exposed parts of the garden to any other aspect. An old specimen measuring 4 feet across smothers itself with small, delightfully fragrant pink to lilac flowers from June until mid-September. Many years must elapse, however, before this measurement can be attained, but smaller specimens can be equally attractive. A large rock, over which the Verbena can tumble, and where the stems may bask in the ripening sunshine, may not be essential to the growth of this plant, but it is certainly congenial and seems to provide the ideal setting. *Verbena thymifolia* is an evergreen species from South America, with short jointed twiggy shoots which become matted and entangled with the years, and by its permanence becomes a plant of character.

Beginner's Stocktaking

By "PIERRE"

"Amiddis ane ranke tre lurkis a goldin bench,
With aureate levis, and flexibil twistis tench."

Gavin Douglas

"But however entrancing it is to wander unchecked through a garden of bright images, are we not enticing your mind from another subject of almost equal importance ?"

Ernest Bramah

THIS YEAR when I received the Seed List, and was fluttering delightedly, butterfly-fashion, among its entrancing beauties, crying that I must have this and that and that, considering distractedly how I could possibly restrict my desires to twelve when there were so many hundreds to allure me, suddenly a chill thought slid into my mind like drops of condensation upon a cherished cutting : "This is all mighty fine, my friend, but in the cold wintry light of reality, all aureate imaginings apart, what exactly remains of all your bright hopes of former Februaries ? And a cloud settled over my garden of bright images, as I caught a mortal vision of hecatombs of innocent victims—seeds that did not germinate, seeds that were still-born because the seedpan was allowed to dry out, seedlings that perished through being planted out too soon instead of being wintered in the frame, maturer plants

that survived if but for a season to fall victims to smog at last, seedlings munched contentedly by fat bourgeois slugs like directors of industry putting down plates of smoked salmon to expenses, and other tender and romantic waifs who uncomplainingly succumbed to the icy tramontane that hurtles down the gully which divides my front from my back garden.

Not all my pretty ones were slaughtered, of course. Even in this icy corridor not only the buxom hoydens romp, but shyer beauties too survive here and there. *Campanula latifolia macrantha* fights an almost equal battle with the foxgloves, and both resist desperately the surging forays of *Meconopsis cambrica*. Groves of Solomon's Seal droop gracefully over jungly undergrowths of *Dicentra* and in clearings here and there are great banks of cowslips and primroses and polyanthus, and *Primula denticulata* white and coloured (which I propagated from root cuttings just to prove to myself that this improbable method was really possible !). *Geranium sanguineum* and *subscaulescens* and *pratensis* hold their own here and there, several varieties of heath, in great clumps, are perfectly able to defend themselves, while London's Pride has burst all bounds. Down some rocks tumbles one of my pet survivors, *Arenaria montana*, than which there are surely few plants more lovely or longer flowering. And then in Spring bluebells in industrial quantities force their way up through mats of *Ajuga reptans*, and here and there under shrubs appear *Oxalis acetosella* and wood violets. *Vinca minor* swamps one corner, and against a wall huddle Yellow Flags, and White Campion and other common and lovely weeds. In clearer spaces can be found youngish plants of *Lithospermum diffusum*, and *Dryas octopetala* in its larger and smaller forms, and also grabbing more and more lebenstraum there is *Polygonum vacciniifolium* in a delightfully free-flowering form which I won in a club draw and which I propagate by plucking off little rooted portions as required. Fortunately as I write the garden lies under a thick blanket of snow, for if I could go and refresh my ageing memory my catalogue might end by swamping the *Journal* as the plants do my jungle garden.

In the midst of the jungle is a flagged space where a year or two ago I built a trough garden of street sets. Unfortunately I made it three feet wide by eight feet long and immediately by all beholders it was christened "the sarcophagus garden." I softened its grim aspect by hastily adding some eighteen inches to each end, and now although it remains slightly suggestive of the Giant's Grave, it is a most useful place to keep some of my smaller propagations which are hardy enough to endure the bitter blast. Here I have clumps of *Saxifraga—apiculata, burseriana, baldensis, callosa, oppositifolia*, some of which I have propagated from cuttings and some from seed. Next to the saxifrages I have little settlements of *Aquilegia pyrenaica* and *bertolinii*, although I confess they both look very much the same to me. I sow a little more seed each year for I find that the bigger the plantation the lovelier the effect. Then I have *Armeria caespitosa*, which is supremely easy

to propagate from cuttings, and *Potentilla verna nana*, which is even easier, and *Primula frondosa*, of which each plant produces two or three when I divide them in the autumn. *Myosotis explanata* I keep going from seed, but *Myosotis rupicola*, although it has survived and looks reasonably comfortable, I have not yet succeeded in propagating. *Androsace spinulifera* also I keep going from seed—at least this was the label when I won it in a club draw, but it has white flowers, not lilac-pink as my text-book says it should have. Perhaps unwisely I introduced *Linaria alpina* and *Hypsella longiflora* and these spread and dive and come up again all over the place. *Dianthus freynii* I propagate from cuttings, but *Dianthus* "Mars" sure enough does not produce enough shoots to spare any for propagation. *Geranium farreri*, a plant for which I have affection, has so far resisted my efforts to increase it, but I have some cuttings of *Geranium lancastriense*.

In the sides of the trough I planted some of the coarser encrusted saxifrages and incidentally one of them acted very strangely a year or two ago. It began to put out its two-foot long plume and then it seemed to change its mind half-way, for it only flowered half-heartedly and then produced along the plume a multitude of leafy rosettes some of which in due course I cut off and rooted in my propagating frame. I have *Campanula muralis* from cuttings and *Campanula poscharskyana*, which I propagate by clawing out a quantum sufficit with a hand-fork, and *Saponaria ocymoides* from seed, and above all my darling *Alyssum saxatile*, which I love not only for itself but also because of the way I propagate it. Because when I think I could be doing with a few more square yards of it, I take in August a spray of it and shake it over a box of soil, feeling like an enchanter waving his magic wand, or like the pious Aeneas with the Golden Bough which was his safe-guard and passport to the mysteries of death and re-birth, and to those Elysian fields with their

> "fresche herbis and grene swardis,
> The lusty orchardis and the halesum zardis
> Of happy saulis and wele fortunate."

On the outskirts of this riotously wild garden lies the peat plot which when I have the energy I try to make boggy with cans of water. Here may be found *Caltha palustris fl. pl.* (Alas ! not nearly so pretty as the single form), *Primula japonica* again mostly from root cuttings, *Meconopsis baileyi* propagated both by division and seed, and most certainly a perennial in my garden, *Meconopsis grandis* (seed have not germinated so far), *Mimulus lewisii* (and there's no need to propagate *that*—though it's easy from seed), *Anemone magellanica*, whose large rich creamy flowers I find extremely lovely, and which again is easy from seed ; *Lychnis haageana*, with its startling scarlet flowers (also easy from seed), *Primula florindae* and one or two others of the larger primulas ; and lastly two others which have survived (I hope !) but which I wait upon impatiently to flower—*Trollius pumilus* and *Parnassia palustris*.

After the peat plot comes a drift of *Gentiana sino-ornata*, and after that a mixed border into which I have introduced shrubs like *Potentilla*

veitchii and *Potentilla farreri* and *Rhododendron x praecox*, and among them clumps of *Campanula lactiflora* and *Campanula persiciflora* and *Linum narbonnense* and *Polemonium cashmerianum* and *Trollius europus* and *Iberis sempervirens*, with in front *Nepeta mussini*, *Hypericum olympicum* (which doesn't always survive the winter) and *Aubrieta* "Gurgiedyke" (with cuttings of which I usually fill one of my propagating frames in autumn).

After this mixed border comes a paved corner with a garden seat, and on each side of it massed helianthemums of different colours, propagated from cuttings and smothering all weeds. Would it be a good idea to carry this helianthemum undergrowth on through my rose plot ? Or would the roses suffer ? Probably they would, if for no other reason than that it would become more difficult for my son and his little pals to retrieve their cricket ball, and thus they would doubtless do even more damage than at present. But all the same I think I must try a tentative experiment by extending it for a yard or two this year.

In front of the house is the rock garden proper—but enough is said to be as good as a feast, and the Editor's eye has a glazed and suffering look. One plant I must mention. It is, I think, *Cytisus procumbens* and it is by far outgrowing its allotted space, and is adding sad Desdemona-deaths by smothering to the list of catastrophes from which my seedlings suffer. And yet . . . and yet, while I take cuttings from it, I cannot bring myself to cut it back hard, because of its brief shining glory in Spring. It is like a vast plate of gold, such a plate as the lady in the Old Testament must have used when

"She brought him butter on a lordly dish."

It reminds me of the blaze of gold I have seen on a Spring morning as I stood on the summit of Castail Abhail looking towards Loch Ranza miles away and thousands of feet below, where beside the loch the gorse was in bloom, a great bush burning but not consumed.

Rare Plants from the Seed Distribution

By CHRISTIANA BOYD-HARVEY

IN THE Club Seed List there are always many plants whose names are not to be found in any of the usual rock gardening text-books. Some of them may be of greater botanical than horticultural interest, but others may well turn out to be most desirable species not yet introduced into cultivation in this country. It is a great privilege to be offered these rare new seeds and a serious duty to give them the care which will bring them to maturity and seed-bearing. The collector has probably travelled hundreds of miles and climbed thousands of feet in order to harvest them for us. Sometimes a plant is so rare in nature that only a few seeds could be sent to the Seed Exchange Manager, and she has to divide them as equitably as possible between the members who request them. This year my ration of *Eritrichium*

elongatum was six seeds. They may never be offered again in future lists so I hope I may be able to produce six plants. In the 1958-59 and 1959-60 lists the "collections" were grouped together on the last pages, but in the main body of the list there were other plants also collected in the wild and these were indicated thus : (c. Gaspé), (c. Alaska), (c. W. Ireland) and so on.

When selecting from the list, it is a great help to have concise collector's notes indicating where collected, at what altitude, and any peculiarities of soil, thus :

"1561—*Eritrichium argenteum,* Snowy Ra. Wyo. 10,500 ft., 1 in. on quartz."

One may deduce from this that the plant is a silvery cushion (or mat ?) which grows on quartz scree (or in quartz crevices ?). It is almost certainly frozen during a long winter with snow cover, so should probably be kept dry except when actively growing. If it received the epithet "*argenteum*" because of silvery hairs on the leaves, it may prove to be as difficult to grow as *Eritrichium nanum.*

The pages of the *Journal* often give a more detailed picture of habitats, and *Journal No.* 23 of September 1958 was particularly valuable in this way because of the articles by Mrs. Tweedie on Patagonia and by Dr. Worth on the Rocky Mountains.

Because a plant is new or rare it does not follow that it will be difficult in cultivation. Our gardens are stocked with plants which once were "new introductions," and have proved themselves through the years to be as good-tempered as they are beautiful. It is said that cyclamens were introduced during the Roman occupation ; and we all remember the introduction of the sensational new pink meconopses by the Stainton, Sykes and Williams expedition of 1953. Thousands of descendants of those plants have now gone to gardens all over the world in the envelopes of the Seed Distribution.

Many members have, during the years, gained practical experience in growing well-known plants of proved horticultural value. If their successes have been more numerous than their failures, they may now want to be more adventurous and include in their next seed order a request for seeds of plants which are unfamiliar even to their most knowledgeable friends.

The old adage says "Never put all your eggs into one basket." The same applies to valuable seeds, so the quantity received of any one species should be divided and tried under a number of different conditions in small pots instead of risking them all together in one large pan. When working in this way, it is all too easy to believe that a useful new discovery has been made by the use of new materials and new techniques, whereas the old tried-and-tested method might have given equally good results. Therefore one pot should be treated in the way which past experience with easier seeds has shown to be successful. My own standard method is briefly as follows :—

3 in. pot ;

3 or 4 crocks ;

½ in. layer of peat ;

John Innes Seed Compost, made with sterilized soil, with added coarse sand, filled up to 1 in. from top of the pot.

Clean coarse sand up to ½ in. from top of the pot.

The contents of each pot are tapped down but not pressed down, so as to retain air spaces and allow for frost expansion.

The seeds are sown as soon as received in January or February.

A small pinch of small seed is mixed with fine sand and sown thinly on top of the coarse sand. Large seeds are sown individually.

Small seeds are covered with a thin drift of fine sharp sand, and large seeds are covered to their own depth with coarse sand.

Name, date, and any other data of interest are written on the label, which is pushed down or bent over level with the rim of the pot.

Sown pots are watered from below until surface is moist.

Pots are plunged nearly up to their rims in ashes in a raised plunge-bed, exposed to all weathers.

A long strip of perforated zinc, cut 7 ins. wide, is rested on the rims of each couple of rows.

If the plunge material begins to look dry in March, it is soaked from a hose which has the nozzle removed.

During heat, drought or high winds, a fine overhead spray is given.

Pots are examined frequently under a lens for emergence of seedlings.

Far be it from me to claim that this is the one and only way to grow seeds successfully. I have had my fair share of failures even with the easier seeds, mostly due to neglect at a critical moment in the life of the seedling. However, the technique outlined above has been built up on a foundation of lessons learnt from past failures and it has become reasonably neglect-proof.

When dealing with small quantities of rare new seeds which have been divided into smaller portions, the first pinch will be sown in the control pot following the method outlined above (or on the lines of each grower's own pet method, whatever it may be). How should this be modified for plants which may perhaps have special requirements ? Previous experience with closely allied plants can sometimes be a guide : for instance, this year I have received seeds of *Primula specuicola* and *Primula laurentiana* and I fully expect them to conform to the same germination pattern as *P. farinosa* and *P. decipiens*, which I have raised in previous years. I have no previous knowledge to

guide me in the case of other seeds I have acquired. By looking at them as they lie in the packet, I cannot forecast what they will need, so after sowing the control pot, other pinches of seed will be given modified treatment in the experimental pots.

Should any modification of the seed compost be made ? Will it suit both lime-haters and lime-lovers ? How can one tell by looking at the seeds what their pH requirements will be ? Is there any need to worry about the pH value in the seed pot or is that a problem which may be postponed until pricking-off time ?

Several years ago when growing Himalayan plants from seed, I used to ask the supplier to mix up the John Innes Seed Compost without any of the usual ground limestone. My seed growing interests are now centred around the collections of Mr. and Mrs. Tweedie in South America and the collections of Dr. Worth and other members in North America, and I have gone back again to the standard J.I. Seed Compost. I still find that I get occasional weed seedlings of common heather arising out of the peat ingredient in the compost. In spite of the limestone ingredient these heathers look dark green and very healthy. This biological indicator speaks even more convincingly than would a chemical analysis, and I now know that the standard J.I. which I am using must surely be suitable for other lime-hating plants as well as for those plants which are lime-loving or lime-indifferent. Other members who might not care to risk their calcifuge plants in standard J.I. could either ask their supplier to omit the limestone or else mix up a home-made compost with peat, river sand and leaf-mould or rubbed sphagnum.

I like to have half an inch of coarse sand on top of the compost for receiving the seeds. Other materials sometimes recommended are whin chippings, smashed pot crocks, washed and sieved coal chips, rubbed sphagnum, or vermiculite. The coarse sand is quite satisfactory, if not allowed to dry out ; pot crocks are better for retaining moisture, and so is vermiculite (if it *does* dry out, it may blow away, carrying seeds with it). Coal chips are supposed to keep down moss and absorb the heat of the sun (I have had no experience—coal bings always look so ominously bare of vegetation and washing and sieving is a dirty job). For the preparation and use of sphagnum refer to Mr. Duguid's article in *Journal No.* 18, page 64, paragraph 4. Refer also to Mr. E. H. M. Cox's article in *Journal No.* 14 on the use of peat moss in plastic containers for Ericaceae.

When should the seeds be sown ? Ought they to be sown as soon as they arrive in January, or would it be better to keep them until better growing weather in March ? If kept back until spring, will they lose viability ? Ought they to be frozen ? Is one freezing enough, or should they have alternating periods of frost and thaw over a prolonged period ? If they are sown immediately and germinate too soon in an early warm spell, will the seedlings suffer should wintry conditions return ? Will they respond to warmth and moisture at any time of

the year, or will they conform to the calendar ? Are they likely to germinate before the parent plants have broken vegetative dormancy ?

Experience with easy seeds shows how unpredictable they can be. Even seeds from the same fruit can behave differently from each other. Some seeds of *Meconopsis betonicifolia* sown in September will germinate in October (and die in December) ; others from the same sowing will wait until March. *Cyclamen neapolitanum* seeds sown fresh in August will have formed a leaf and a tuber by the second week in September. If not sown until January they will remain dormant until the second week in September comes round again. The difference between 32°F. and 34°F. is sufficient to germinate the self-sown seeds of *Crocus tomasinianus* and they emerge on the same day that the parents push through the soil. In gardens there is the risk of a pseudo-spring arriving many weeks before the true late spring of the mountains. Some seeds will respond to it by emerging, others will respond only when the correct date is on the calendar.

Therefore when dealing with new seeds of unknown germination behaviour, I would suggest that most of the seeds from each packet should be sown as soon as received, and a small pinch kept back in a cold dry place until March. If only about six seeds are received I would sow all of them immediately rather than risk loss of viability during storage. All the seeds sown early will have the benefit of several freezings and also a valuable period of snow-cover. If they emerge prematurely I would move them into a frame closed at night and wide open on suitable days. Those sown late will have (we hope) uninterrupted good growing weather. If wished, they may previously be refrigerated either in a damp envelope or in their pots.

Those from either early or late sowings which do not respond to freezing, warmth and moisture, may be waiting for their correct date and nothing will hurry them.

It is often recommended that, after the seeds are sown, they should be covered to their own depth with sifted soil, coal-chips or some other form of top-dressing. Finally, a piece of slate, asbestos sheeting or brown paper and glass is recommended for covering them, thus ensuring profound darkness for them all. It is stated that the seeds must be inspected daily and that the covers must be removed as soon as germination takes place.

Those members who have the R.H.S. Journal for October 1955 should re-read in its entirety the Masters Memorial Lecturer by R. H. Stoughton on "Light and Plant Growth." I quote from it :—

> "While light favours or is even necessary to the germination of some seeds, with others the reverse is true and light reduces or inhibits activity. Kinzel studied the seeds or fruits of 964 species at temperatures around 65°F. and found that about 70% were light-favoured, 26.5% dark-favoured, and 3.5% indifferent . . . . . seeds of *Ramonda pyrenaica* and *Primula obconica* have a marked light requirement, and those of *Gentiana*

> *lagodechiana, Primula denticulata, Draba aizoides* and *Mimulus langsdorfii*, while capable of germination in the dark, are light-favoured. . . . . All workers are agreed that germination of *Phacelia tenacetifolia* is greatly hindered by light, the inhibition increasing with light intensity. . . . . Several workers have found that the removal of the seed-coat usually permits germination even in strong light, suggesting that it is the testa, or enclosing structures in some cases, which is concerned in the light response."

I quote also from "The Genus Primula" (Section Auricula) by Sir William Wright Smith and H. R. Fletcher, Ph.D., D.Sc. (1948) :—

> "In each species some seeds may develop quickly and others be delayed. . . . . Cold and light have a favourable influence. The same verdict is given by Ludi ; most *Primula* seeds need strong illumination and a period of low temperature—the best and quickest results when frost and light are working together . . . . . *P. minima* germinated in light within three years to 99%—in the dark, nil."

So much for the routine top-dressing and piece of slate or brown paper ! I wonder how many of our past failures may be blamed to those carefully placed pieces of light-proof material. Who can say what the light requirements of new seeds will be ?

It is obvious that if the seeds in the control pot are top-dressed, a proportion of the same species must be given the chance of lying exposed on the surface. They will, however, be in danger from seed-eating birds, and from the risk of dessication should they emerge on a hot or windy day. The perforated zinc which I like using cuts out half the quanity of light. Glass affects the quality of solar radiation by cutting out certain wavelengths, which, for all we know, may be required to induce germination in a particular species. Fine gauge wire-netting lets through a greater quantity of light than perforated zinc and is almost as good for frustrating birds, but the risk of drying out is much greater. Perhaps other members have suggestions to make. Perspex ? Polythene ? Windolite ? How do they compare with glass for transmitting wavelengths of the visible spectrum ? How much ultra-violet radiation passes through ?

The observations on the response of seeds to illumination have, presumably, been made at laboratories at low altitudes. What do we know about the response of seeds at great altitudes where solar radiation is intense ? It is well known that ultra-violet radiation slows down growth of mature plants, could it also delay germination of seeds on high mountains ? If this were so the use of glass (which excludes ultra-violet) would be a positive advantage for germinating certain seeds.

There is endless scope here for trying out a wide range of conditions : complete darkness, dim light, fullest possible light from the sky, and light which has passed through glass or similar materials. Most of

my own seeds are under perforated zinc, some top-dressed and others bare on the surface. Others are covered with nothing but wire netting, and I have a few under glass.

The seeds in the pots, having been given the environment for germination, now only need time for these factors to interact. During the time of waiting, which may be only a few weeks or may be several years, all factors of the environment must be maintained. Perhaps the most widespread cause of failure is allowing the pots to dry out. If it is the intention to leave them in the open to receive the benefits of frost and snow-cover, they must be plunged in some moisture-retentive material such as sifted ashes or sand and peat, and of course the plunge-beds must be above ground level to avoid flooding. If they are covered with perforated zinc, the pots will look after themselves during that period of the year which is least enjoyed by us but is so beneficial to dormant seeds. Those who live in the colder parts of the country, and find that the advent of spring is all too gradual, may prefer to put their pots in frames, and there too they will not dry out in the early part of the year. Later, when the weather permits the frames to be left open, attention will have to be given to their watering. In either case, as the growing season approaches, a daily visit should be made to frames or plunge beds, not only to check for drying-out, but also to inspect for germinating seedlings. At the same time a watch should be kept for insect pests ; in a plunge-bed there is less trouble in this respect, but in frames, springtails lie in wait for seedlings to emerge, and soon nibble them out of existence. They may be tapped or blown away, but they soon spring back from somewhere else, unless the surfaces on and around the pots are made distasteful with an occasional drift of D.D.T. powder. Any moss within the frame should be scraped off, because it is here that the creatures hide themselves and breed.

Any weeds which emerge should be noted, but the utmost discretion must be exercised when weeding pots of rare seeds collected in the wild. When there is the slightest possible shadow of doubt, they should be left alone.

The most dramatic weed seedling in the history of rock gardening was *Primula aureata*, which appeared amongst seedlings of *Swertia sp.* at the Royal Botanic Garden, Edinburgh. It was new to cultivation and also new to science. It was many years later before it was discovered growing wild in Sikkim.

I myself had some weeds which looked very much like plantains in a pot of Mr. David Tweedie's collected seeds of *Primula decipiens*. They were extracted and planted out in a scree, where they eventually revealed themselves as *Calceolaria darwinii* and were awarded the Forrest Medal at the 1956 Dunfermline Show.

The day will come when the daily visit to the plunge-bed is rewarded by activity in some of the seeds. If this should happen before the

establishment of good growing weather, those pots should be removed into a frame or other safe place. The temperature should be maintained above freezing point or else the roots will not be able to probe down into iron-hard compost. The temperature and humidity must not be allowed to rise too high or else the shoots will become drawn and susceptible to "damping off" disease. Any seedlings which were on the surface exposed to light may now be gently top dressed to assist anchorage. When suitable weather arrives (the end of March or the beginning of April, we hope) these seedlings and any others which have appeared may be pricked off.

This is a dangerous period in the life of the seedling, and in some cases it may be by-passed. When only a few seeds were sown in a pot, they may be moved undisturbed into a larger pot to make a nice group for subsequent planting in their final position. This is suitable for the smaller primulas, calceolarias, etc. Seedlings of aquilegias and delphiniums, if they were sown sufficiently thinly, may be left for another year in their pots, and then the small carrot-like roots may be divided when growth starts the following spring. The same procedure may be followed with bulbous plants and cyclamens. If there is danger of crowding, the whole potful may be potted on before being left to grow on for another year. A little mild feeding with biomisation fluid helps them to build up below ground. Most other plants should be pricked off singly into small pots.

I like to use 2 in. Long Toms for this. They have the same depth as the 3 in. seed pots, but because of their small surface area, they may be tidily honeycombed into a small plunge-bed. The compost I usually use is John Innes Seed Compost plus a little finely sifted leaf-mould, but with unknown seeds there is much scope for experimental work at this stage. The compost should not be too fiercely "scree-ish" or it will fall to pieces and disturb the roots when eventually potted on or planted out. The surface of the compost is covered with about $\frac{1}{4}$ in. of sand and when the dibble hole is made some of it will fall down to surround the root until it can probe down to the richness below.

I find that it is important to move the seedlings while they still have inherited nutrients in their cotyledons and before their roots have branched and tangled. With tiny seedlings this is a delicate operation and I recommend the use of the following tools :—

An old-fashioned pen-holder fitted with a Relief nib turned up at the tip to make a two-pronged fork.

A medium-sized camelhair brush.

The seeds are loosened with the handle end of the brush. The fork is inserted beneath the pair of cotyledons and lifts the seedling gently and safely. The brush handle is used again as a dibble. The root is lowered into the hole and sand is brushed round it. The brush is used again to ease the seedling out of the fork. The pots are watered from below in a bowl of tepid water, usually with a little biomisation

fluid added, and the seedlings are very gently made firm. Labels should bear the date of pricking off. If the seed-pot had been modified in any way from the control pot and germination was either earlier or more profuse, it should be recorded in a note-book.

The pots are packed closely in a plunge-bed or frame ; they will establish quickly if the weather is humid, but they must be given very careful shading and wind protection should warm, dry weather follow. The smaller the seedlings are, the more easily will they pull through this critical period of their lives.

It is most rewarding to see the new seeds so well on the way towards maturity, but it is a great strain on the patience to see other pots left over from two or three years ago still with no signs of life. Dr. Tod has told us that his patience has sometimes been rewarded after keeping pots of seeds for seven years ! Why should they be so slow ? Is there any way of hastening them ?

It is time-honoured gardening practice to chip the seeds of certain sweet peas and lupins, and I believe that most cases of prolonged dormancy may be due to an impervious seed coat. A tough horny coat is an asset to a seed during the hazardous period of seed dispersal. Roses and cotoneasters are examples of seeds which can pass unscathed through the gizzard of a bird, and, as it happens, both genera may be very slow to germinate. The embryo seed is not, however, quite hermetically sealed within its hard coat. In a massive seed like a broad bean a hole the size of a pinprick may be seen close to the scar. In smaller seeds this must be microscopic but large enough to permit the entry of water. During the ripening of the seed the contents shrink, and the seed coat collapses into wrinkles, folds and flanges. When the seed coat finally hardens could one of these folds block the hole and prevent the ingress of water ? When entry is not blocked water may enter, and could the expansion of this water during frost explain the value of freezing for breaking dormancy ? Why does either the presence of light or its absence assist germination ? A newspaper (which is, after all, not so very different from a seed coat chemically) will become brittle and disintegrate if left out in strong sun. Another newspaper buried in the darkness of a moist bacteria-infested compost heap will also disintegrate.

This is no more than speculation and does not explain every dormancy problem. Dr. Tod, working with seeds of *Primula edgeworthii* taken fresh from the capsule, obtained 40% germination with water and 80% with gibberellic acid. What was wrong with those which responded neither to water nor to the acid ? When sown, the seed coats were still green and tender as they should be with petiolarid primulas.

There has been world-wide research into the uses of gibberellic acid for breaking dormancy in food crop seeds, and it is good to know that Dr. Tod is working on this problem with the seeds of rock garden plants. Some of his earlier findings were published in the *Gardeners*

Chronicle of October 1958, and he tells me he hopes to make further investigation during the coming year.

My 1960 plans for ancient pots are as follows :—

Wait until March or April and examine with a lens.

Remove tufts of moss, shaking off any sand which lifts, and examining all the time for the pale seedlings which are sometimes found underneath.

Stir the top quarter of an inch with a pin to expose seeds in darkness or bury those in light.

Give the pots a thorough bubbling soak in warm water, and close up immediately in a frame.

Treat a few pots with gibberellic acid, using the greatest discretion to avoid the elongation of any resultant seedlings.

If there is still no hatch by June, put them back again in the plunge-bed for another year of patient waiting.

Returning again to the young plants which have been growing on steadily throughout spring and summer, it will be seen that the amount of growth they have made is very variable. Even within the same species some individuals are more robust than their fellows. Those which have made good top growth and have roots showing at the drainage hole may be moved on, either into larger pots or pans, or into the open garden. If a good number have been raised successfully they should be tried in a variety of situations. Reference should be made again to collectors' notes if available, but very often the plant, by its appearance, will proclaim its needs. Some specimens of a species may be treasured in pots or in a frame, or in the safety of a sink garden ; some will be planted in the scree or a peat wall, and others in ordinary rock garden soil, facing north, south, east or west.

Most plants are versatile and will tolerate a wide range of conditions, in fact some will grow into finer cultivated specimens than those seen in nature. Others, which have become too well adapted to their mountain homes, have lost the adaptability for settling down easily in a garden or alpine house. An attempt may be made to copy the soil and rocks amongst which the parent plants were growing but it is not so easy to mimic deep snow cover for perhaps seven or eight months, and sun-ray lamps have not yet become standard rock gardening equipment !

When a plant owes its compact habit of growth to the dwarfing effects of ultra-violet radiation and wind-speed, it will be deprived of these at low altitudes, and these deprivations will be aggravated when solar radiation is further excluded by industrial air pollution and the shelter of glass.

All growers know best the special problems of their own gardens. If they discover compromise solutions, they will be amply rewarded by having plants which are tough, compact, brilliantly flowered and in perfect health.

Autumn Concerto

By J. ARCHIBALD

NESTLING DOWN in a cushion of heather and birches, now, in September, beginning to change their summer covering of silver-green to a richer, autumnal one of gold, Inshriach is a garden well known to most alpine plant enthusiasts. Apart from the extensive nursery, the garden itself is fairly small and in no way exceptional, though perhaps it does contain a larger number of notable plants per square yard than the gardens of most specialists, but Inshriach has a peculiarly seductive beauty and the visitor experiences a certain delight in finding so many exotic alpines looking so much at home here among the hills of the Cairngorms. The pale September sun rises from the fresh chill of the Highland morning mist to shine down on alpines from the high mountain ranges of every continent. This cosmopolitan atmosphere is, of course, not common only to the rock garden at Inshriach, but few people fully appreciate the amazing fact that the gardener can distil the beauty of the world into a few square yards of inhospitable soil. From the mountains of Norway to the barren, wind-swept shingle beaches of the Falkland Islands, from the grassy alps of the Yunnan to the Olympic Mountains of Washington come alpines to contribute to the final display of autumn before the cold of the Highland winter comes with a freezing hand and forces them to cower into the soil.

In fact, to find good late summer alpines we need go no farther than our own country, whence come such delightful plants as *Dryas octopetala*, which carries in autumn its numerous little, fluffy white, powder-puff, seed-heads over a mat of tiny leathern green oak leaves, and *Geranium sanguineum*, in its forms, like *G. s. lancastriense* to be found on the sea-sprayed turf of Lancashire's Walney Island, with its large satin-pink apple-blossoms all summer through. The Maiden Pink, *Dianthus deltoides*, another long-flowering native, in its garden forms from the earlier flowering, rich red "Huntsman" to the Wisley Variety's flopping profusion of dusky, grassy foliage jewelled with the brilliant little crimson flowers, is still determinedly producing its abundant blossoms in autumn. Of course, of native autumnal rock garden plants, our heaths and heathers provide some of the most praiseworthy. In company with the Himalayan gentians they provide some wonderful sweeps of colour, but any catalogue of them will provide adequate descriptions of the legion of varieties, so a mere mention of them will suffice here.

In the garden it is but a short step from Scotland across the Atlantic and, indeed, across the whole North American continent to find the Lewisias from the mountains of the far Western United States. At Inshriach, these sumptuous Westerners grow absolutely contentedly in the same dry stone wall which *Geranium sanguineum lancastriense* drapes with its hanging stems. The Lewisias generally bloom in spring

and early summer, but there were enough *L. cotyledon* hybrids in flower in August and September to cause an appreciable amount of comment from visitors to this garden at that time. These hybrids, which are becoming a speciality here, are never happier than when growing in a sunny dry stone wall or vertical rock crevice, where they can produce their specious flowers of crimson or pink or orange apricot, all flamed and pencilled with richer, deeper tones. A relative of the Lewisias, also from Western North America, is the recently introduced *Claytonia nivalis*, which is a living refutation of Farrer's judgement that the 'Claytonias are pretty little weeds, but weeds no less,' for it is none too easy to cultivate and merits a more extravagant adjective than merely 'pretty.' It makes a fine pan plant with its splaying rosettes of red-tinged, succulent leaves and sprays of gay, sugar-pink flowers which appear intermittently from spring to autumn.

However, neither the Lewisias nor their rarer relative provide a really successful ambassador from North America to the autumn rock garden. Nor do the crudely insolent bright-pink Monkey Flowers of *Mimulus lewisii* any longer gape their mouths and show their speckled throats, like Chinese dragon-heads, to the extent that one still feels that it was worth their while to come down from the banks of the icy Alaskan streams or the edges of the winter-frozen swamps in the Rockies. While the Erigerons and Penstemons become less anxious to produce new flowers and neat little *Oenothera flava* is more reluctant to billow into its huge, blasé imitation blooms in the softest of yellows, which are so delicately enormous that they look as if they will be wafted away by the first evening breeze, there is one American which by sheer daring of its gaudy colour attracted more attention late last summer at Inshriach than any other. *Gilia aggregata* is not an alpine plant but an inhabitant of mountain meadows and grasslands on the slopes of the Southern Rockies, where its Sky Rockets shoot up straight from the waving sea of grasses, the three-foot stem clad evenly in feathery fine foliage, somewhat reminiscent of the pernicious Mare's Tail, and erupt into an uninhibited blaze of the most fiery of volcanic scarlets. The individual flowers have great beauty but are closely packed into a compact spire, in which the top buds open first, in the manner of that other brilliant American genus, *Liatris*, each one poking its nose out from among the light green hair-like leaves before bursting into a flaring trumpet of that most intense of colours. *G. aggregata* is but a biennial and at three to four feet hardly a suitable contender for a place in the rock garden, but as a border plant nothing could be more spectacular in the shortening days of late summer than the fiery brands of this American blazing with unrestrained splendour.

The South American continent, in contrast to its northern neighbour, has provided comparatively few plants for the rock garden, though the Cordillera of the Andes is as rich as any other great mountain mass in alpine flowers, but despite the efforts of Harold Comber and many others, these temperamental temptresses from the south never seem to settle down here for any length of time. There are, of

course, such exquisite exceptions as *Calceolaria darwinii* and the more recently introduced *Oxalis laciniata*. A relative of the former, the Chilean *C. tenella*, sends up from its creeping mat of tiny, bright green leaves a myriad of baggy little flowers on quivering hair-like stems, gaping their yellow mouths, delicately gashed with tiny mahogany-crimson teeth, ceaselessly all summer. From the cold and windy Falkland Islands comes delightful *Myrtus nummularia*, swept into a prostrate huddle by the howling Antarctic gales and bearing in autumn, over its neat little varnished leaves, relatively huge, waxy pink berries.

However, the most obtrusive South American in this garden last autumn was not a rock garden plant but a half hardy climber from Chile. *Eccremocarpus scaber* is neither new nor difficult ; almost every popular seed catalogue contains its name, but very few visitors to this garden had ever seen it before. One of the most spectacular of climbers, clinging by means of finely twisting tendrils at the ends of the dull green leaves, it will quickly reach a height of anything up to twenty feet, before being cut back by the first severe frosts, and from July onwards produce its curving racemes of tubular orange-yellow flowers, each one flushing with deeper orange-red towards the throat and puffing out its glossy cheeks before pouting its chrome yellow-lipped mouth, in a manner befitting any Chilean beauty.

From Chile's northern neighbour, Bolivia, comes one of the few South American gentians in cultivation. The short-lived *Gentiana chrysantha* from high in the Bolivian Andes, like all other gentians from the Southern Hemisphere, seems most ungentian-like to our northern eyes. On a stem of nine inches or so it carries its spikes of bright yellow flowers, squinny little things when compared to the massive trumpets of *G. acaulis*, but of interest because of their form, colour and rarity.

To find a more impressive beauty among the cultivated gentians of the South we must travel over 6000 miles west from the Bolivian mountains to the southern shores of the South Island of New Zealand, where, among the rocks and sand-hills, *G. saxosa* forms its neat two-inch clumps of crowded, brownish-green leaves and produces its shallow, upturned flowers of sumptuous white, huge for the size of the small plant. A close relation of this is *G. bellidifolia* from both the Southern Alps and the mountains of North Island. It is a somewhat larger plant and bears many dark, flopping stems on which loosely cluster the large white goblets looking up at you from their delicately veined depths.

To visit the home of the next plant we must move from 40° South to 40° North, from these great islands of the Antipodes to their northern counterpart, Japan, whence comes little *Thalictrum kiusianum* to run about accommodatingly in rich scree at Inshriach. This pleasant Oriental dwarf spreads itself in a fragile way, sending up a yellowish-green Aquilegia leaf every so often and in late summer producing an abundance of tiny fluffy lilac blossoms on fine two-inch stems. A more robust inhabitant of Nippon is the curious woodlander, *Tricyrtis*

macrantha. At Inshriach this weird relation of the lilies grows happily to a height of about two feet among dwarf rhododendrons. From the axils of the hairy, corrugated leaves in autumn come the pallid, waxen flowers, spotted and freckled with a sombre and livid ruby purple—altogether rather fascinatingly evil and bizarre caricatures of the more beautiful members of the lily family.

Beloved of bees and butterflies, Japanese *Sedum pluricaule* revels both in sunny scree and in a trough, where towards the end of summer it covers its prostrate mat of fleshy leaves with flat, almost stemless clusters of brilliant rosy crimson-pink flowers in so harsh a shade that the crudeness of colour would be almost overpowering were it not for the subtle tempering effect of the glaucous grey leaves, which convert this little sun-lover from just a vulgar splash of colour to one of the most useful, easy, and beautiful plants for any rock garden in autumn.

Before looking at the plants from the Himalayas, the most generous of the massive ranges in giving of its beauty in autumn, we shall see what the hot, arid lands of the Eastern Mediterranean region and the Near East have provided for the embellishment of the garden in September. With one foot in the Black Sea and the other in the Caspian, the colossal mountain chain of the Caucasus bestrides this part of Southern Russia, enclosing the northern borders of Georgia and Azerbaijan. From this range might come innumerable fine plants were it not for the impregnable political barriers erected by man—barriers far less easy to surmount than any set up by nature.

Nevertheless, many of our showiest alpines are contented refugees from this area, notably the Campanula species centering on *C. tridentata* and, for the autumn garden, *Silene schafta*, a particularly easy, colourful plant which seems to rest in unmerited and unaccountable obscurity. The flowers of this friendly Caucasian are rather similar to those of the wild Red Campion of our hedgerows in size and colour, but are borne on dark stems of only five inches or so, in an indescribable profusion of magenta-rose, above the lush leafiness of its tufted clumps. So eagerly does it produce its masses of bloom that one is apt to suspect that it has sprung from some packet of half-hardy annual seeds and will die of exhaustion before the coming of winter, but the next year will see *S. schafta* up again, irrepressibly and blatantly flaunting itself in the autumn garden, as it will do for many years to come.

West from Azerbaijan and to the north of Persia, lies the consistently mountainous land of Armenia, where grows the Prophet Flower, *Arnebia echioides*. At Inshriach, or in any other garden, this plant enjoys a sunny place and light soil at the front of the border or in the rock garden, where it will produce, both in early and late summer, its foot-high bunches of large, bright primrose-yellow flowers with each of their five lobes blotched at the base with a daub of jet-black —the five finger-marks of the Prophet. However, he does not seem to have made a lasting impression on the blossom, for as it grows older

the signs of his presence fade from its memory until the colour is that of a clear and immaculate milky, lemon-yellow.

Another plant which delights in a similar life in the sun is the result of a bigeneric cross : tiny, beautiful *Celsia acaulis*, from high on Mount Taiyetos in the southernmost of the Greek Peloponnesus, was married with the somewhat coarser, two-foot *Verbascum phoeniceum*, from farther east, around the Lebanon, mixing its pure yellow with the purplish-pink of the latter, to produce a six-inch hybrid, with large flowers in a most wonderful shade of brick-pink imperceptibly tinged with burnt apricot, a shade equalled only by the smoky autumn clouds when sunset lights them from within and they hint of a storm far beyond the mountains. Moreover, this astonishing plant, as if knowing that we can never have enough of this colour, insists on producing its delicate sprays from the end of May right on through September in a succession of seemingly interminable beauty, although, admittedly, by autumn is it understandably looking just a little straggly in the daintiest way possible.

North of the Plain of Thessaly towers the 9,500 ft. summit of Mount Olympus, whereon the Greek gods meet in conclave and which is also the home of an aristocrat among the Dandelions and Hawkweeds, *Crepis incana*, a plant as different in its bearing from its relations as the gods are from mankind, for which reason it doubtless has sought their company up on Olympus in preference to living on the railway embankments and roadsides of us mortals. Nevertheless, this aloof Composite will come down from the sacred heights and settle down in a hot, dry place in our gardens, where in late summer it will generally boisterously produce its fifteen-inch high bouquets of large, delicate pink Dandelion-flowers on soft, grey-leaved, branching stems and later, mingled with the flowers, the fluffy silvery seed-heads, which never quite show the final familiarity of producing for us any fertile seed.

And so, finally, we come to the last of the great mountain ranges from which plants have come to give of their beauty here in September, and the greatest of them all—the Himalayas, the home of the most wonderful of all autumn-flowering plants, the Himalayan gentians. It would be pointless to describe and ennumerate the two dozen or so distinct species and hybrids grown at Inshriach ; it is sufficient to mention a few of the less common ones. *Gentiana x fasta* 'Highlands' is a magnificent plant with the blood of the three best autumn-flowering species in it, *G. veitchiorum* from Szechwan in W. China, *G. farreri* from Northern Kansu in Tibet, and *G. sino-ornata* from the N.W. Yunnan. This beautiful and elegant plant with its brilliant blue trumpets—almost greenish-blue in their intensity—is best planted in groups, large or small, so that the effect of the colour is not lost, as the flopping, dark, fine-leaved stems are long and a single plant distributes its beauty over a wider area than most gentians.

In face of the oft-repeated eulogies concerning *G. x* 'Inverleith' it seems rash to name *G. x macaulayi* 'Kingfisher' as an altogether

superior hybrid. Granted, it has not the massive flowers of the *farreri-veitchorium* cross, but mere size has become a vulgar horticultural obsession ; on the other hand, the 'Kingfisher' has a colour as vivid as the metallic blue-green of its namesake, deeply electrifying in its brilliance, and an artistically proportioned habit, which is extremely neat while every bit as strong as that of 'Inverleith.' A wide mass of this gentian created a most arresting sight in September, particularly as it took part in a very daring colour combination with the richly and deeply coloured, magenta-claret goblets of *Colchicum speciosum atropurpureum*, the most shameless and brazen of all 'Naked Ladies.' Pale, translucent blue *G. hexaphylla*, the earliest flowering of all the autumn gentians, crossed with the Cambridge blue *G. farreri*, gave rise to the lovely hybrid, *G. x hexa-farreri*, of which the Aberchalder Form provides one of the longest-flowering autumn gentians, easy-going like most of these Himalayans in a moist, gritty, peaty soil.

Another genus of blue, autumn-flowering Himalayans, less well-known than these gentians but liking exactly the same cultural conditions, is that of *Cyananthus*. All these make flopping mats beset with many large and sumptuous blooms, like flat periwinkle-flowers, over quite some length of time. *C. integer* is perhaps the best with its neat dark-foliaged stems and soft-blue vincas, but the laxer-growing *C. lobatus* has more splendid flowers in a variety of shades. There is a pale and lucent albino, the porcelain blue of 'Sherriff's Variety' and the rich, deep, satiny-toned *var. insignis* in Oxford-blue luminescently shot with violet. They all die back each winter to the sturdy central tap root and all relish that rich, cool, peaty scree beloved of so many Himalayan plants.

Codonopsis convolvulacea, like the *Cyananthus*, is a member of the *Campanulaceae*. It is also a Himalayan and has come down from sub-alpine levels, where it twists and twines and trails among the tangles of shrub and herbage, to bestow on us its most lovely flowers in late summer. These, the most delicately fragile, shallow, Wedgewood-blue saucers, imperceptibly lit with a lavender glow, open wide to show the intricacies of design at their centres, painted on with lacquer of crimson-lake. *C. vincaeflora* is the double of *C. convolvulacea* with the same intimate clinging habit and the same wonderful flowers which, however, lack the central crimson brush strokes, though, by way of compensation, they begin to display themselves somewhat earlier.

An unusual woodlander, widely distributed in the Himalayas, is *Podophyllum emodi*, which, like *Paeonia emodi*, derives its name from the 'Emodi Montes,' the ancient description of that district of the Himalaya first explored by Alexander the Great. Whatever distant connections with the Macedonian conqueror it may have, *Podophyllum emodi* was first discovered by Dr. Wallich in Nepal in 1829, but, despite well over a hundred years in cultivation, one hardly ever sees this interesting plant, which is surprising, as it is by far one of the most spectacular things in the autumn garden. Although the flowers, which appear in May like huge, pearly-white winter aconites, are

pleasant and deeply lobed, umbrella-like leaves, blotched with purple, make it a fine foliage plant, its real glory comes in autumn with the production of the massive, squashy fruits of glowing orange-scarlet, like large and bloated plums or persimmons. These dangle from the slender swaying stems of about a foot in height and last for a considerable length of time, for, in spite of their soft appearance, the outer skin is tough and leathery. At Inshriach this herbaceous woodlander is perfectly happy growing in light shade and ordinary soil, but it must not be allowed to suffer from extreme drought in summer or be disturbed once established.

Yet another easily grown alpine of Himalayan extraction, which is rarely seen, is *Potentilla x tonguei*, indisputably one of the best, most trouble-free plants for the autumn rock garden. This charming, almost prostrate potentilla is a hybrid of the much larger *P. nepalensis* of our herbaceous borders and makes rough little tufts of similar dark and dull green, cinquefoil-leaves, over which glow the embers of large strawberry-flowers in late summer, each one like a bowl of apricot brandy with a central drop of crimson blood, which before congealing had begun to suffuse its erubescent light over each petal. This delightful hybrid is extremely simple to cultivate in a light and fairly sunny soil, as long as it is not one which is very poor or arid.

In September, high in the mountains of the Pir Panjal range in Kashmir, at an altitude above 12,000 ft., *Polygonum affine* paints the rocky slopes with a hazy pink, pouring itself loosely over the boulders and covering itself with innumerable, uneven spikes of many tiny, frothy flowers in several shades of rose-pink, varying in richness. This showy alpine is willing and good-natured enough to give a similar spectacular performance in the September rock garden and, when grown in full sun and poor soil, a few of the pointed, bright, leathery leaves will sometimes turn to a brilliant scarlet, adding even more zest to the display of the ever-deepening pink flower spikes. A neater relation of this all but too rampant Himalayan is the equally affable *P. vaccinifolium*, a plant which Farrer described as a 'refined treasure' needing 'careful propagation.' However, whatever first appearances may suggest, it soon becomes obvious to the rock gardener that Farrer must have planted *P. vaccinifolium* upside down to come to the conclusion that it needed careful propagation, for this little enchantress shoots out long stems, arching over the surface of the soil and rooting wherever they touch it. Thus, it forms an undulating carpet of twiggy growth, in winter, bare yet pleasant in its density, clothed all summer with small bilberry-leaves, looking deceptively evergreen, and covering itself in autumn with countless, four-inch spikes of rose-pink fluffiness.

Just as Farrer was somewhat mistaken about the culture of *Polygonum vaccinifolium*, he seems to have been entirely ignorant of the merits of the Himalayan *Saxifraga strigosa*, which he condemns in his usual peremptory manner as being worthless, 'dowdy in appearance, difficult in temper and tender in constitution.' It is needless to add that Farrer could never have seen the plant in cultivation; in

fact, it was not introduced until after his death. It is a most dainty and beautiful plant, providing an excellent foil for the blue of the more refined gentians and *Cyananthi*, with its flowers of deep and brilliant yellow, a colour so intense and vivid that it almost verges on garishness, but the small and graceful blooms, each with a few minute and brilliant orange nectaries, which temper rather than emphasise the gaudiness, are so delicately borne that the overall effect is far too ephemeral looking to appear ostentatious. This unusual hairy saxifrage will flower for about two months in late summer and requires a little care in cultivation, but should give no trouble in the peaty scree and shady position recommended for some other Himalayans. Care should also be taken that no great, lolling, rampant neighbour engulfs the little saxifrage for it is, literally, a fragile plant. Nevertheless, however fragile *Saxifraga strigosa* may be, the last thing that could ever be said of it is that it is 'dowdy in appearance.'

Now, at last, we reach the final plant in this survey of some of the alpines which have come from all parts of the earth to decorate this garden. It is through no odd chance that this plant has been kept to the end, for it is the only one of the list to merit the phrase 'quite out of this world.' *Saussurea stella* is so weird a whim of nature that, on seeing it for the first time, one has suspicions that the seed must have dropped from a flying-saucer, so like a product of the surrealistic imagination is it. But, on closer examination, it can be seen that it is none other than an earthly composite gone mad and in fact this plant and many of its relatives have let the mountain air of the Caucasus and Chinese Alps go to their heads and fallen victims to paranoia and schizophrenia. These vegetable maniacs go to no limits to vie with each other in imbecility : *S. obvallata* blows its flowers up in a balloon of lemon-yellow, Chinese-silken bracts ; *S. sacra* rolls itself into a perfect ball of cotton-wool ; *S. gossypiphora* carries the cotton-wool madness to a state *par excellence* ; yet others form columns of down for the little flowers to hide their personalities in the depths ; and *S. stella* thinks that it will try, away up on the Roof of the World in Tibet, to emulate a starfish from Saturn. Almost all of these maniacs are absolutely intractable in the garden, whither they are no sooner brought than they languish and depart, so that their souls can return to the barren mountain wastes to rant and rave to their hearts' content. *S. stella*, however, is quite willing to be confined in the gardeners' Bedlam, where it will delight the lovers of the bizarre by performing its strange ritual of flowering. Before it flowers, this plant does not look inordinately curious, but it is easily seen that it is trying very hard to be a graceful, bright green starfish in the way that it forms its tufts of grassy leaves. Late one summer, it will at last realise its hopes; the leaves lie flat on the ground and broaden markedly at the base, where they become tinted with a bright, yet sinister, shade of pinkish, beetroot-red, rather similar to the colour of phenol soda solution ; then the plant, having all but succeeded in its attempts, changes its mind and decides that it will be a sea-anemone instead, so it sends up

from the centre of the starfish a tight cluster of deep Tyrian purple, perverse and stemless knapweed-flowers, from which the cream anthers frolic forth in an evilly seductive fashion ; and so, elated at having achieved its end, *S. stella* departs this world, leaving behind it sufficient seed to perpetuate its hereditary insanity.

This is probably the only nursery to propagate this curiosity commercially and it is certainly a pity that more members of this genus are not willing to display their weirdness at this Highland garden, where such difficult rarities as *Meconopsis delavayi* and *Ranunculus buchananii* grow successfully. Inshriach is a garden for the enthusiast and as has been seen, in autumn, though no more than at any other time, embraces alpines from every continent, combined in one great harmony of colour and form, a vast concerto, in which there are many soloists, but one which almost everyone could have in his own rock garden with a little skill and a little more patience.

The Season's Ups and Downs

By A. DUGUID

1959 WITH US in Berwickshire has been a year of extremes. As in other areas, practically no rain fell from January to October, our total when the drought finally broke in mid-October being 4.5 inches—a very meagre fall indeed compared with a monthly average of about 4 inches in a normal year. Lack of water became a source of increasing anxiety as month followed month when we had to depend on a small but constant trickle which had to serve the needs of a farm, three households, and lastly a garden and nursery. It had to be decided early in the season that none could be spared for established trees, shrubs, and plants which were more or less left to care for themselves.

It was surprising how many came through, but with deep-rooting plants being on a clay subsoil must have helped greatly. Rhododendrons, being mainly surface rooters, suffered severely in the drier areas and looked very miserable with their tightly curled leaves. Several long established bushes died completely : others suffered so severely that it will take them quite some time to recover their former vigour. Gentians, likewise, did not like the excessive drought, suffering both from lack of rain and the almost complete absence of dew at night. On only one night in July did I notice traces of dew and there was no appreciable amount again till mid-September. This lack of night moisture was a serious loss since dew at nights benefits plant life to a very great extent—especially seedlings and young plants. As a result of this drought we had the poorest show of Gentians we have ever had—even of *G. sino-ornata*, usually a carpet of blue. The only gentian that really flowered well—and it happened to be in a damp spot—was *G. x hexa-farreri* "Aberchalder Form," which produced a wealth of flowers for weeks on end.

Lilies and nomochares also did not give of their best ; they flowered, certainly, but did not produce their usual vigorous growth. Most noticeable in this respect was that fine plant, *Lilium wardii*, which produced only $1\frac{1}{2}$ to $2\frac{1}{2}$ feet stems instead of the usual $4\frac{1}{2}$ feet. This is one of my favourite lilies, chiefly because of its perfume in early morning and late evening, and in every respect it worthily bears the name of its famous introducer. *Lilium auratum* did not appear above ground at all ; although on examination the bulbs appear to be quite sound. It is hard to know why liliums should sometimes take this rest, but I have noticed it before in the case of Liliums *monadelphum szovitzianum*, *chalcedonicum*, and *henryi*. It may be because they are not quite suited as regards soil or situation, or perhaps slugs have eaten off the young shoots as they appeared.

Losses among primulas were heavy—as was to be expected—particularly among the Petiolares section. Fortunately I lifted and boxed some of all the species we have of this section and have thus been able to keep a nucleus of stock ; those left outside were practically wiped out except for one planting facing north which escaped. Other sections also suffered but not to the same extent. Polyanthus, too, were almost completely wiped out in their beds and were a sorry sight at the end of the summer.

Plants on the peat walls, even with fairly regular watering, had a bad time ; they dried out badly. However, I fear that the construction was at fault here ; originally our peat garden was the rubbish dump and in its original state, being near to the nursery, was unsightly. A few years ago a more secluded site was found for rubbish and the old rubbish dump transformed into peat walls. This was done by building a series of walls of turves in more or less ascending terraces one above the other, suitable plants, mainly primulas, gentians, dwarf rhododendrons, gaultherias, nomochares and lilies—being put into the beds between the walls. In the wet summers which followed the construction and planting this worked very well and plants throve—especially the petiolarid primulas. The recent hot summer, however, was disastrous ; walls quickly became dust dry and a death trap for moisture-loving plants. When next a peat wall has to be built I will sink the walls and avoid this trouble in future ; very wet years can be taken care of with good drainage.

Propagation, too, has had its special problems, and it has been difficult to find good propagating material on many plants. This was particularly noticeable in dwarf shrubs such as heaths. Cuttings were brittle and dry and the percentage of 'strike' was well below average. Seed germination on the whole was poor and seedlings did not appear to have their usual robustness. This is usually noticeable after a sunless summer such as we had in 1958.

The summer of 1959 will be remembered too for the almost complete absence of slugs. I cannot remember a season when we had less trouble with these pests ; they, at any rate, did not appreciate the very hot

weather. Blackbirds were much less a pest than usual, and peat walls escaped their destructive attention (? ?—editor) ; no doubt with the very dry conditions there was little in the slug or grub line to attract them. The poor birds really do us a great service if only they did not go about it with such a passionate intensity. Moles, on the other hand, were a perfect plague : surely we had a visit from every mole in the Borders during the course of the summer. At any rate we were kept busy trying to get rid of them by various methods. Apart from poisoning (which I do not like), trapping is most satisfactory provided one gets a main run preferably leading to water. This year I tried the new 'mole fuse control'—a candle-like stick of grey material which is lit and inserted in a run and then covered up. The idea is that the fumes are carried by the smoke to all the moles in the area and kill them off. That is the theory, but I must say that I did not have satisfactory results ; it may have been that there were so many of them coming in to the water that I really did not have many resident moles in the control area.

1959 has gone, leaving its lessons learned and its own particular problems presented—I hope to our benefit and profit.

A Letter from Australia

February 1959.

To AN Australian member of the Scottish Rock Garden Club, this *Journal* is full of helpful information, and reading about members' activities in rock gardening and plant hunting abroad is most interesting and pleasurable.

Ferny Creek may be termed an outer suburb, east of Melbourne, in the Blue Dandenong Hills, being approximately twenty-two miles from the city ; so named after a creek rising in the vicinity and bordered by luxuriant tree ferns. Nearby are the townships of Sassafras, Olinda, Kalorama, Kallista and Monbulk, all in delightful settings and full of horticultural enthusiasts.

Barely a mile from our home is the Sherbrooke Forest, famous for its lyre-birds. Being approximately 1,600 feet above sea level, we get panoramic views of Western Port and Port Phillip Bays, other mountain ranges, and the lights of the metropolis. The soil is mainly acid and very fertile ; some difficulty is experienced in growing some of the lime-loving plants with full success. There is rock in abundance, as originally these hills were volcanic.

Our Rock Garden Group at Ferny Creek comprises about twenty-five very keen people who (I think without exception) have turned over a portion of their individual properties most suitable, and now have attractive rock gardens. Several of our members have made trips to Mt. Bogong and Wilson's Promontory to collect native plants.

We have no trouble with drainage and so long as the rocks are placed for effect and to keep the roots cool in summer, scree need

only serve a surface purpose of keeping the plants clean. We have passed through a recent heat wave of daily temperatures reaching from 105 to 110 degrees in the shade, and it is most noticeable that any plants where I placed rocks around the roots earlier, when heat was predicted, have hardly suffered. I cannot speak comprehensively on any particular genus, so will just pass on some of the rock plants which do well in my garden, requiring the minimum of care :—

ALYSSUMS : *Aa. saxatile*, "Dudley Neville," and *citrinus* all like our soil and climate, and flaunt their yellows unstintingly.

Anemone pulsatilla : always a lovely sight.

CAMPANULAS : A number of varieties do well, in particular I look forward to the little *C. pusilla*, both blue and white, coming to life again each Spring.

CONVOLVULUS : *C. cantabrica* is very showy, covered with its soft pink flowers, as also is the blue *mauritanicus*.

CROCUSES generally make a lovely splash of colour Autumn and Spring, as well as at other odd times according to variety.

COLCHICUMS shoot up as sprightly as ever each Autumn, but are rather difficult to procure.

CYCLAMEN : *Cc. neapolitanum, cilicium, europaeum* and *coum* please everyone both in leaf and flower.

Daphne cneorum is a blaze of colour in season.

DIANTHUS in many colours and heights flourish.

ERICAS : "Springwood White" is a gem, but "Springwood Pink" is difficult to come by. I am nurturing a plant kindly given to me and which has come through the heat wave with flying colours. "Winter Gem" is just glorious in Winter, blooming profusely, as does *ventricosa* in the Summer.

Incidentally the Scottish Heathers, white and mauve-pink, do very well and happen to bloom just at Christmas time, which makes them both much prized.

The Daboecias in three different shades thrive.

ERYTHRONIUMS : I have had seed germinate but have an idea they need some care.

FRITILLARIAS : So far seem quite happy.

GENTIANS : *Gg. septemfida, acaulis* and *asclepiadea* bloom well—*G. acaulis* produced 109 blooms last Spring on just a few plants, and a friend had nearly 180 flowers on a patch about 4 ft. × 1 ft. *G. sino-ornata* is not such a good doer, the sun scorching it in the Summer, thus spoiling the plants for Autumn flowering.

IRISES : All seem very hardy and most members seem to be making a special feature of *Ii. innominata* (Fig. 2) and *reticulata*.

GALANTHUS : *Gg. elwesii* and *nivalis* bloom well, and although it is the lot of most members to possess only a few bulbs each, they are treasured by each of us.

Muscari azureum is a general favourite.

NARCISSUS : Seeds I received about five years ago of *N. cyclamineus* have bloomed the last three years and are very dainty in the garden. It is such a pleasure to walk through the garden early in the Spring and come suddenly upon one or two which have come to life and flowered almost, it seems, overnight.

N. bulbocodium (several varieties including *citrinus* and *foliosus*) are really delightful, and last year some set seed well.

N. triandus albus is also a favourite, and also set seed last season. I have a number of bulbs from seed from the S.R.G.C. and am looking forward hopefully to some of them flowering this coming Spring.

Phlox subulata in variety and thymes abound.

SAXIFRAGAS : Some do well, but have to be kept in pans and protected.

TULIPAS : *T. saxatile* is hardy, also two or three other varieties, but we are only finding out more about these and various other rock plants since receiving seed from the S.R.G.C.

Several Australian natives, such as *Viola hederacea*, Kennedyas, Boronias, Leschenaultias, and *Micromyrtus ciliatus* all add to the colour harmony of our rock gardens. All the foregoing I have found most successful, but am hoping, through membership with the Scottish Rock Garden Club, to add to this list, and I would like to express my thanks for the generous help in this respect in the past.

BERYL WATSON,
Ferny Creek,
Vic., Australia.

Plant Notes

ANCHUSA ANGUSTISSIMA KOCH.

THAT IS the name which has now been given to the plant which for too long in too many catalogues has been masquerading under the name *Anchuas caespitosa*. It is a pretty dwarf anchusa of about 12 inches, certainly NOT *caespitosa*, and too big for the Rock Garden, but an attractive plant all the same. The real *A. caespitosa*, unfortunately to be found in no catalogue at present, is something quite different. It is endemic to Crete, where it grows on the White Mountains at a height of between 5000 and 7000 feet. It is reported as growing there in screes and crevices.

It grows in the form of a low rosette of bristly leaves an inch or so in height. The flowers, almost as big as the old silver threepenny bit, are a brilliant rich blue with a snow-white centre, quite as breath-taking as those of *Eritrichium nanum*. The only place I have seen it growing out of doors is in a scree in the Royal Botanic Garden, Edin-

burgh. There it has survived and flowered for some years now, though it can hardly be said to have flourished. I have noticed that it gets a covering of a pane of glass in winter. I was lucky to get a plant by exchange, but unfortunately it died in 1957 during my absence in Switzerland. Too much water in the plunge, I suspect.

An Award of Merit was given on 15th May 1945 to a plant under the name *Anchusa caespitosa* ; it is probable, however, that the plant was really *A. angustissima*. A note on this most desirable plant by anyone who has had success with it would be most interesting.

Perthshire.

D. M. MURRAY-LYON

CAMPANULA MIRABILIS

MANY SPECIES of Campanula are monocarpic and because of this people will not bother to grow them, although their raising is not any more difficult than that of other plants. Admittedly, one has to wait two or three years before they flower, but when they do flower the reward is great : further to this, in the rosette stage they are very attractive. There is no doubt that among the monocarpic species of Campanula are some of the loveliest of the whole genus. When they do flower they produce great numbers of flowers and these are usually of a firm texture and each bloom lasts a considerable time. The photograph (see Fig. 4) shows this species growing in a wall where there was plenty of depth. Prior to the flowering stage this rosette had been a source of attraction with its smooth glossy leaves flat against the wall.

From this rosette a strong flowering stem arose about nine or ten inches in length, branching all the way, each side shoot carrying several flowers. The flowers are bell-shaped with deeply cut lobes and measure about one and a half inches in length and about the same across the open flower and are a pale lilac blue in colour. Other plants that flowered during the same year in a scree were not so large, but the colour of the flowers was a deeper shade.

This is undoubtedly a plant for the rock crevice or wall where it gets a good soil and where it is grown on the vertical so that the crown is drier during wet weather ; it also requires depth of soil for its taproot. Like other monocarpic species, early transplanting into their permanent quarters is recommended.

It is a native of the Caucasus.

D. WILKIE

CODONOPSIS

I OFTEN wonder why Codonopsis, at least certain species, should have an unpleasant smell while other plants, and many not nearly so attractive, should have a pleasant scent. Fortunately, there are people who do not spurn the whole genus for the faults of the few, but are selective and pick out the sheep from the foxes.

This note is not intended to parade the charms of the genus, but rather to try and correct an error in naming which has gone on for a very long time.

I refer to the name *C. ovata* (see Fig. 5). There are gardens where this name is on the correct plant, but in quite a number of gardens this name is given to another plant, namely, *C. clematidea* (see Fig. 6).

Once the true plant has been seen I do not think that the mistake should occur again, as there are sufficient distinguishing characters to separate them. Even out of flower they are distinct, as references to the pictures will show.

Codonopsis clematidea is a much taller plant with many branching stems upwards to about two feet in height with leaves about an inch in length which are prominently veined beneath ; slightly greyish in colour and the whole plant forming a compact mass of growth. The other species, *C. ovata*, is a more graceful plant with many sterile branches, and only reaching about a foot or less in height, with long flowering stems carried well above the foliage, and it does not make the same compact mass of growth as its ally. The leaves, while covered with hairs, have a bluish-green look instead of greyish.

It is in the flowers that the greatest difference lies ; in *C. clematidea* the corolla is widely bell-shaped, about an inch in length and with the tips slightly reflexing at the edges, pale lavender blue in colour with a large purplish blotch inside the flower at the base. The calyx is large, about half the length of the corolla and when the flower is past it reflexes right back. It is a native of the Punjab, Kashmir and through to Turkestan.

In *C. ovata*, the corolla is open bell-shaped, without the tips reflexing, also the calyx lobes are less than a fourth the length of the corolla ; these lobes have ciliate margins and do not reflex right back. The colour of the flowers is more of a blue than lavender blue ; it is also marked inside at the base. *C. ovata* is a native of Kashmir.

Both plants are attractive and while *C. clematidea* probably produces a greater number of flowers to a plant, I prefer *C. ovata*, as it has less smell and is a more graceful plant.

D. WILKIE

GENTIANA KURROO

FOR SOME reason *Gentiana kurroo*, at least the true plant, is seen very much less now than it was prior to the last war. I remember in the early thirties visiting gardens and nurseries in the South and seeing quite a lot of it. Unfortunately, there has always existed a lot of confusion as to what is true *G. kurroo* and there are two or three species that are grown in error.

There must be something attractive in the name that make so many people choose it for their plants. Perhaps it may be because for a long time it was the only species of this habit that was being sent into this country. Continental gardens were no better. When I was pre-

paring the book "Gentians" I was growing gentian seed from all over the world and while many packets of seed were named *G. kurroo*, I am safe in saying that none were true except those received from India, its native home.

Most of the species received as *G. kurroo* belonged to the same Section of the genus, usually *G. dahurica*, but *G. cruciata* and *G. macrophylla* were good seconds. *Gentiana dahurica* is quite distinct in being a cluster-head and the other two species, apart from having flowers in clusters, have leafy stems quite different from our plant.

Gentiana kurroo is one of the species which comprises the Aptera Section of the genus and, although they all look similar with their strap-shaped leaves and habit of growth, *G. kurroo* is always distinct, even as a young plant without flowers. A look at the photograph will settle a few doubts (see Fig. 3).

The foliage, which measures about four inches in length, is almost flat on the ground ; it is hard in texture and has a greyish tinge due to the covering of tiny spots. Blunt at the tips with the broadest part in the upper third and tapering from there to the base, generally the leaves are somewhat concave. The flowering stems are up to about six inches in length, but often more, with short narrow leaves of about an inch in pairs, similar in colour to the basal rosette. In most cases the flowering stems are solitary flowered, but occasionally a second flower is produced in axils of the topmost pair of leaves. In size and shape the flower is very distinct ; it measures about an inch and a half in length and nearly as much across the open flower, the corolla lobes are cut to the base and are ovate in outline and sharply pointed. The colour is a good blue with numerous green spots within the throat and whitish down into the corolla-tube. This spotting is variable ; and plants are sometimes of a paler blue.

It is a very attractive species and like all this Section withstands a great deal of drought, in fact prefers drier conditions than the other Sections of the genus. This is one of the reasons why this species is scarce ; the winter moisture rots the crown. A deep scree, and it requires a deep one owing to its long tap-root, with a sheet of glass over it during wet weather is what is needed. I have seen plants withstand considerable frosts without damage and I have no doubt that it must do so too in its native home in Kashmir.

In the past a plant has been offered in foreign lists as *G. kurroo brevidens*. This should be just *G. dahurica*, but a variety of species have been received under this name, including *G. dahurica*, *G. cruciata* and even a form of *G. septemfida*.

DAVID WILKIE

Royal Horticultural Society

JOINT ROCK GARDEN PLANT COMMITTEE

THE COMMITTEE met at the Scottish Rock Garden Club Show at North Berwick on 3rd September 1959, when the following awards were made :—

FIRST CLASS CERTIFICATE :

To *Cyclamen neapolitanum* as a flowering plant for the alpine house and rock garden. Exhibited by Miss N. Bowe, Rose Cottage, Dirleton, and Mrs. L. C. Boyd-Harvey, Boonslie, Dirleton.

AWARD OF MERIT :

To *Sedum cauticola* as a flowering plant for the rock garden and alpine house. Exhibited by the Hon. Miriam Pease, Mrs. M. S. Hinton, and Mrs. L. C. Boyd-Harvey.

To *Colchicum byzantinum* as a flowering plant for the rock garden. Exhibited by the Regius Keeper, Royal Botanic Garden, Edinburgh.

To *Gentiana* "Coronation" as a flowering plant for the rock garden. Exhibited by Major and Mrs. Knox Finlay, Keillour Castle, Methven.

CERTIFICATE OF PRELIMINARY COMMENDATION :

Eo Tanacetum densum ssp. *amani* (P.D.16368). Exhibited by Dr, H. Tod, Carnethy, Seafield, and by Miss N. Bowe, Rose Cottage. Dirleton.

To *Chrysanthemum haradjanii* (P.D.16366). Exhibited by Dr. Henry Tod.

To *Erigeron aureus* "montana" (subject to verification of name). Exhibited by Messrs. Jack Drake, Inshriach.

CULTURAL COMMENDATION :

To Mrs. L. C. Boyd-Harvey, Boonslie, Dirleton, for fine plants of *Cyclamen neapolitanum album* and *Mertensia maritima.*

To Miss D. C. Pape, Grindon Corner, Berwick-on-Tweed, for a fine plant of *Omphalodes luciliae.*

To Messrs. Jack Drake, Aviemore, for a fine plant of *Celmisia argentea.*

To Major and Mrs. Knox Finlay, for a fine plant of *Gentiana* "Devonhall."

Show Report

NORTH BERWICK

THE AUTUMN SHOW of the Club was held in the Sun Parlour at North Berwick on 3rd September 1959, and as usual the weather was of the best.

For some time before the Show the Committee were extremely worried, as most gardens were simply dried up, and while the glorious summer was appreciated by everyone it certainly did not help the exhibitor. During the summer certain districts had an occasional shower, but not East Lothian. The weather just continued to be sunny, hot and dry.

In spite of such a season there were many fine plants exhibited in all Sections and the Show Committee take this opportunity of thanking all those members who brought their plants in, some from quite a distance, to make the Show a success.

With this Show at North Berwick being held so late in the season, it has become an important meeting of the Club, as a great many plants are staged here that would never be exhibited otherwise. While the number of entries does credit to the small band of enthusiasts, it must be stressed that more exhibitors are required if the present standard of the Show is to be maintained. There is room for every member who has even one plant to show and there is always the possibility that it will be a prize winner. Who hasn't thought to themselves at a show—if only I had entered my plant of So-and-So I would have gained first prize ? And how often this would have been true, more often than most people think ! May I appeal to all members, whether in the district or not, to enter in some Class or other : you will enjoy your day at North Berwick, enjoy the Show, and meet many enthusiastic members.

The Trade stands were up to their usual standard and Gold Medals were awarded to the Edrom Nurseries and Messrs. Ponton of Kirknewton. A very interesting collection of Sempervivums was staged by the Regius Keeper, Royal Botanic Garden, Edinburgh. It attracted a great deal of attention.

The Forrest Medal was awarded to Mrs. Boyd-Harvey for a lovely pan of *Cyclamen neapolitanum album.* This plant figured again in the Class for 3 pans together with *Sedum cauticola* and *Tunica* "Rosette" and won for Mrs. Boyd-Harvey the East Lothian Trophy. In Class 16 The Peel Trophy was awarded to Major and Mrs. G. Knox Finlay for Gentians. They staged *Gg. veitchorum,* x "Devonhall," and x "Coronation," this last being a lovely new hybrid.

Miniature gardens have become part and parcel of our Shows and North Berwick have always several entries for these Classes : The Logan Home Trophy for the best entry was awarded to Mr. and Mrs. R. Baillie.

For the best plant in Section II, the Silver Cup and the Bronze Medal for the highest aggregate of points in the same Section were awarded to Mr. and Mrs. Burrows.

An unusual and rare plant from New Zealand, *Raoulia eximia*, one of the 'Vegetable Sheep,' exhibited by Mr. Esslemont, was awarded a Certificate of Merit.

Throughout the Show there were many fine examples of good cultivation and among the outstanding ones were plants of *Veronica bombycina* in the Silver Grey Class, and an ideal plant this is for this Class. The Class for a 'cushion' of Saxifraga, which was put in partly as an experiment, brought in many perfect examples. In the Native of Scotland Class, the lovely *Mertensia maritima* again won the day. Patagonian plants were prominent in the Rare Plant Class, one a *Naussavia*, and the other an *Azorella*. I am always puzzled and disappointed that the Autumn Foliage Class does not bring more entries, as there are so many subjects, apart from *Shortia* and *Berberis*, which show autumnal tints, and of course the plant does not need to be in flower.

Among the cushion plants, *Androsace imbricata* usually takes the lead ; another fine plant was *Gypsophila aretioides*, a species not grown as much as it used to be. In the Astilbe Class, the dainty *Astilbe simplicifolia* with its racemes of white flowers and autumn-tinted foliage is always an attractive subject. Another disappointing Class is Campanulaceae. One feels that this genus should be well represented, because there are bound to be many species and hybrids which, though perhaps not at their peak of bloom, should still be in bloom and worth staging. Caryophyllaceae is a very wide group, but mostly Spring and Summer flowering, so one does not expect much in September. The Class for Compositae always brings something interesting ; first of all there was *Helichrysum frigidum*, a tiny grey-leaved dwarf, followed by *Helichrysum coralloides* from New Zealand, and finally one from Patagonia—*Perezia pilifera*.

If we did not have a Show in September we would never see those wonderful plants of *Cyclamen neapolitanum album* in bloom, nor for that matter would we see the fine specimens of Calluna and Gentiana. The plants shown were *Gentiana veitchiorum*, x 'Devonhall,' x 'Glendevon,' x 'Inverleith,' x 'Coronation,' 'Drake's Form' and x 'Kingfisher.' This past season has been a difficult one for Gentians and it was pleasing to see *Gentiana sino-ornata*, which appears to suffer more from drought than the others, in good form.

In the Class for Geraniaceae and Oxalidaceae the pretty *Oxalis laciniata* gained a first prize. Among the Sedums, *S. primuloides* and *S. hidakana* were good and the Sempervivums were as usual of a very high standard.

The Coniferae Classes did not appear to have as many entries as last year ; this is surprising, as these plants lift reasonably well and by September have made their growth for the season.

Book Review

" DWARF BULBS FOR THE ROCK GARDEN," by E. B. Anderson. Pp. 120, with 24 colour illustrations. Nelson. 18/-.

Before describing the bulbs, the author devotes the first 26 pages of this book of 120 pages to dealing with Cultivation, Planting, Bulbs in Pots and Frames, Propagation, and Pests and Diseases, all of which Mr. Anderson writes about in a lucid and highly informative manner, combining the essential facts with many anecdotes of personal experience.

It is always difficult to restrict oneself to the topic described by the title when writing on any subject, particularly a horticultural one, but Mr. Anderson has been successful in describing comprehensively all the bulbs, corms and tubers, which are under a foot high when flowering and which are definitely hardy in most parts of Britain.

Nevertheless, some plants are included which few of us think of as bulbs, corms or tubers, although indubitably some of them do come under these headings. Incarvilleas, Roscoeas and Trilliums are included, along with such plants as *Ranunculus amplexicaulis* and *R. calandrinioides*, *Sanguinaria canadensis* and *Oxalis laciniata*, of which the latter pair at any rate certainly do not come within the scope of the title. With regard to hardiness, the author is strict in his requirements, but he does admit such species as *Anomatheca cruenta*, *Weldonia candida* and the *Calochorti*, while excluding many South African genera like *Ixia*, *Babiana*, *Tritonia* and *Moraea*. However, as can be seen, any criticisms of the book in these two aspects are not very serious ones and the only noticeable omission, apart from an odd species here and there, is that of the wonderful North American tuberous rooted Delphiniums, like *D. glareosum*.

Mr. Anderson includes many very rare species in his selection and his mention of plants such as *Chamaescilla corymbosa*, *Syringodea* sp., and *Eranthis pinnatifida* set the plantsman's heart beating just a little faster. Several sections of this most excellent volume are deserving of special mention. The parts dealing with the Brodiaeas and Irises, particularly the list of *Iris persica* varieties, are very comprehensive and useful, and the page on *Cyclamen libanoticum* is exceedingly interesting, as also is the chapter entitled " The Cliff "—a most original method of cultivation.

There are a few unimportant typographical errors in the spelling of plant names, like ' *Cyclamen libanaticum* ' and ' *Galanthus cosyrensis* ' and a certain inconsistency in the spelling of the name of that most notable of all corydalis : ' *C. cashemireana*,' ' *C. cashmireana* ' and ' *C. cashmeriana* ' all occur on successive occasions—third time lucky ?

The four colour plates, illustrating twenty-four species, are on the whole of a very high standard. Most of them give a very true representation of the colour and, in particular, the photographs of *Colchicum agrippinum* and *Crocus nudiflorus*, as well as almost the whole of Plate 2, illustrating Cyclamen and Erythroniums, are really exquisite portraits. The three fritillaries on Plate 3 are not quite so vivid, especially *Fritillaria tubiformis moggridgei*, which is inclined to be rather vague and muddy.

By far the most interesting feature of this concise yet very readable book—and one which greatly increases its value to the specialist—is the constant reference in the text to monographs and more detailed articles in specialist publications, dealing with a particular genus. These invaluable references point out many sources of information, about which the majority of readers would never have known, but even without this annotated bibliography, " Dwarf Bulbs for the Rock Garden " collects in the restricted space between its two covers a most amazing amount of information. It can be said without reservation that, at its comparatively reasonable price, this book is indispensable to every member of the S.R.G.C.

J. ARCHIBALD

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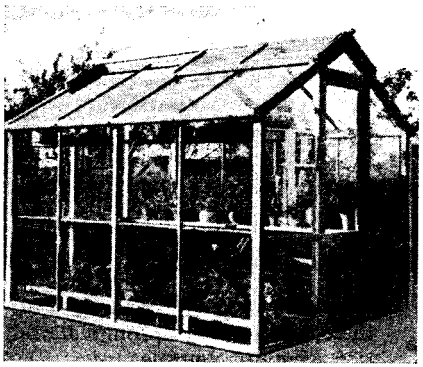

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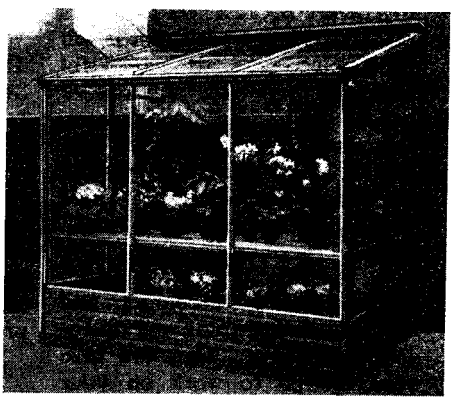

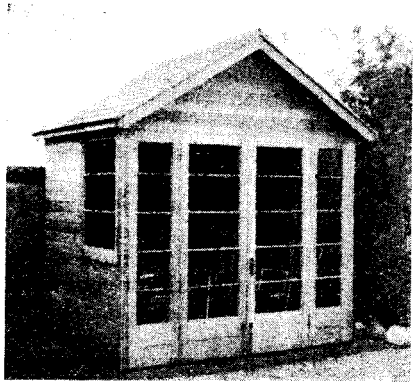

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