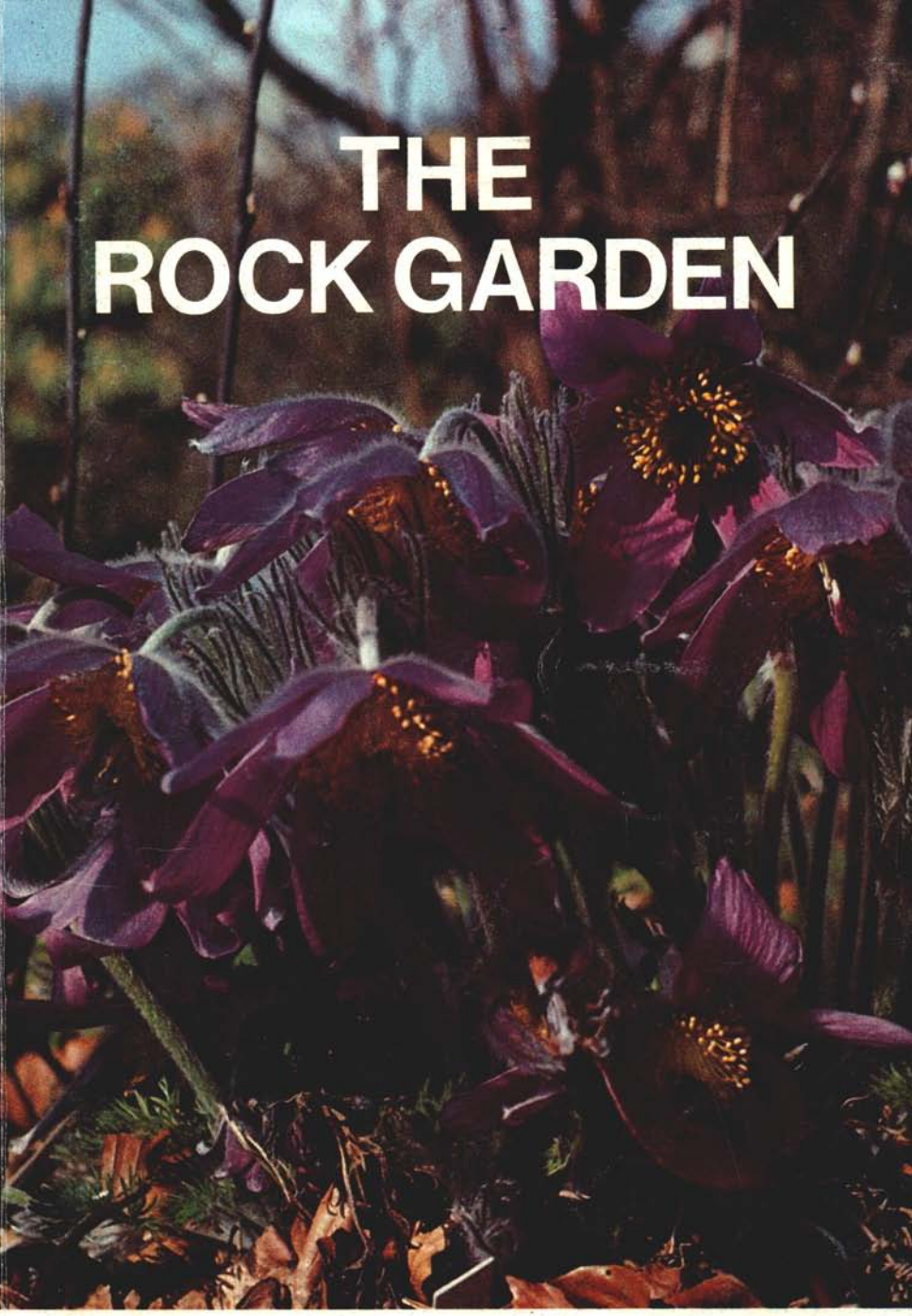
THE ROCK GARDEN



THE JOURNAL OF THE SCOTTISH ROCK GARDEN CLUB

Volume XIX Part 1 Number 74

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The Rock Garden

THE JOURNAL OF THE SCOTTISH ROCK GARDEN CLUB

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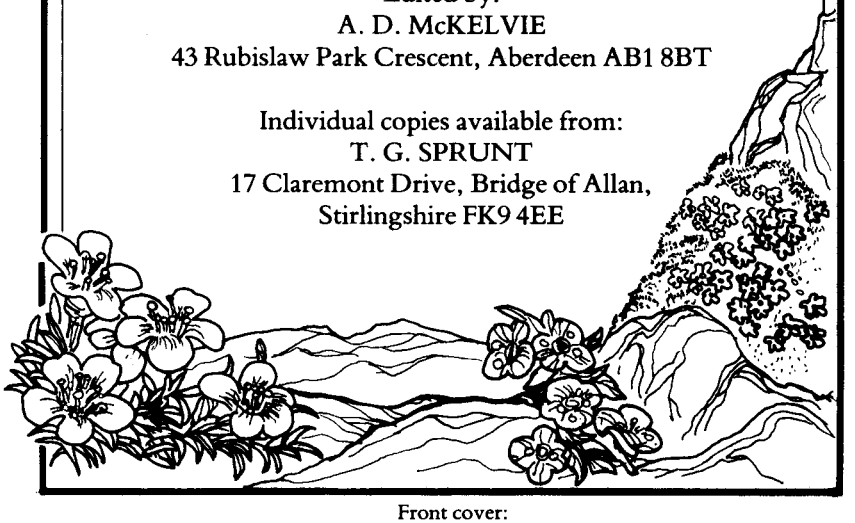

Front cover:
Pulsatilla halleri slavica in full flower in April

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Editorial

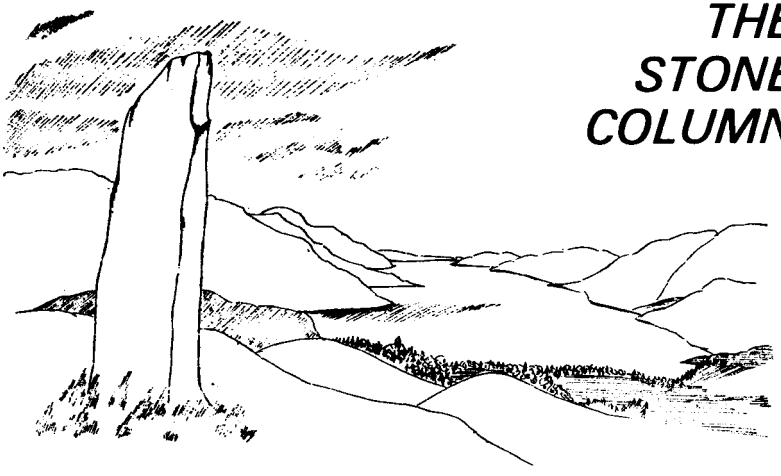
ONE senses in the Club a dichotomy between those, perhaps but not necessarily, older members who garden according to the precepts of crocks, bone meal and summer shading and those, perhaps younger, members who dispense with crocks, despise bone meal and aim for maximum light intensity at all times. Who is right?

In spite of the tremendous advances in horticultural science particularly in knowledge of seeds and germination, pesticides, plant breeding and environmental physiology, the successful growers have always been those with a feel for plants or 'green fingers' as we call it. The eminent rock gardeners who raised the art of growing cushion plants to a peak undreamt of pre-war or showed that Pleiones prospered in a moist sphagnum-surrounded atmosphere relied on a feel for things rather than scientific textbooks. And yet in the light of modern knowledge one has to suppose that much of their success was in spite of, rather than because of, what they did. The logical extension of that argument is to suppose that for these successful growers it would not really matter what they did; the plants would still prosper.

What are we lesser mortals to do? We probably can't get away with some of the things done by the experts. I would suggest we try to learn as much as possible by visiting Shows and talking to the owners of the immaculate plants displayed, by visiting the gardens of the great and by reading as many modern monographs as possible. As is pointed out in The Stone Column in this issue a lot of the currently produced gardening books perpetuate the deplorable old myths of gardening. We should try to lay our hands on as many books as we can written by people we know have some claim to be experts. The books produced by the Alpine Garden Society are amongst the best and are good value for the price. Unfortunately television and radio programmes often fail to deal with gardening at a high enough level.

Finally, I would suggest that almost the best way to improve our expertise is to exhibit at Shows. Although our Shows are not cut-throat competitions the mere fact of seeing plants grown better by someone else and of being able to discuss techniques with growers on the spot instils a resolve to do better next year.

ALASTAIR McKELVIE

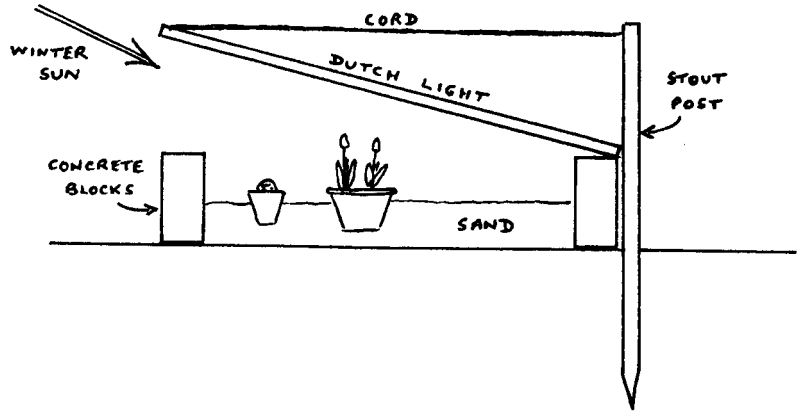


THE STONE COLUMN

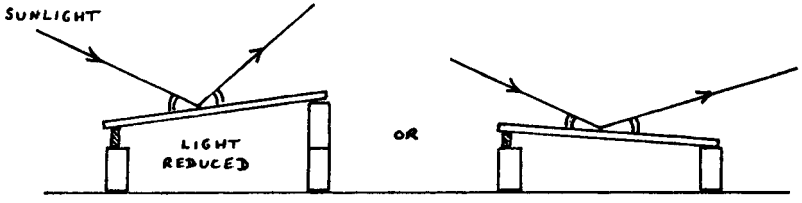
More on frames

We have tried to make it clear right from the start that we can only write from our own experience, and about our own garden conditions. The British Isles may not be very extensive geographically speaking, but they do embrace quite a range of local garden climates. This was brought home emphatically to us during a visit to the RHS gardens at Wisley. Here we were shown the frame-yard and alpine house by John Warwick. In addition to his experience in charge of the Wisley frames, John is no stranger to Scottish growing conditions, having worked for Jack Drake at Inshriach, one of the coldest parts of the Highlands. He told us that the primary consideration in the design of alpine frames for the south should be winter light-level, rather than ventilation. Down in the south, the dormancy of alpine plants in the winter tends to be shorter in duration and also less profound. Many plants tend to keep growing during the winter and can become drawn or out of character if the light level is inadequate. Up here, most of our plants 'shut down' for the winter, and if they aren't growing they cannot become drawn. John mentioned grass as an analogy. They may still be cutting lawns in December, we give our grass its last mow in early September and don't start again until late April. Even our fields are far less green in winter. Another example of the same effect appeared on a radio 'Nature' programme from the Kirkstone Pass in the English Lake District. They were discussing the alpine ladies' mantle, *Alchemilla alpina,* which there is confined to rocky areas. Although there is grazing pressure, this is not the whole reason; in Scotland, *Alchemilla alpina* grows in open grassy slopes which are also grazed by sheep. The answer is that in the more severe Scottish climate the grass is shorter, and the *Alchemilla* can compete successfully.

John has aligned his frames to run east to west and supports his lights from behind, so there are no obstructions to the south:



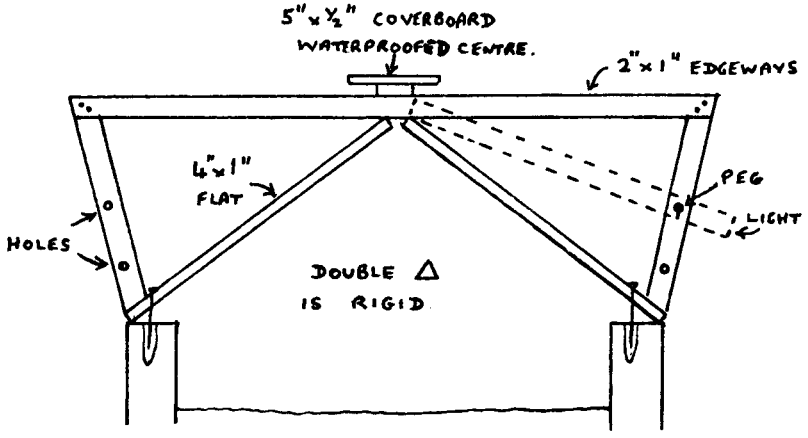
By angling the lights upwards as shown, the reflection of light from the upper surface is avoided:



The heavy glass Dutch lights hang in position, held by their own weight. We feel this would be unsafe with plastic, the open end could be flicked right over by the wind; a cord down the front would be advised.

During our recent travels, we have seen many materials used for frame lights. A favourite seems to be corrugated vinyl plastic sheeting such as ICI's Novolux, either on its own or fastened to light wooden frameworks. One correspondent mentions successful use of 3mm

acrylic sheeting, stating that he experiences less heating under it on warm days than under glass. A drawback is its expense. He also asked how we hold up the middle of our seed-frame if it has no solid centre. In Fig 55 of the June 1983 *Journal*, we omitted the details of the superstructure in the interests of simplicity. The dotted lines are in fact the outline of a bridge across the frame:



Aciphyllas again

Astute readers will have noticed that in the paragraph on *Aciphylla hookeri* (June 1983, No 72), there was no description of the actual contrast between the juvenile and adult foliage types. This was because a drawing had been supplied to accompany this item but unfortunately was mis-laid during the editorial change-over last year. We must apologise to readers for this omission, and include over the page a replacement which we hope makes clear the striking dimorphism of this species:

Above – Juvenile foliage
Below – Adult foliage

Winter of storms

We commenced our very first Stone Column with a piece on the severe winter of 1981/2, with its record low temperatures. We make no apology for returning to this theme; after all, the Column is at least partly a diary. Here in Fort Augustus, the past winter 1983/4 was just as cold as 81/2, reaching −15°C but, unlike the former occasion, there was a good snow cover for most of January, unusual in our fickle climate. Thus there was rather less damage to plants from the cold than during that previous winter. A few evergreens such as *Osmanthus delavayi* lost branches from the weight of snow. However, it is not for the cold or the snow that we will long remember the early months of 1984, but for the many fierce storms which occurred during this time.

Early in January, over 100 trees were blown down at the National Trust's garden at Inverewe, out on the west coast. Being farther inland, and more sheltered, we escaped damage during this blizzard, although the garden was littered with twigs and branches. We were lucky again when a second blizzard struck later in the month. Friends, whose house is higher up overlooking Fort Augustus, were less fortunate. A group of

tall spruce trees, growing close together, blew over as one, their combined rootball, well over 5m across, hoisting the garden fence high into the air. During the night 300 of their own sheep wandered into the garden, through the space under the elevated fence. The deep snow cover protected many of the plants, but 1,200 hooves can do a lot of trampling, and many Rhododendrons were nibbled. Anne Chambers has just drawn attention to the poisonous nature of Rhododendrons (No 73, page 380); four of the sheep subsequently died, and several more were ill. Rhododendron shoots are liberally supplied with lateral buds and the bushes should soon repair the damage.

Back in our own garden, these January blizzards were simply curtain-raisers to the main event, which occurred on the night of 20 February. A very deep depression was centred over south-west Ireland, and an occluded front moved north into southern Scotland. The wind rose steadily during the day from the south-east, reaching storm force by 9pm. I ventured outside to check on the frame and trough lights. The surrounding trees were lashing backwards and forwards and the air was full of flying twigs and branches, travelling horizontally. There was no precipitation, rain or snow. The Met Office in Edinburgh tell us that the unusual feature of this wind was the very high gust to mean speed ratio, registered by their local instruments. The wind was accelerating to over three times its average speed during the gusts, applying a periodic force to trees and rocking them. Perhaps the gusting was caused by turbulence as the wind blew across the line of the Great Glen. I visited the trough area, finding all secure, and moved round the house to the frames. One light was missing; the pegs had rattled out. No sign of it in the garden but I found it lying undamaged in the road over our 6ft front wall. I was just struggling back through the gate with it, when there was an almighty crash from the lower garden. A 23m larch tree had fallen right across the trough area where I had been a few minutes earlier.

Next morning was calm with our large patches of *Crocus chrysanthus* opening their flowers in the sun. It was half-term and we were up early to survey the damage. It was not nearly as bad as we had feared overnight. Most of the branches had missed the troughs and were holding the trunk about 2m off the ground. Incredibly only one trough was damaged; a large branch impaled it, like Dracula's coffin, knocking a square foot out of the bottom. However, there had been a second fall; the top 9m or so had snapped clean out of a larch on the other side of the garden. The broken butt landed on a path, with the tip wedged high in a beech tree. Branches of both littered the bed underneath. We decided the troughs had priority. Three of the five trough covers were wrecked,

but we left them in place during clearing to protect the plants underneath from sawdust. When the sheep had invaded their garden, we were only able to commiserate with our friends; now the boot was on the other foot and Ian could be of much more practical help. Quietly efficient, his presence gave much needed moral support. Using his small power saw, we were able to remove the part of the larch actually over the troughs without causing any further damage.

Later in the afternoon, after a succession of curious locals, two professionals arrived with larger chain-saws to cut up the thicker part of this larch, and to fell the decapitated one. This they dropped into the new part of the garden which is still simply a field. Cutting chunks from its lower end, they shortened the leaning piece until, using a rope, it was neatly dropped onto the path beside the beech tree. It didn't occur to us until afterwards, but at this time we had in the garden helping us a local land owner and two other gentlemen whose nocturnal activities on the hills might perhaps clash with the former's interests. It could only happen in the Highlands.

There remained the question of what to do about the four remaining tall larches. With one gone from each end, the others must surely follow one day. Better have it over and done with we thought. The next Saturday morning was traumatic, especially for Poll. I was at School and missed the actual felling. She need not have worried; an experienced forester used wedges to tip all four backwards, one on top of the other, into an unplanted space. During that afternoon they snedded, sliced up the trunks, and loaded them into a dump-truck through a gap cut in the side fence. We were now faced with the enormous task of cleaning up, relieved by the thought that the garden was ours again, free of the danger of other people's trampling feet. A bonfire, fuelled by the brash, burnt for a week, day and night. Poll swept up four heaped barrow-loads of sawdust from one bed alone, using a dustpan and brush. Fresh sawdust should not be left to rot on the ground as it demands nitrogen as it rots.

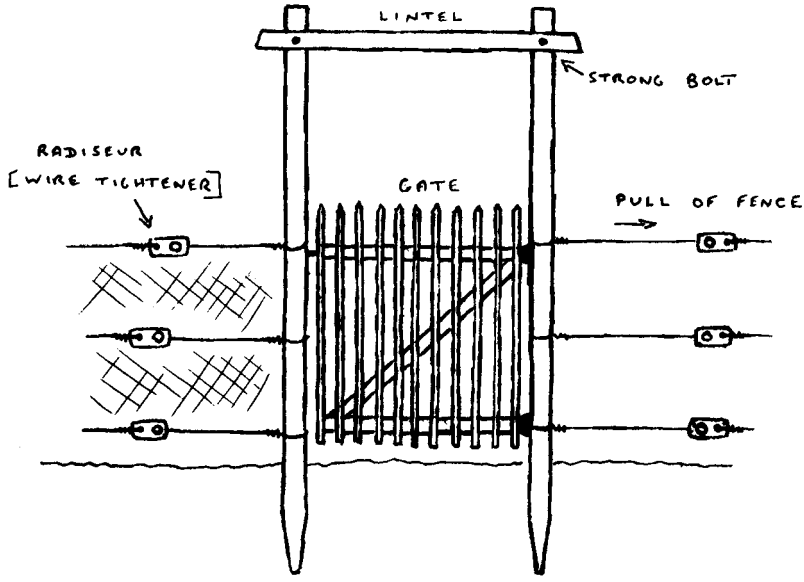
After the storm

Now that it's all over how does the balance lie? The main loss has been time. The weeks spent clearing should have been used for constructing new beds. One's always a little sad to see mature trees go. There are many more around the outside of the garden, and as our Group Convener, Jim Sutherland, said recently, "Who wants a muckle great forest tree in an alpine garden anyway?" He's right, they obscure the light and rob the soil. When we counted the rings of the stumps, we noticed the last few were much broader than the previous 20 years thanks to our feeding and watering the garden. Now that we have got

used to it we like the garden better without them. They formed a sort of visual barrier diagonally across the centre of the garden. There remains the damaged trough to empty and repair and we will have to remake the three trough covers before next autumn.

We even turned the gap cut in the side fence to advantage, adding a gateway here to give access to the wood outside. A tip worth passing on when inserting gates into wire fences is to use tall posts and join them with a lintel across the top to take the pull of the fence (see Fig). If this is not done then the gateposts must be strainers, set solidly over one metre into the ground, so that they do not move apart at the top as the fence is retightened.

Finally, what of the damage to plants? A few cushions on troughs were dented by branches; they may recover. Some Rhododendrons lost pieces here and there but, as mentioned above, will regrow from lateral buds. Some plants were amazingly resilient; a young shrub of x *Gaulnettya wisleyensis* was pushed bodily several inches into the ground by a trunk landing right on top of it. When the latter was rolled away, the Gaulnettya was quite unharmed. We simply top-dressed the depression until it was level; and called it deep planting. "Nil distruptum carborundum!"



Them funny stones

Before writing an item involving other people, we always seek their permission. However, in the following case, the unsuspecting couple concerned are not members of either the AGS or the SRGC and did not know us.

During August 1983 we spent a few days to the west of London, visiting friends and gardens. Such trips are always instructive; one sees a different range of plants. What will 'do its thing' for one person, won't necessarily for another in a different part of the country. We will long remember a plant of *Campsis* 'Madame Galen', covering the front of a large house with its magnificent trumpets. Friends in east Scotland tell us they once had two flowers on theirs after many years and then gave it up in disgust. The southern rock gardens contain a good measure of what we call MRW's (Mediterranean roadside weeds). This is not a pejorative term; many of them, like the pink or blue trailing *Convolvulus* species, are very beautiful. We console ourselves with the thought that arctic alpines will sometimes grow for us.

Our intinerary was quite complex. One always tries to fit in too much and we had to arrive at one garden on the Sunday when it was open to the local Woking Group of the AGS. We were instructed to circulate as visiting 'Scottish Rock'. After an hour or so we escaped on our own to have a look in the alpine house. We were bending down, looking at some ferns grown in pans under the bench, when we heard a female voice from the doorway: "Oh, it's them stones, them funny stones". We looked at each other, scarcely believing what we had heard then glanced towards the door. A middle-aged couple stood in the doorway gazing over our heads, she in her best blue crimplene and white gloves, he with tiny trimmed moustache, sun-hat and checked trousers. "Oh yes," he replied, "it's them fungi"; and they moved off around the outside of the house to inspect, through the glass, a tray of *Lithops* on a shelf at the other end. Suppressing our giggles, we fled indoors, collapsed into hysterical laughter; and then had to explain our unusual behaviour to our hostess.

Random thoughts on reading old Journals

The *SRGC Journal* is the nearest we have to a history of the Club. It puts us in touch with previous generations of growers. One would imagine that the recent celebration of the Club's Golden Jubilee would have been an excellent excuse for a certain amount of nostalgia amongst the members. In fact, there have been comparatively few outbreaks, only two short articles in the January '83 *Journal*. Perhaps it is because, as gardeners, we are always looking forward to the next spring, the next

flowering, the next show . . . Of course, there are those long-serving members of our Club who delight in telling youngsters like ourselves, "But you should have seen so-and-so's plant; it was X inches across and had Y flowers." It is always a cause of great regret to us that many of these most skilled cultivators of the past wrote so little. W. C. Buchanan and R. B. Cooke spring immediately to mind. Looking through our back numbers of the *SRGC Journal* we can only find the former's 'Some Favourites' in Nos 14 and 15, an interesting connoisseur's selection, some of which are sadly no longer with us. R. B. Cooke has only three entries in the new index, including an authoritative, but brief, survey of the genus *Cassiope* in No 22. Especially sad, now that so many gardening books are written by journalists, whose experience is acquired second hand; but of this more later.

One author whose articles we return to regularly is the late Christina Boyd-Harvey. From her writings, she sounds the sort of common-sense gardener we would like to have met. In 'Too Much Drainage' (No 22, page 75), she makes out a very strong case against the method of rock garden construction which begins, "Excavate a hole three feet deep and fill it in with drainage material." We had thought these sumps long discredited (Duncan Lowe, No 72, page 253); but one reappeared on the BBC's 'Gardener's World', some months ago. She mentions the importance of capillary contact between a made-up alpine bed and the subsoil beneath, a subject dear to our hearts as readers will know. Also close to our experience is her vision of the future, concluding, '20th Century Trends" (No 44, page 190), wherein a couple retire to the Highlands, take in more and more land until they are unable to cope and retreat to a pavement "tending the plants in their waist-high walls." Substitute 'troughs' for walls and this could be a warning to us. Especially apt as we have recently added an extra half acre to our garden. With available ground, only used as sheep-walk, on two sides of our garden, it was very tempting to take on too much and end up with a mill-stone around our necks. An alpine garden requires far more time-consuming maintenance than an equivalent area of 'woodland with Rhododendrons'. We would dispute Mrs Boyd-Harvey's statement that "Even the weeds are interesting and beautiful in the Highlands". Our pearlworts and poppers are the same as anywhere else! Obviously her imaginary couple of the future have solved the problem of the midges out on their sheltered paving. Gardening is quite impossible here on windless days in summer.

Equally thought-provoking is Mrs Boyd-Harvey's final article, 'Making Things Easy' (No 54, page 27), written shortly before her death in 1974. In it she pokes gentle fun at those growers who discard

beautiful, but easy, plants in favour of recalcitrant plants which want to die and thereby become famous. Here at Askival, all plants must justify their space with a return in beauty or style. We have no room for any, no matter how rare or difficult, that are BIO (Botanical Interest Only, a phrase coined, we believe by the late General Murray-Lyon).

We have always believed in the old saying, "Spend time to save time," especially when applied to the design and layout of a garden. We have never gone in for 'lash-ups'. Build frames properly from the start for example and you save time in the long run. We followed Mrs Boyd-Harvey's advice (op cit, page 29) when making all parts of our garden accessible at arm's length. All beds can be weeded from a grass area, a gravel path, or a row of stepping-stones, without standing on the soil. A 5ft rake is used as a convenient measure when marking out new beds; no double-sided bed is made wider than this. Single-sided ones, say against a wall, are half this width. Stepping-stones, close together in rows, forming walk-ways, means that we can use a kneeling mat on one, keeping our feet on the one behind thus avoiding kicking the plants. A beautifully-built rock garden, which is too time-consuming to maintain adequately, will soon degenerate into an eyesore. However, it's all too easy to go too far in the opposite direction and end up with a simply maintained, but boring, garden. There is considerable pressure in this direction nowadays, particularly from gardening journalists who write for the general public in newspapers etc. They, or their editors, seem to be obsessed with, to use Mrs Boyd-Harvey's phrase, "making things easy". Perhaps they are afraid that if hard work is advocated readers will be frightened away from gardening. They forget that gardening is, in itself, a recreation in the true sense of the word, an activity to be enjoyed for its own sake. It is not a question of getting the gardening chores over and done with, and then getting on with one's leisure, watching TV, reading the paper, or entertaining on the patio. Mrs Boyd-Harvey, with her tongue firmly in her cheek, concludes her articles with a vision of herself, decorously clad, pouring tea for her friends, "with smooth white hands", amid a trouble-free decorative garden. Graham Rose, the 'Sunday Times' gardening correspondent, could have had such social occasions in mind when he wrote his recent book, 'The Low Maintenance Garden'. In this he claims that, thanks to the wonders of modern technology, an exciting (sic) low maintenance garden can be created. For as little as £500 you, too, can convert even quite a large garden into something requiring less than one hour's work per week. Really! We wish we had known this before we started on our patch in 1972.

At one time gardens were created largely to impress others with the owner's status and maintained by hired labour. Something of this attitude has carried over into the modern idea that a garden is a possession, a sort of outdoor room furnished with plants. Thus cultivation is equated with wall-papering, a chore to be delegated, or at least minimised. We disagree entirely. With more and more leisure time, enforced or otherwise, we should be looking for ways of encouraging more people to spend longer times in their gardens. There is no doubt that alpine growing is one of the more time consuming forms of gardening, but the greater the effort, the greater the rewards. Nobody suggests that all golf courses should be simplified, so that everyone could go round in 36.

Two from New Zealand

We have said it before, and it's worth repeating, that alpine gardening encompasses a wider range of plants than any other branch of horticulture. There is always something new to try. Not just new varieties of, say, HT rose or cabbage, which are usually the genetic mixture as before restirred, but completely different species with their own particular beauty to offer. The following two examples are quite distinct from anything else we grow, and worth describing.

Forstera sedifolia

Forstera is a small genus of Southern Hemisphere herbs, belonging to the *Stylidiaceae*; a select family which also contains the rather better known genus of cushion plants the Phyllachnes. Three species, and one variety, are illustrated in our favourite book of 'New Zealand Alpines' by Mark and Adams. Thanks to the kindness of an Antipodean visitor to Alpines '81, a small piece of a *Forstera* came our way at Nottingham. We subsequently identified it as *Forstera sedifolia* (Fig 84), using the key in H. H. Allan's 'Flora of New Zealand'. Since its habit is to creep and root along the ground for a cm or so before turning upright, it was easy to divide into about half a dozen pieces for potting. With no previous experience as a guide, it's always a good idea to propagate a new plant so that it can be tried in various situations. As it turned out, this *Forstera* has proved most accommodating here. The following summer, 1982, three plants were put out into troughs; one in shade on the north side of the house, a second in part sun on the west side, and the third in the main trough area in full sun. All established and flowered the next summer, in spite of the high temperatures which killed several Himalayan Kabschia saxifrages, and set seed. As we write (March '84) this has not yet germinated.

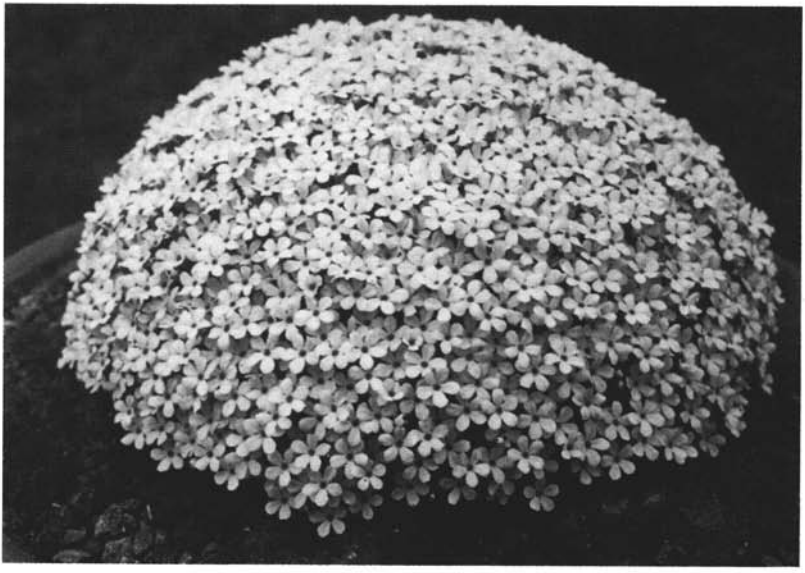


Fig 80 *Androsace vandellii* (see page 47) Photo: H. Esslemont

Fig 81 *Androsace cylindrica* (see page 41) Photo: A. Stevens

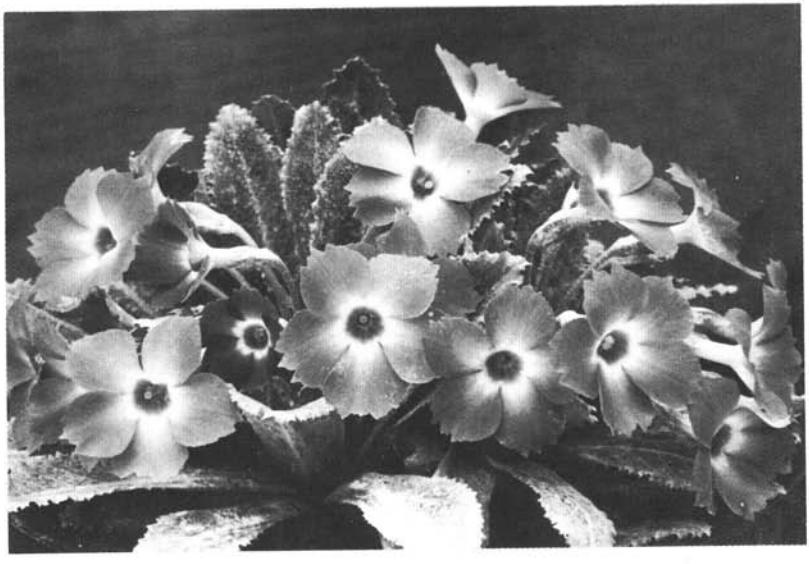


Fig 82 *Primula* 'Tantallon' (see page 45) Photo: H. Taylor

Fig 83 *Primula whitei* (see page 40) Photo: A. Stevens

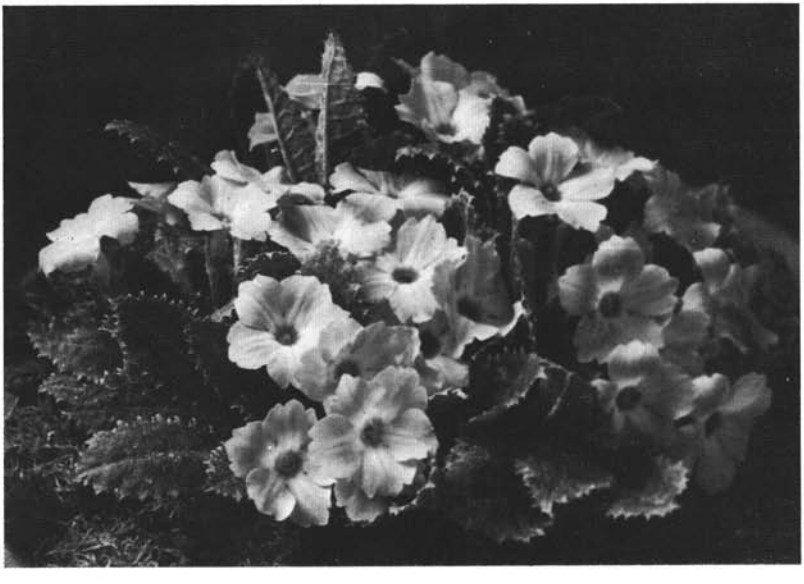
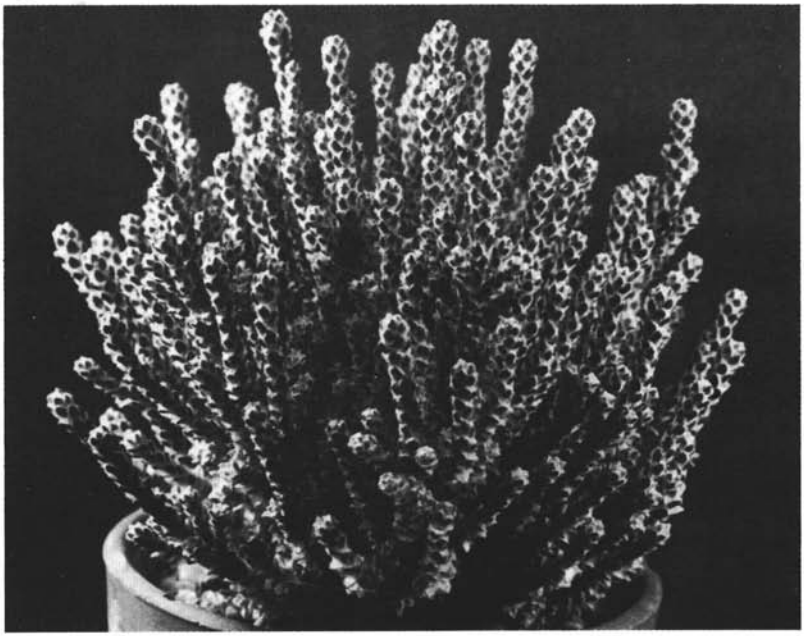


Fig 84 *Forstera sedifolia* (see page 14) Photo: M. Stone

Fig 85 *Lewisia brachycalyx* (see page 43) Photo: A. Stevens

Fig 86 *Helichrysum corralloides* (see page 89) Photo: A. Stevens



Our plants of *Forstera sedifolia* have formed small 'thickets' of sparsely branching upright stems about 5cm high. The leathery leaves are about 6mm long by 2mm wide; the bottom 2mm clasping the stem. They are arranged in closely set spirals around the stems. This is quite different from the leaf arrangement in some Hebes, such as *HH. epacridea* and *haastii,* which at first glance appear superficially similar. These Hebes carry their opposite leaves in 4 distinct rows along their stems.

From the axils of the upper leaves arise slender 5-6cm dark red flower stems, each carrying either one or two white flowers. These were most attractive with a ring of red spotting around the base of the six-petalled corollas. The flowers are large for the size of plant, being about 2.5cm across, and the broad petals give a solid feel rather than the starry look of many comparable alpines. One visitor, looking just at these flowers, thought it to be a superior saxifrage which gives an idea of how it appeared.

Myosotis uniflora

Sometimes one comes across a plant and then actively seeks it; on other occasions unsolicited plants just arrive. So it was with *Myosotis uniflora.* This cushion plant was unknown to us when seed arrived from Ethel Doyle in June 1982. Only one germinated, in August 1982, but this grew rapidly and had formed a little mat 3cm across before the onset of winter. Potted on from its seed-pot the following spring, a few flowers were produced before it was one year old. Subsequent growth was quite good, producing a flat cushion now 7.5cm in diameter. Since it grows from a central woody tap-root, propagation by division is clearly impossible. We are not very clever with cuttings and, as the plant is clearly going to flower again, we will hand pollinate and hope it's self-fertile.

Like most cushion plants the living leaves form rosettes on the ends of the shoots, the older ones persisting down the stems. The hairy leaves are much narrower than those of the well-known *Myosotis pulvinaris,* only 1mm wide by 5mm long, and are green on both surfaces, not grey as in the latter. However, the flowers are of similar form, with 5mm tubes and 5 rounded lobes about 2mm long, of a good texture. They open quite a good yellow, and fade to cream as the flower ages. *Myosotis pulvinaris* has, of course, white flowers, as do most New Zealand alpines.

Although *Myosotis uniflora* is not a high alpine, growing in river gravel at 600-1,060m, it proved hardy to −15°C last winter in an unplunged pot. If it can be propagated, it should prove a valuable addition to the ranks of damp tolerant cushion plants.

There little that's really new under the sun

Gardening is a very old pastime, having been practised for literally thousands of years. Thus, whenever one introduces a new method of cultivation into one's garden, the chances are that it is not really an innovation. Someone else has probably thought of it before. This was brought home to us during a lecture trip to Ireland in November 1983. Our aim in cultivation is always to establish a plant outside in the garden. In order to extend the range of plants grown in our troughs, we have fitted six of them with covers which remain in place from October to March. They have proved fairly successful, and we hope, one day, to extend the method to a larger scree bed. This is to accommodate such plants as *Helichrysum milfordiae* and *Androsace lanuginosa,* which won't survive our winter wet but grow too large for a trough. When in Ireland, we saw four examples of such scree beds. All were basically rectangular raised beds of various heights and sizes, over which transparent winter covers are suspended, always allowing for adequate ventilation through the sides. Judging by the size of a huge plant of *Erinacea pungens,* at least twenty years old, we would think the earliest bed was in David Shackleton's garden outside Dublin. He uses very large wooden frame-lights as covers, to which are nailed first wire netting, then a 'glazing' of polythene. The wire netting underneath relieves the polythene of the weight of snow and prevents it from bulging. This sagging occurs particularly when, as often happens here, it rains onto lying snow, greatly adding to the weight. The wire mesh is dry under the polythene, so there is no danger of zinc leaching. Zinc can be toxic to plants. There's an old wooden gate-post near Askival, upon which lichens only grow above the galvanised fencing wires wrapped around it. The bed itself is of concrete, and has a permanent framework of thin iron bars to support the lights.

By way of contrast was Harold McBride's covered bed in his Lisburn garden, only a foot or so high, as opposed to waist-height, quite narrow, and built of dry-stone walling. The cover is of corrugated rigid plastic, fastened to a wooden framework with legs. The whole thing stands over the bed like a long low table. A neat solution, but we were slightly surprised at the absence of any method of holding the structure down. Perhaps we are too sensitive about wind (but see 'Winter of storms').

We haven't really decided what method of covering to use on our intended bed. The criteria are that it must be wind-firm and completely removable for the summer. Whatever eventually is constructed, there is no doubt that: "it's all been done before".

Food from the alpine house

JAMES COBB

NO, I AM NOT suggesting you eat your *Lewisia rediviva,* even assuming you have the talent to keep large quantities of it alive! I realize also there is probably something in the small print of the Club Rules about sacriligious behaviour of this sort and I shall face expulsion long before I arrive at the ten-inch pan stage. I have recently added an alpine house to my motley collection of glass structures which range from sweetie jars to an up-market 16 × 10 aluminium house. All of these are intensively used; I have an abhorrence of waste and there is spare productive capacity in an alpine house. First the roof where a well-trained vine provides excellent shade at the right time of year. If your house runs east to west then train a vine parallel halfway up the north span of the house the entire length as a single cordon. In this way the south bench will still receive a full summer baking for your Rhinopetalum Frits and Oncocyclus Iris. You could of course train side branches down the south span and produce a shady jungle for the Pleiones. If you consult a modern garden book (anyone will do, they are all the same), they will recommend Black Hamburgh. This is an awful grape, difficult to grow and, especially in Scotland, difficult to ripen properly. Buy instead Muscat Noir Hatif de Marseilles – a marvellous small sweet black grape, or Royal Muscadine – a delightful small white grape. Both ripen well and early (six to eight weeks before some other varieties) without heat and do not need fussy thinning. They do not harbour diseases since they are easily scrubbed clean in winter, do not obscure light in winter and spring as single cordons and they need a minimum of shoot-pinching to keep them in bounds in summer. The only care needed is in autumn with falling leaves onto the pots below. If you don't like grapes you could always make wine and celebrate your latest Forrest Medal.

Relatively few of my alpines stay indoors during the summer anyway. Twice a year my family have a haunted look as the great day of the migration of the alpine pastures takes place when an unending stream of pots is dispatched to various frames, roofs and the chicken run. In autumn the migration is reversed and the only member of the family who is exempted is the dog and problems always occur since there now seem to be twice as many pots (I think this is called Parkinson's Law and has something to do with reproduction!).

Perhaps I should mention the chicken run in passing. This has two levels – the underground where they go when it is raining and has my shady plunge beds as a roof (the Pleiones love this and this is probably related to the Asiatic origins of the chicken); the other level is the compost heap where they spend the working day. I'm not sure the stuff they produce is good for Eritrichiums but you should see the Brassicae!

There is room on the alpine house shelves for a crop of peppers in pots (try Gipsy for a big early crop but not the best quality). Two points should be noticed about peppers, sow the seeds really early – a month before tomatoes – they are slow germinators and growers and watch for greenfly. Peppers are the ultimate test of your abilities in keeping greenfly at bay, if you keep these clean you are laughing with *Calceolaria darwinii*. Finally the ground underneath the shelves. Amstel forcing carrots will give you a marvellous crop in May from a February sowing and some August-sown Arctic King lettuce produce a crop in April. The lettuce won't heart up well in the shade but the leaves taste good and are no worse than the summer cut and come again lettuce like Salad Bowl. In summer you can dry your onions, shallots and garlic with the New World Frits and the Juno Iris. Don't, however, get carried away like my youngest daughter and sow mustard and cress in the plunging gravel. It grows a good crop but one really does have to draw the line somewhere and even the most egalitarian *Androsace* would object.

Dab Hand

For those rock gardeners with a large area to cover, Tavislodge Ltd of Middlefield Farm, Stapleford, Cambridge, have come up with a pre-primed sponge applicator for applying glyphosate (Tumbleweed). Glyphosate is a wonderful herbicide for many perennials but is toxic to quite a number of shrubs especially all kinds of roses. The Dab Hand (£12.95 by post) has a circular protective shield round the working parts and a sponge for dabbing the weeds. The sponge is good for 100,000 and the reservoir for 2,000 dabs.

NCCPG (Alpines)

ALFRED EVANS

I FEEL certain that everyone is familiar with the aims of the NCCPG. In an article "Heritage in Trust", published in the AGS Bulletin for September, 1982, Joy Hulme very clearly outlines the policies. You will know that the SRGC and others help towards achieving these aims and this is an appeal for your co-operation.

In the first instance it is proposed to establish a central record system of all alpine plants which are in danger of being lost to cultivation. This danger is very real and can be due to two factors. One may be that a wild-occurring plant is reluctant to become established in our gardens, the other that this state of affairs may be brought about by our own neglect of a cultivar which is no longer popular. We are all aware of how fashions affect gardeners and how some plants are greatly admired for a time and then, for no apparent reason, lose favour. Our flower shows demonstrate this regularly, for how often do we overhear remarks complaining of the loss of this or that form which was popular years ago? As examples of these we need only turn to pleiones, kabschia saxifragas and forms of *Primula allionii*. Think how valuable it would be if it were possible to trace the existence of a rare plant in a garden or nursery simply by making reference to a central record system. That is one of the aims, and many of the highly-prized cultivars of earlier times would have been well-worth this sort of effort even if the glowing reports we hear about them were only half-true. This then, in association with the NCCPG, is an attempt to preserve these fine plants by making growers aware of their presence in British gardens.

This is how YOU can help

Appraise the rock garden plants in your garden and decide upon those which you think are rare. The degree of rarity must be your own assessment. There is no real yardstick by which this can be measured but, obviously, it would be pointless in an exercise of this sort to note plants which are encountered in many gardens or are offered in nurserymen's catalogues. Next make a list of these plants, in alphabetical order please, and send it to NCCPG (Alpines), Royal Botanic Garden, Edinburgh EH3 5LR. Don't worry because you think a plant may be grown more widely in another part of the country or are uncertain of

the correct spelling. The lists will be vetted. Just make sure that the information you give is correct. At this stage, if you are in doubt about a plant's true identity, leave it out and try to have it checked by an authority.

Eventually it should be possible to provide a complete list of the plants recorded but there would be no indication on this list where a rare plant was growing. This information will be treated as confidential, and details will only be disclosed to an enquirer if the grower agrees. The fact that these plant lists are made public, however, should help stimulate an interest in those species and cultivars which are rare and, hopefully, this will encourage others to cultivate them.

It is likely in the foreseeable future that the records will be held on a computer and this should make access to the files easier. It would be simple to devise a complicated record system giving an infinite amount of information but this would involve the recorder in a great deal of extra work. Let us keep this one within limits, at least for the present.

However, records are only as good as the information they contain. It is essential therefore that they are maintained accurately. So, if you obtain a rare species or cultivar, please let the recorder know once the plant is established in your care. Conversely, it is just as important to let him know if one of your rare plants dies. If, after some time, you are uncertain of how much information you gave, it should be possible to get back for checking an up-to-date list of the plants which you had notified as being in your garden. I now await your response.

Group Conveners

In the 1984 Year Book there were two errors in the list of Group Conveners. The Dunbartonshire and Renfrewshire Groups were shown to be vacant whereas they are actually still in the care of their regular Conveners.

The Dunbartonshire Convener is still Mrs E. M. Bezzant, 24 North Grange Road, Bearsden, Glasgow EH14 3BA.

The Renfrewshire Convener is still Mr A. C. Small, 2 Kensington Drive, Giffnock, Renfrewshire.

Crocks and capillarity

HILARY HILL

TO CROCK or not to crock, that is the question.

As a rock gardener of barely four summers I was delighted that the first issue of *The Rock Garden* was primarily for beginners. I expected unequivocal guidance on really basic and fundamental aspects of rock gardening such as whether my pots should be crocked or not, but the answer seemed to depend on which expert I follow.

Mike and Polly Stone (p 217, Fig 56) are emphatic that no crocks should be used lest these interfere with capillary buffering.

Jack Drake, no less, lists as essential requirements for growing alpines from seed "crocks, small stones or coarse grit for drainage" (p 260), as does John Aitken (p 267).

Henry Tod, when growing bulbs from seed used no crocks, but crocked the seedlings (p 262).

All this in the first issue of *The Rock Garden*. Pity the Beginner! Which gardener should I follow, all so expert, so successful and so diverse? Can they all be right? They must be, and therefore there must be some other explanation for their success.

So what do the experts do with the pots when the seeds have been sown? The Stones screw them into sand thus enabling capillary contact to occur between compost in the pot and the sand in their propagating frame (Vol XVIII, No 71, p 190, Fig 43). By this technique moisture can flow by capillary attraction between pot contents and plunge and vice-versa. The problem is that Jack Drake, Henry Tod and John Aitken do not describe exactly what they do with their pots after seed-sowing. If the establishment of capillary permeability is what really matters then it is not the presence or absence of crocks that determines success, but the nature of and contact with the surface on which the pot subsequently rests that is important.

To support this theory I looked around my house, alpine house and garden during the summer heatwave of 1983. This is what I found:

1. In the house, plants stand in a gravel-filled tray, the gravel overlapping the base of the pots. I water the gravel, not the pots, and the water level is kept below the bottom of the pots. An *Echeveria* (in a pot crocked with fine granite chippings left over from road surfacing and swept up from lay-bys and edges

of a country road) has been on the tray for more than a year. The surface of the compost is damp. The only way that water can get into the pot is from damp gravel in the tray via fine granite chipping crocks into the gritty compost.

2. In the alpine house a pot of *Primula obconica* (crocked with fine chippings) watered from below by plunging it briefly in a bowl of water, stands on the irregular concrete floor. A little water has drained out, but the compost remains soggily moist – just what is needed in the summer of 1983. Poor contact between pot and floor means that some water drains away, but capillary contact has not been established so that most water stays in the pot.

   An identical pot of *P. obconica* is in the alpine house plunge bed of gritty sand. This plant is limp and wilting for, because of capillary attraction, too much water has been drawn out of the pot by the sun-baked sand of the plunge.

3. In the garden my plunge bed is filled with moist gritty sand; plunge and pots are watered by rain or sprinkler hose. Pots screwed into this bed are a mixture, mainly crocked, but a dozen pots, a gift from Mike and Polly Stone, have no crocks: all pots are uniformly moist, deriving their water from the gritty sand by drawing it into the pots by capillary action.

So a beginner's conclusion is, crock or not as you please, so long as your compost is well-drained and gritty, but do set your pots into a well-drained bed, bench or frame filled with sand, grit, gravel or other material which allows contact to be established between the compost in the pot and the surface into which it is plunged. In this way the gritty compost, the gravel, chips or small stone crocks (if you use them) and the sand, grit or gravel of the plunge form the minute capillary channels which attract and allow the free movement of water between the pot's contents and the plunge bed.

Arosa 1982

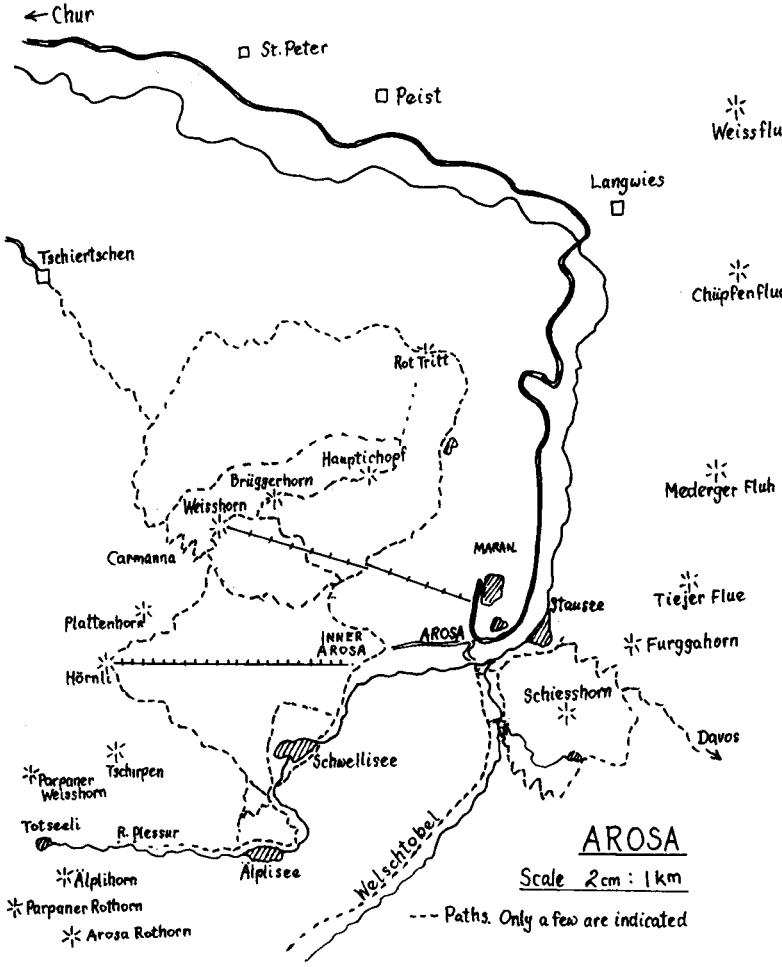
NORMAN WOODWARD

'LE PLUS ça change, le plus c'est la même'. I wonder how much Miss Joyce Halley and others who with her paid their first and only visit to Arosa on an AGS Tour twenty years ago[1] would have subscribed to that philosophy had they revisited Arosa with us last year.

We arrived in the last week of June, via Zurich, Chur and the local railway up the Plessur valley. We were not so much impressed by the engineering achievements of this line, as depressed by the climatic conditions. The weather had deteriorated steadily from Zurich onwards, we left Chur in heavy rain, shortly afterwards plunging into thick cloud, so that we apparently progressed with a sheer grey cliff up on our left, and a black, bottomless abyss down on our right, a state of affairs only relieved by occasional stations, neat, tidy and picturesque even in the wet gloom, and short intervals when the sheer, grey cliff vanished, leaving us suspended on nothing very obvious over the black abyss on either side. To be fair, we did, or did not, see the valley at its worst – and – we did have splendid weather for the rest of the holiday.

Arosa is in the Engadine, at the eastern end of Switzerland, with Leichtenstein and the western end of Austria to the north, and central, northern Italy to the south. The River Plessur rises at over 2,000m in a rocky, narrow valley ringed by the Aroser and Parpaner Rothorns, the Alplihorn, Parpaner Weisshorn and Tschirpen, all peaks getting close to the 3,000m mark. The limestone in this region seems to be soft and easily eroded, so that by the time the Plessur has run a mere 6km north-east to Arosa it is already in a deep, steep-sided valley. The valley becomes deeper as the river continues a similar distance northwards to Langweis, where it turns west for its final 15km to Chur and joins, surprisingly at least to non-geographers, the Rhine. Chur, a one-time capital of Switzerland, is a sizeable, busy town with the usual amenities of civilisation, such as heavy traffic and departmental stores. Tourists are directed round the older parts by means of coloured footprints painted on the pavement – a variation, so to speak, of tearing along the dotted line. Although no Edinburgh or York, it offers a pleasant alternative, barely an hour distant from Arosa by train, to flower hunting when one would like a less strenuous day.

The several small villages along the Plessur valley are still tight


← Chur
St. Peter
Peist
Weissfluh
Langwies
Tschiertschen
Chüpfenflue
Rot Tritt
Hauptichopf
Brüggerhorn
Weisshorn
Carmanna
MARAN
Mederger Fluh
Tiejer Flue
Stausee
Plattenhorn
INNER AROSA
AROSA
Furggahorn
Hörnli
Schiesshorn
Davos
Tschirpen
Parpaner Weisshorn
Schwellisee
Totseeli
R. Plessur
Welschtobel
Älplihorn
Alplisee
Parpaner Rothorn
Arosa Rothorn
AROSA
Scale 2cm : 1km
--- Paths. Only a few are indicated

communities based on farming. Although near to Chur, with easy road and rail access in summer at least, we saw no signs of 'commuter' development. Farming as a way of life in these parts, with most fields at an angle of around 45 and deep snow cover from autumn to late spring, cannot be easy. It was interesting to see that in the village churches that we were able to visit, whilst their creed seemed to be a very simple Protestant one, with no altars, crucifixes or other religious furniture, all had the remains of much earlier wall paintings, showing brief summaries of the life of Christ, carefully preserved. A further indication of how close-knit these communities are was to be found outside the churches in the graveyards. Here every grave was carefully planted with flowers, the gravelled paths between were completely weedless, and each headstone carried a beautifully carved motif showing such familiar things as mountains, corn, gentians and chamois.

The eastern side of the Plessur, across the river from Arosa, is high, steep and rocky, offering exhilarating, exciting, even exhausting, walking for those younger and fitter than us. Directly opposite to Arosa is the foot of a long, narrow valley, the Welchtobel. There are various roads and paths down to the river from Arosa, always remembering that what goes lightheartedly and carefree down in the morning will have to plod wearily back up at the end of the day! The path up the Welchtobel starts well through the woods beside the river, with good views of the Altein Falls a short way up on the other side. Then, as the valley narrows, the path rises up the increasingly steep valley side, sometimes in woodland, frequently over loose scree. The day was hot, the path became more precarious where winter avalanches had taken their toll, and flowers were very few and far between with a few Vacciniums and an occasional flower of *Clematis alpina.* We retreated, crossed the river by a footbridge, and walked down the other side. Three species were well represented here, *Dryas octopetala, Pinguicula alpina* and, unexpectedly, *Erica carnea* demonstrating well its indifference to lime. A fairly short walk through woods, where *Moneses uniflora* and a helleborine, probably *Epipactis atrorubens,* were just beginning to show, brings one to the Staubsee or reservoir, a small artificial lake. From here a mountain track, possibly a major route before the age of the railway, climbs up through the Furggatobel and over to Davos, whilst ahead a pleasant path rises through woods and meadows to the very small Grüenseeli, with good views of Arosa and the Weisshorn across the valley.

On the western side of the valley, above Arosa, the meadows sweep up to the crest of an irregular ridge, which starts high and rocky in the mountains at Tschirpen near the source of the Plessur, sweeps north to

Hörnli, Plattenhorn and the Weisshorn, and then gradually fades away to the north-east via Bruggenhorn and Hauptichopf. In this stretch of meadows we found as fine, or finer an array of flowers as we have, in an admittedly very limited touring life, seen elsewhere. A stretch of woodland about 1.5km long and 0.5km wide, lying between Arosa and the edge of the meadows is designated as a wild life area. On several occasions when taking a gentle stroll after dinner, along the contours, we glimpsed deer that disappeared rapidly into the shelter of shrubs and bushes. The other principal inhabitants are not so retiring, and certainly not wild. The numerous dark brown squirrels have the firm idea that any rucksack contains their next meal, and often cannot wait to get into it to make sure!

And so to the meadows and flowers. Climb up through the woods above Arosa, feeding the squirrels on the way if you will. Before reaching the Prätschli Hotel, flowers will be appearing with *Viola biflora* by the roadside, and orchids and primulas in the clearings. But this is only the prelude – beyond Prätschli are the lower meadows, comparatively flat and moist. *Primula farinosa* was here in countless thousands, and so was *Viola calcarata,* assuming that it was *Viola calcarata,* for within the space of a kilometre or two we found flowers that were white, orange, yellow, blue, purple and a dozen or more combinations of these basic colours. Whatever their botanical identification, the effect was gloriously colourful. Keeping the viola company in many places was *Daphne striata,* low growing in the grass, extensive and very fragrant. Damper areas were yellow with *Caltha palustris,* and *Trollius europaeus,* whilst large colonies of the broad leaved marsh orchid, *Dactylorhiza majalis,* were often nearby.

From Prätschli, one can follow reasonably level paths northwards through the meadows, or wander across them, passing above Arosa and its northerly outpost of Maran. There have been reports of an Alpine Garden at Maran – it is still marked on a local map – but from what we could see of where it might be we felt that it was for an 'off' day and we had no 'off' days. Beyond Maran the meadows stretch onwards, here and there are small lakes with *Trollius,* Bog Pimpernel (*Anagallis tenella*) and Bog Violet (*Viola palustris*). Nor should the gentians be forgotten. Like so many of the flowers, they seemed to continue indefinitely into the far distance. *Geum montanum* was almost over, whilst a few *Primula elatior* remained in the shelter of patches in woodland. The main path soon swings left to head westwards parallel to the lower valley of the Plessur, of which there are good views across to the villages on the far side, as well as to the peaks Tiejerflue, Mederger Flue, Chüpfenflue and Weissflüe which tower between

Arosa and Davos to the east. Just past the viewpoint of Rot Tritt on an unclimbable, tree-covered mass of rocks on our left, *Clematis alpina* grew profusely, well out of reach, through the boughs above. Even higher up, at the top of a vertical gully, shone three brilliant patches of bright blue, which, with little chance of contradiction, we claimed as *Aquilegia alpina*.

Beyond Rot Tritt this path continues more or less along the contours to reach the small town of Tschiertschen. Strong walkers who start early and dally not for flowers may continue through Praden and thence down to Chur. But this is road walking, and most travellers would prefer to take the Postbus from Tschierstschen to Chur (check the times at the Information Bureau before starting), returning to Arosa by train. Remember that most travel charges can be halved with a Swiss Holiday Ticket! Should you not wish to wander so far, a lower path returns from Rot Tritt. *Rhododendron ferrugineum* was common thereabouts, although the fact that there was less flower than might have been expected and the fact that the path was an easy, popular walk from Arosa may not have been unconnected. A short way down this return path was another large colony of *Dactylorhiza majalis,* rather surprisingly mixed up with ox-eye daisies, *Leucanthemum vulgare*. At the farther end of this meadow were good stands of *Gentiana punctata,* a species which often compares rather unfavourably with better known members of the species, but which here was at its best. A word of warning here for future visitors. A new farm road, not shown on the local maps, has been built to Oeschenalp beyond Rot Tritt, and for some distance road and path coincide. The return through the woods is pleasant although not colourful. At one point, opposite a decrepit wooden shelter, were two large hybrid orchid colonies. One in a very wet area beside the road had *Dactylorhiza majalis* mixing with *Dactylorhiza fuchsii,* the other, farther back to the left, had the former keeping intimate company with the Fragrant Orchid, *Gymnadenia conopsea*. The road eventually drops down to join the Chur-Arosa road, leaving the path to continue on through the woods back to Arosa.

I have said before that to find the best flowers one should, with due caution, abandon the well-used paths and take to minor tracks, or no path at all. A kilometre beyond Maran on the Rot Tritt path is a small lake, the Ober Prätschsee, charming in itself, but quite busy with picnickers and walkers. Here we left the path and turned uphill, soon leaving the road and its company out of sight. A few minutes' walk and there were the green alpine meadows of winter dreams, undulating gently, with shallow hidden valleys to explore, some with tiny lakes, others with shingle flats that looked like water until walked on. Low

outcrops of rocks and scattered trees, blue skies, warm sunshine and distant, snowcapped peaks completed the scene – and flowers, flowers, flowers! To catalogue them all would be tedious, but there on a backcloth of buttercups, vetches and clovers were the many-coloured violas, *Gentiana kochiana* with *Gentiana verna* beginning to join it, the ubiquitous *Primula farinosa,* all shades of pink and even occasional white ones. Keeping it company on damp slopes was *Primula integrifolia* in increasingly large drifts, and where there was *Primula integrifolia* there were certain to be the soldanellas, both *S. alpina* and *S. pusilla.* Behind one small lake rose a steep, rocky bank, but brown, not the grey of limestone. Much of it was covered by a vivid yellow, deeper than the surrounding buttercups and vetches. Here grew *Pulsatilla alpina* ssp *apiifolia* (one of the earlier examples of the tendency of present-day botanists to replace the comparatively simple binomial system of Linnaeus by a much more cumbersome polysyllabic trinomial nomenclature).

Wandering along this Paradise, climbing gradually towards Hauptichopf and then the Bruggerhorn, some flowers stay behind, new ones appear. *Linaria alpina,* with and without orange markings, liked the stony flats, one small valley had an area of *Ranunculus pyrenaeus* with a few late *Crocus albiflorus,* an occasional *Pulsatilla vernalis* still lingered, although most were keeping the geums company with their feathery seedheads. *Pinguicula alpestris* flourished in masses in damp and apparently not so damp places, and the cushions of *Silene acaulis* grew larger and larger. Continuing along this ridge, one could reach the Weisshorn via Hauptichopf and the Bruggerhorn. The easier way is to use the cablecar from Arosa or from the Middle Station situated in the meadows. But then, of course, you might miss the orchids above Inner Arosa, *Cephalanthera bifolia,* the Lesser Butterfly, and both the Fragrant and Small Fragrant Orchids grow close to the path. Up near the Bruggerhorn, *Gentiana bavarica* took over from *G. verna,* there were brilliant yellow clumps of *Draba azoides,* and, if you looked behind the right boulders, good patches of *Saxifraga oppositifolia* with *Lloydia serotina* quite common if a little discreet. All the way along the top as well grew that rather frustrating plant in cultivation, *Loiseleuria procumbens,* flowering profusely, always on flat ground right at the top, where it must have had maximum drainage and maximum light. Whilst walkers may wish to toil one way up the Weisshorn to descend by another route, flower-seekers like ourselves will prefer to use the cablecar at least for the second half on the ascent, in order to have time to admire the marvellous views, from Arosa at one's feet in one direction to Chur in the distance the other way, with a background of snowcapped peaks all round. We must confess to not finding the 'well-

known' androsaces on the summit; *A. helvetica, alpina* and the hybrid *heeri* reputedly grow here. The summit was, in fact, so densely populated that any androsaces remaining were probably being used as cushions.

The meadows below the south face of the Weisshorn, below the cablecar, are well worth exploring. In addition to much already mentioned, we found *Primula auricula* and *Pulsatilla alpina* both flowering well. *Globularia nudicaulis* was plentiful, but the smaller, matforming *Globularia cordifolia* was rather scarce. Two more contrasting yellows came from the low mats of *Helianthemum oelandicum* ssp *alpestre* (another of those names) and the tall, robust clumps of *Gentiana lutea* with broad green leaves and masses of bright yellow flower heads. Those with time to spare and patience might find themselves exchanging greetings with the local marmots who seem to have a large colony thereabouts. Between the Weisshorn and the Plattenhorn is the Carmanna Pass. The path on the other side drops very steeply into a valley which runs down to Tschiertschen. Alternatively, a short way down this valley are paths bearing right to enable a circuit of the Weisshorn to be made. Below the Plattenhorn the meadows reach on and up to Hörnli and the Hörnlihutte. Here again, the 'down-hillers' may use the telecabin service from Inner Arosa, although this service does not start until the first week in July, a month later than the Weisshorn cablecar. Near the lower terminus is the local Folk Museum, housed in one of the preserved old buildings. This is only open during mid-afternoon on Wednesdays, not particularly convenient unless Wednesday happens to be wet. In front of the Hörnlihutte the meadows undulate down to Inner Arosa, with various paths and sundry small lakes to explore. Much more interesting, though, was the path that we found leading south-east below the line of cliffs running to Tschirpen. This was a good path, clearly marked as a mountain path (red and white), but not on the local 'O.S.' map. In this rocky country above the meadows, *Dryas octopetala* abounded, and so did *Leucanthemopsis alpina,* whilst *Cerastium cerastioides* completed a trio of widespread white flowers. The violas, however, remained blue.

Androsace chamaejasme was quite common in the woods and meadows lower down. Whilst searching for the choicer androsaces, we had found a number of tight cushions of small, green rosettes growing on large boulders. Our suspicions that these were not androsaces were confirmed when, on this high path, we found one such cushion covered with small, yellowish flowers, *Saxifraga moschata* – and we never did find any of those choice androsaces. A little farther along this path and a lake comes into view below, the Schwellisee. This lake is easily reached from Arosa by following the road and track through Inner Arosa. If the river, which flows through the lake, is low, it is possible to walk right

round. *Ranunculus alpestris* grew in the shingle of the river bed above the lake, with *Hutchinsia alpina* for company. Some distance higher up, where the middle path above the lake and the lower path meet, *Doronicum grandiflorum,* no more than 10cm high, spread through the stony debris close to the river. Meanwhile, on our top mountain track, we found we had a choice of three routes to reach the head waters of the Plessur and its top lake, the Alplisee. The highest continued across a steep, loose scree and disappeared up a steeper gully between craggy cliffs. Down below, the main path above the Schwellisee climbed steeply round the edge of high cliffs, with a considerable drop to the river gorge well below on the other side. As this was still snow-covered at the beginning of our visit, and the wire safety rope was rather the worse for winter wear, care and caution were essential. In between, a middle path zigzagged not too steeply up the grassy hillsides to emerge on the meadows above a short distance from the Alplisee. This is a jewel of a lake, with green meadows on one side, enormous screes, rising 500-600 metres on the other, and with a magnificent background of the ring of peaks mentioned at the start of this article. Having gazed our fill of the scenery, we turned to the meadows to see what was new. *Campanula barbata* was just appearing, and so was the dark Vanilla Orchid, *Nigritella nigra. Gagea lutea,* with its single basal leaf was in the higher parts of the grass, whilst more *Ranunculus alpestris* and *Saxifraga oppositifolia* grew down by the river. But the find of the area was also, perhaps, the most inconspicuous and only found because one half of the party likes to sit down, enjoy the views and study her flower books, whilst the other half rushed about seeing only the flowers a few centimetres in front of the camera viewfinder. So it was that *Ranunculus pygmaeus* joined our flower lists, a tiny miniature, only a few centimetres across, with flowers no larger than a single petal of the common mountain buttercups keeping it company. This plant, like *Dryas octopetala,* chooses the far north of Europe as an alternative habitat.

And what of those magnificent screes and rocks stretching a further 2.5km to the source of the Plessur in the tiny Totseeli? That, alas, is for 'next time' – no doubt but that there are fabulous flowers still to be found. Our time was running out, but not before we had followed our own advice again, and left the paths, wandered through trackless woods, and found the Lady's Slipper Orchid, *Cypripedium calceolus,* at its best, many scattered plants and clumps, the best with over twenty flowers in it. By then, the gentians, primulas, violas were fading, the cows were grazing right up the meadows higher and higher, hay was being cut lower down. It was time to return, to relive the scenery and flowers with winter slides, and to plan where to go and what to find 'next time'.

1 *Journal of the Scottish Rock Garden Club,* No 33, September 1963, p 269.

Fig 87 *Rhododendron hybrid* (see page 53)

Fig 88 *Cassiope wardii* (see page 39) Photo: H. Esslemont

Permanent labels

ALASTAIR McKELVIE

IT IS obvious from the many replies to the request in the June 1983 issue of *The Rock Garden* for help with the problem of permanent labels and markers that there is no one best answer.

'Serpent' labels

The old method of using lead 'Serpent' labels has by and large disappeared. There is no doubt that they looked neat when coiled round the outside of a cushion plant in a Show, but for every day labelling of hundreds of pots or of plants outdoors they are too slow to prepare and also too expensive. 'Serpent' machines are no longer made but it is still possible to see a second-hand one advertised. The lead labels are no longer made either so that it is necessary to make them oneself by hand or have them made to order. The other old method of punching letters by means of a metal die has also largely disappeared for the same sorts of reasons. One firm, Andrew Crace Garden Designs, Much Hadham, Herts, still advertises sets of character punches for labelling onto aluminium. By and large, however, few gardeners outside Botanic Gardens and Trust properties now use 'Serpent' or metal punched labels.

Large and permanent

Gardens which are open to the public, and where plants must be labelled, have to have robust, indestructible and absolutely permanent labels. One of the best systems I have seen is that used at the Cruickshank Botanic Gardens in Aberdeen. Letters are punched out on Dymo (or similar) tape and stuck on Formica plates (approx 7.5 × 3.0cm) which are then screwed or riveted onto upright angled aluminium stems. The aluminium is absolutely permanent, unbreakable and not heaved out of the ground by birds or frost. The Dymo labelling lasts at least five years, usually longer, and can readily be cleaned. Labelling is fairly slow so that most gardeners would tend to use Dymo for permanent labelling and use some quicker and cheaper method of every-day labelling of pots.

Owners of small gardens do not care over-much for a forest of large labels all over the place but Botanical and other large gardens need to adopt some such system.

Wooden labels

Wooden labels are good for pots and trays in greenhouses and frames but are too short-lived for permanent outdoor plantings. Lead pencil writing on a white painted wooden stick is a good combination for indoors. For permanent outdoor labelling the labels need to be 'Celcured' which makes them expensive. In addition, wooden labels are no longer easy to find in shops.

Plastic labels

Plastic labels are the most used type of label nowadays but are not necessarily the most popular. As Harley Milne said in the June 1983 issue they become brittle, the writing fades and, like all labels, they are adored by birds. Harley also made a plea for some uniformity of labelling plants at Shows to avoid the contortions necessary at present, but that is another topic which needs to be raised elsewhere.

Many gardeners feel that white plastic labels are an eyesore. It is possible to buy plastic labels which are dark-grey or black on one side. These can be labelled by inscribing with a steel point making the writing indelible. The idea is good but the writing often appears spidery and it is often difficult to produce neat curves.

Most correspondents felt that plastic labels for outside should be at least 15cm long and should be plunged 10cm into the ground to overcome the problems of frost heave and of bird depradations. One suggestion was that the label should simply have a Dymo number placed at the end of the label which would then be pushed deep into the soil with only the number visible. The plant would be catalogued, named and described in the 'Garden Book'. This seems a good idea for troughs where prominent labels are an eye-sore.

Metal labels

Readers described various types of metal labels that they preferred to plastic because of their durability. The Hartley label is long-lasting but it is no longer manufactured. It is still possible to buy them occasionally from old stocks. A firm who make similar anodised aluminium labels is Andrews Crace Garden Designs already referred to, but there are possibly other firms who also manufacture.

The old type of zinc label is still available from Wartnaby Gardens, Melton Mowbray, Leicestershire, either as a stem label or as a tie-on label.

Anodised aluminium labels are long-lasting but tend to bend when pushed into soil. They may become pitted if cleaned with a scouring powder making them difficult to write on again.

Marking agents

The old-fashioned lead pencil is still a good and fairly permanent method of writing on labels. Grades from HB to 2B are suitable; harder grades are more difficult to use while softer grades are more easily erased accidentally. Wax pencils such as Chinagraph give long-lasting and legible lettering but are difficult to use except on very smooth dry surfaces.

Probably the easiest marker to use is a felt pen. It is first of all essential to discard any make of felt pen that is not labelled as permanent. Spirit-based pens tend to be permanent while water-based pens are definitely not. There are many permanent felt pens on the market; among good types are Pentel, Rainbow and Staedtler Lumocolor 317. It is important to choose a fine point since all these pens broaden with use. It is also essential to replace the cap whenever the pen is not being used.

It used to be possible to buy 'plastic' inks which were quite permanent but they seem to have vanished from the market. A good substitute according to one correspondent is Humbrol Enamel. A small one inch tin lasts for ages and can be applied with an ordinary pen. The paint is really permanent.

Already referred to is the Dymo label which is permanent and highly legible and for larger labels is probably to be preferred to pencils, pens or paint.

All labels should, however, be inspected each autumn in case they need attention before winter arrives. Don't be like a gardener in a large well-known garden who was reputed to lift all his labels in the autumn, clean them indoors and then replace them!

One correspondent who had problems in obtaining suitable metal labels referred me to someone who has gone, or is just going, into the production of individually designed aluminium labels. The address for details is Mr M. Griffiths, 19 Friends Avenue, Margate, Kent CT9 3XE. He will prepare labels to any design. I have seen a specimen label and they seem to be serviceable and durable. It is probable that many aluminium engineering firms would prepare labels to specification. It is possible to buy small electric engravers for engraving onto metal.

Cleaning labels

Apart from labels written by lead pencil which can be erased with a rubber, the only really good method of cleaning labels is by rubbing hard. Steel wool and/or scouring powder is pretty well essential for removing paint, Chinagraph or permanent felt pen lettering.

One reader sent me a detailed account of how he made his anodised labels permanent. He takes a packet of 20 labels, washes them in detergent to remove any film then dries them. After laying them on a warm surface such as a kitchen boiler he writes firmly on one side with an HB pencil and on the other with black Chinagraph pencil. The warming is to allow the Chinagraph to write better. Alternatively he suggests using Chinagraph on both sides. He then gives each side a coat of gloss polyurethane, keeping the pointed end free. The labels are then set upright in a block of polystyrene foam overnight to dry. With care these labels are almost indefinitely permanent.

This article does not try to be a comprehensive guide to garden labelling but is a compilation of 20 letters sent in to the Editor.

French layering

French layering is a useful method for propagating shrubs and trees which are difficult or slow from cuttings, particularly when only a few plants are wanted. It is a simple technique and the success rate is high.

It differs from ordinary layering where young stems are pegged down near the tip but each one produces only a single plant. In French layering the young stems are pegged down along the entire length. Buds produce vertical shoots right along the stem. Pegging down must be done before buds break in spring. The previous year's stem should be pegged down right along the entire length and held down with wire pegs. When the new shoots are 5cm tall they should be covered with fine soil so that only the tips show. They should be earthed up again after another 5cm of new growth; this prevents drying-out. The branch should be lifted in autumn or late winter/early spring with a fork and each layered branch cut off close to the mother plant. The individual shoots should then be cut off and potted up.

Germination of Meconopsis seed

HORTUS

OF THE many species of Meconopsis, 35 or so have been or are in cultivation judging by the latest SRGC Index but probably only around a dozen are grown regularly in gardens.

They are best propagated from seed, at least the short-lived and monocarpic species, but many gardeners find them difficult to germinate. There is no reason for poor germination provided seed is viable. The following note is based on my own experience plus what accounts are available in the literature.

The first essential is to store seed dry and cool. This can be done by storing in sealed containers containing granular calcium chloride or silica gel crystals.

Good germination can be achieved with most species without any special treatment. Perhaps surprisingly the species with the most stringent requirements is that ubiquitous weed *M. cambrica,* the Welsh poppy. It may be significant that this is the only non-Asian species. In our gardens, where it seeds and spreads rapidly, our winters give it the necessary cold to induce germination but it is almost impossible to germinate fresh seed without a spell of cold.

Contrary to what is said about the need to sow fresh seed of many alpines, Meconopsis species do not germinate all that well when sown fresh. The best time to sow is in December or January at a temperature of between 15 and 20°C. If the temperature is higher than 20°C the seeds will germinate but seedlings die within a few days. Light is also beneficial but stratification at low temperature is of little value except for *M. cambrica.*

Seed should never be sown deep; ideally it should be sown onto the surface of a gritty compost and not allowed to dry out.

M. betonicifolia – Germination is easy and 50% should be achieved at temperatures below 20°C. Seed is normally viable for up to one year after harvest. Light is not essential.

M. cambrica – Fresh seed germinates poorly; one-year-old seed germinates much better. The secret of success with this species, particularly with fresh seed is to stratify moist seed at just above freezing, about 2°C, for about 12 weeks when germination will be 100%. Gibberellic acid is very effective instead of cold but it is not easy for gardeners to obtain and to prepare.

M. dhwojii – Requirements are as for *M. betonicifolia*.

M. gracilipes – Light is definitely helpful with this species. Temperatures should not exeed 15°C.

M. horridula – Fresh seed germinates badly but dry storage for at least six weeks is beneficial. Best results are obtained from a December sowing.

M. latifolia – Germination is as for *M. horridula* but it definitely requires light and benefits from stratification of moist seed at 2°C for two weeks.

M. quintuplinervia, M. regia, M. napaulensis, M. x *'Sarsonii'* – They have similar requirements to *M. betonicifolia* but they all need light.

Index to Volume XVIII

Readers will find the Index to Volume XVIII at the back of this issue which is No 1 of Volume XIX.

It would obviously have been better if the Index to Volume XVIII could have been put at the end of No 4 of that Volume but in view of tight printing schedules it proved impossible to have it ready in time.

Accordingly the new pattern will be that Volume Indexes will appear in No 1 of the next Volume. It will be more comprehensive than in the past and because it has been prepared on a computer it will be quite simple to produce a Cumulative Index every few Volumes without it being the major undertaking of the recently published one.

Plant portraits

Aster alpinus

Michael Scott

The genus Aster of the Family Compositae contains around 250 species most of which are to be found in north America. A few occur in Europe of which *A. alpinus* is one of the commonest in the mountains and by no means the least attractive species in the genus.

It has a reputation of being rather a dowdy plant and is not grown in rock gardens all that much. Farrer on the other hand, in his usual purple prose, describes it as one of the loveliest of the Asters. "It glorifies June with its abundant flowers of richest violet with a solid eye of brightest gold. The loose spires of the best Aeizoon Saxifrages come showing up among them as they do on the high shoulder below the Laemmern glacier".

Farrer probably also saw the Aster and the Saxifrage growing in one of his favourite areas, the Bindelweg in the Italian Dolomites, where the photograph (Fig 96) was taken. *Aster alpinus* grows on rocks or in dry mountain pastures from July-September.

It is a small hairy alpine perennial, 5-20cm tall with large solitary flower heads 3-5cm across or rarely 3-4 heads on a branched stem. The ray-florets are blue-lilac or violet and the disc-florets yellow. The leaves are mostly basal and oval.

It is very easy to grow in any garden soil, is daintily attractive and propagates readily by splitting or from seed. What more could one ask from any plant?

Rhododendron ferrugineum

Maurice Bampton

This is not often considered one of the choicer Rhododendrons but a clump of three bushes forms an attractive feature in any garden. The deep pink-red flowers can be wishy-washy in poorer forms but are a pleasant shade in the best types.

R. ferrugineum, the Alpen rose, is widespread throughout Europe from the Pyrenees, Alps, Jura Mountains and into western Yugoslavia.

It grows on mountain slopes and open wood or scrub reaching altitudes of almost 3,000m in the Valais or the Dolomites and descending right down to the shores of Lake Maggiore. It is often dominant over large areas in the dwarf-shrub montane zone, particularly on non-calcareous rocks (Fig 97). In this it contrasts with *R. hirsutum* which is found in similar situations but on calcareous rocks.

R. ferrugineum is an evergreen shrub 50-120cm tall. The young twigs are ferrugineous (hence the name) and are also lepidote (possessing scales). The leaves are 2-4cm long, elliptic, acute and entire. They are dark shiny green above and densely lepidote underneath with brown ferrugineous scales which are yellow when young.

The inflorescence consists of a raceme with 6-10 flowers. The corolla is bell-shaped or campanulate, about 15mm across. The corolla is deep pink-red and lepidote on the outside. A further distinguishing feature which is of importance when identifying dwarf Rhododendrons is that the style is twice as long as the ovary.

It is of easy cultivation in any non-calcareous soil but, like many Rhododendrons, will grow quite happily in a compost containing lime provided it is peat-based. Cuttings strike readily if taken in early winter after the parent plant has experienced some frost; the cuttings should be given bottom heat. Seeds germinate easily and plants should flower about four years after germination.

It is not stocked by all garden centres but there should be no real difficulty in finding plants for sale.

Pulsatilla halleri slavica

Jim Beaton

The genus *Pulsatilla*, containing about 12 species, differs from *Anemone* in the feathery styles which lengthen to about 5cm after flowering. *Pulsatilla* includes a number of excellent garden plants which are of particular value in March-April when there may not be much else in flower outside.

One of the finest species in the genus is *P. halleri slavica* which produces enormous dark violet flowers with a central disc of golden stamens (see front cover). The flowers are much larger than our native *P. vulgaris*; they are so large and heavy that they often droop particularly when wet from rain. The sight of a clump opening their large flowers in the bright spring sunshine is quite breathtaking.

There is some ambiguity about the naming of the species and more particularly the sub-species. *P. halleri slavica* can be distinguished by the basal leaves which are simply pinnate and densely woolly at the base.

The terminal leaf segments are long-stalked. The whole plant dies down in autumn. The sub-species *slavica* comes from the western Carpathians and can be distinguished by the three primary divisions of the basal leaves as opposed to the five primary divisions of the sub-species *halleri* and *styriaca*.

P. halleri slavica flowers in late March-mid April before the foliage is fully up. It grows easily in any well-drained soils and appreciates leaf mould. It does not object to lime.

Vegetative propagation can sometimes be achieved by splitting but the best method of increase is by seed which germinates readily if slowly. Best success is achieved by sowing when fresh and allowing stratification over winter.

Cassiope wardii

Cassiope wardii is one of those fabled plants that only the brave try to grow and which appears from time to time on the Show benches to fabulous gasps of awe.

It was first described by Kingdon-Ward in 1924 from south-east Tibet and the first introductions made by Sir George Taylor in 1938 from the the same area. Since then it has been grown spasmodically and awarded an AM in 1949 when shown by Mr R. B. Cooke and a FCC in 1982 when shown by Mr H. Esslemont (Fig 88). In spite of this little has been written about its cultivation. The plant shown in Fig 88 was originally grown by Mr R. B. Cooke, passed on to Mr A. Reid in Aberdeen then to Mr J. Crosland. A rooted cutting to Mr Esslemont then produced the FCC plant.

Sir George Taylor collected *C. fastigiata, C. pectinata, C. selaginoides* and *C. wardii* in 1938 but these species met with little success in terms of introduction and establishment. Only a few plants of *C. wardii* survived although Sir George thought that it was the most robust species and that it should survive in a cool moist peaty corner where its stolons could spread. It had been found growing at Tripe (pronounced 'tree-pay'!) in the alpine zone surrounded by many species of *Primula* and by *Codonopsis mollis, Cyananthus lobatus, Leontopodium* sp as well as extremely luxuriant and floriferous plants of *Saxifraga cernua,* quite different from the squinny and rare plants to be found on Ben Lawers in Scotland. Amongst all this vegetation large clumps of *C. wardii* were to be found amongst the rocks.

C. wardii is the largest species in the genus and one of the most difficult. Some people find it reasonably easy to grow either outside in a moist sheltered sunny spot, a rather difficult combination to achieve, or

inside in a deep pot, kept moist with sphagnum. Difficult enough to grow it is almost impossible to propagate. Normal tip cuttings are not successful; the only hope is to try to root from the base of the long shoots, deep down below soil surface. Sometimes plants will root by layers into sphagnum.

Seed is rarely set and when it is it tends to be hybrid. Some delightful chance hybrids have occurred particularly the variety, Muirhead, which is a cross between *C. wardii* and *C. lycopodioides*.

C. wardii is not commercially available and is so rare that the chance for most people of getting a specimen is remote. Perhaps this is a species where modern micropropagation techniques might pay off.

Primula whitei

Denis Hardy

Primula whitei, first collected by Sir Claude White in Bhutan in 1905, supposedly embraces *P. bhutanica,* collected by Ludlow and Sherriff (L and S 1166) in 1936, also in Bhutan. *P. bhutanica* was reduced to the limbo of synonymy by Ludlow and Sherriff themselves when, in south-east Tibet in 1947, they discovered a group of plants of the blue primula in one spot. Some of these plants they considered to have the characteristics of *P. whitei,* and some of *P. bhutanica.* It was concluded that *P. whitei* was a variable species.

Primula bhutanica, however, refuses to lie down. Richards regards *Pp. whitei* and *bhutanica* as good, though closely-related, species. I have a collection of plants of the blue primula that is composed of three recognisably different types. One of these was obtained originally from Alex Duguid at Edrom; his stock derived from the original L and S introduction of *P. bhutanica.*

This form comes true from seed, with flowers of darker blue than the other forms. It does well with me in a frame in the shade of a north wall; the glass is put on only to keep off the autumn rains; in winter snow blows in the sides. All the flowers are pin-eyed, but seed is sometimes set.

The other two forms have ice-blue flowers, and all are pin-eyed. One is *P. whitei* (Fig 83) as described by Richards, with dentate petals; it seems to be the most common form in cultivation, and flourishes at Branklyn. I have had it outside in a peat wall, facing north with no protection, for the last two years. It has flowered magnificently, but never set seed.

My third form came originally from Inshriach; the petals are crenulate rather than dentate. It grows well in the frame, and sometimes sets seed.

All three forms grow equally well in a compost of equal parts of soil, sphagnum-peat and sharp sand, with some Vitax Q4 added, or in one of the proprietary peat-based composts. Well-flowered plants may be potted-up for Shows, without ill-effects if the roots are disturbed as little as possible, and an overhead spray given.

Any seed is sown green; one pot lay dormant for two years until shocked into action by a very cold winter. Suitable plants may be divided. I have not tried leaf cuttings.

Primula whitei (*bhutanica*?) is sometimes advertised commercially, and privately, but does not seem to be readily available.

Other photographs of this lovely blue primula, variously labelled *P. bhutanica* or *P. whitei,* may be seen in the following:

Fletcher. A Quest of Flowers. Edinburgh University Press 1975, p 81.
Evans. The Peat Garden. Dent 1974, Plate XIIc.
Clapham. Primulas. David and Charles 1971, p 82.
SRGC Journal, Vol X Fig 34 (after 152); Vol XVI Fig 50 (after p 272).
Alpine Garden Society Bulletin, Vol 37 p 325; Vol 47 p 327.

REFERENCE

Richards. *SRGC Journal,* Vol XV pp 201-2, 204-5.

Androsace cylindrica

Sandy Leven

Androsace cylindrica is a most difficult plant to obtain in true form. In cultivation it crosses readily with its cousin *A. hirtella,* therefore to obtain true seeds the two species must be kept well-separated. In nature it is so rare that it is almost impossible to collect wild seed. This beautiful member of the Aretian Section is endemic to the Pyrenees mostly reported from Gavarnie on the French side and Monté Perido on the Spanish side, growing on moist, north-facing, limestone cliffs, often lightly shaded by trees at altitudes between 1,300 and 2,000 metres. Unfortunately, the plant has been almost wiped out by 'plant lovers' and botanists, who have collected it from its most accessible sites. One source says it takes its name from the Cylindre du Marberé, near Gavarnie, another that it is because the withered leaves persist on the stems giving them a cylindrical appearance.

In Scotland it is grown as an alpine house plant because, although it is hardy it abhors winter wet on the tight round cushions which can lead to fungal infection. It demands a quick-draining open compost which will allow air to circulate round the roots but which at the same time has a reasonable degree of moisture retention. The pan should be top-dressed with about 1cm of grit. Pieces of slate or hard tufa may be placed under the cushion.

The flat open rosettes are 15-20mm across with outward-curving, linear elliptic leaves which have a few upright hairs on the leaf margins. The flowers are white with a greenish-yellow eye. (Flora Europea says the flowers are pink!) They are 7-9mm across and the lobes are obovate and are slightly fimbriated, up to 10 per rosette, each one borne singly on a hirsute pedicel 10-20mm long.

A well-flowered plant (Fig 81) in its prime affords one scant opportunity to view the foliage. Plants should be turned regularly to ensure even flowering all over the cushion.

It can be propagated either by seed or from cuttings. Growing from seed allows one to select particularly fine-flowered forms, which may then be increased by cuttings. Seed should be sown fresh in a mixture of 2 parts JI No 1/1 part $^1/_8$ inch grit. Cuttings should be taken in June or July and inserted in moist sharp sand in a plastic pot covered with glass and kept out of the sun.

Seed may be obtained from the SRGC, AGS or ARGS Seed Exchanges. Plants are offered fairly regularly by alpine nurserymen.

Try to see the plants in flower, make sure they are true and select a good form, then look forward to its magnificent show in April. *Androsace cylindrica* is one of the easier androsaces to grow in an alpine house and gives one an introduction to growing the high alpine cushion plants which are a delight at our spring shows.

Primula rotundifolia

A. Bremner

Primula rotundifolia is the only member of the small section Rotundifolia which is commonly in cultivation. Its distribution is confined to Nepal and Sikkim, where it grows at an elevation of 4,000-5,000 metres. This plant was first discovered by Hooker in 1841.

Primula rotundifolia is a perennial with a short thick rootstock. The leaves are somewhat cordate to orbicular, with an irregular dentate margin. The under-surface of the leaves is coated with creamy-yellow farina. The flowers, carried on slender scapes, in one, or occasionally two tiers, are purplish-pink with a yellow eye.

The plant illustrated (Fig 93) has been grown for three years plunged in a shaded frame. It is repotted each year after flowering in a mixture of one part each of soil, peat, leaf-mould and coarse sand, over sharp drainage. The pot is top-dressed in winter with dried pine needles. This helps to protect the plant, which over-winters as a tight, farinose bud, which must be kept dry during the resting period. It is not a difficult plant to grow, provided this requirement is met. Once it starts into growth it is watered freely, and an occasional weak liquid-feed is given until it flowers, in early-May.

The plant was divided after flowering in 1982, and this year seed, sown in early-September, germinated readily within two weeks.

This primula is occasionally offered by a few specialist alpine nurserymen.

Lewisia brachycalyx

Jean Wylie

This is a native of north-west America, growing in marshy places and wet meadows which dry out in summer.

It is low-growing, 1½-2 inches high; the leaves radiate from a fleshy caudex and are 2½ inches long, lanceolate, fleshy and glaucous-green in colour. The root is thick and branching. Flowers are nearly sesile having two bracts below and similar to the sepals. The 5-9 petals are usually white but can sometimes be pale-pink each being ½-1 inch long. Flowering starts in early spring and continues for some weeks. Leaves disappear as flowering ends leaving a resting bud. Seeds are formed and shed within a few weeks.

Lewisia brachycalyx can be grown in the open ground in a well-drained position with some winter protection from excessive wet but they are not long-lived under these conditions. Pot culture is better

(Fig 85), growing them in a free-draining mixture of equal parts loam, leaf-mould and grit, repotting when required before growth starts in early-spring. After flowering, until growth starts, the plants must be kept nearly dry and only small amounts of water given till full growth commences. Feeding with a balanced fertiliser at this time is a good idea.

Propagation is by seed sown as early as possible and left where frost can stratify them. Seed can be acquired from the SRGC and AGS Seed Exchanges. I do not know any nursery that offers plants but there must be one somewhere. As *Lewisia nevadensis* is similar but smaller and inferior, care must be taken that you are actually getting *L. brachycalyx*. One important difference is that *L. brachycalyx* has bracts immediately below the sepals while in *L. nevadensis* the bracts are below the middle of the stem.

Brachycome rigidula

James Cobb

This is an Australian member of the daisy family and belongs to a genus with quite a number of species. I have been fortunate to obtain wild seeds of a number of different alpine plants from the Australian Alps in Victoria and *Brachycome rigidula* was one that germinated well in spring from an autumn sowing of seed freshly harvested. The plant sprawls in a loose carpet of finely-cut dark-green leaves, one or two inches high, from which arise three-inch wiry flower-stalks with a terminal lilac flower about three-quarters of an inch across (Fig 89). The centre of the flower is a nice deep-yellow. The seed carries no obvious pappus ('parachute') and so the seed heads stay tidy and at a distance look as neat as the buds. It flowers from mid-summer until really hard frosts and appears totally hardy having survived −20°C without snow cover.

It occupies a deep well-drained scree of washed gravel and leaf-mould and fills an area of about one square foot after three years without any sign of bad-mannered invasiveness. My plants show variation in hairiness of leaf, flower size and colour and no doubt enthusiasts with plenty of room could select even better plants. It appears easy from cuttings if non-flowering shoots can be found and is reported in the wild to die back to the root in winter although my plants have not shown this behaviour.

Primula 'Tantallon'

Margaret and Henry Taylor – *AM Feb 1983*

This plant originated in a batch of seedlings resulting from hand-pollinating *Primula bhutanica* with *P. edgworthii*. One stood out from its fellows because of robust growth and extra-large deep violet-blue flowers similar to those of *P. edgworthii* on a plant with leaves resembling *P. bhutanica* (Fig 82).

'Tantallon' multiplies and thrives here in eastern Scotland in conditions where other petiolarid primulas tend to come and go rather rapidly with us. We often overwater plants in pots whereas they flourish planted-out in a frame of rich compost and leaf-mould. Plants also thrive on a shady moist peat wall, covered by a pane of glass in winter to ensure undamaged farina on leaves and flowers. Just before this summer's drought we shifted several plants to our newly-constructed primula frame. A rather observant lady neighbour cornered me one day to enquire loudly, "Oh, Mr Taylor, what is the mysterious secret hidden in the corner of your garden?" She was rather let down when told that the huge bedsheet was just draped around some primulas to hide them from the scorching sun.

Bugs are another problem. Plants can suddenly keel over due to the roots having been eaten away by vine weevil or sciarid fly larvae. We now mix HCH dust into our primula soil to deter these pests.

Primula 'Tantallon' flowers over a very long period from January to March. On 8 February a friend took our plant to an RHS show in London, where the Joint Committee gave it an Award of Merit. The flowers are 3cm across, deep violet-blue on the face of the petal with a paler dusty back and a white tube. The pin-eyed flower has a yellowish-green centre with a white surround. Plants are easily propagated by division as the crowns multiply rapidly. 'Tantallon' has been distributed to friends and nurserymen in the hope that it will be a worthwhile addition to gardens.

Polygala chamaebuxus purpurea

Helen Craig

This plant is of the Milkwort family, the name having derived from the Greek Polys-much, and Gala-milk.

It is a low, more or less mat-forming evergreen shrublet. The leaves are oval, shiny-green and leathery. Flowers are the yellow and purple winged form. Buds become visible in December, and open from February to May. It does well in well-drained peaty soil, similar to John Innes No 2 but with more grit than sand.

It increases by suckers when established and can be propagated by cuttings during summer, rooted in a cold frame or by rooted pieces taken from a plant and planted-out in spring after flowering.

It should be repotted every other year after flowering. The plant illustrated (Fig 90) was badly frosted in the 1981/82 winter. The remaining part was repotted and came on well. It can be put in shade to discourage it from flowering too early for spring shows.

It appears to be readily available from some nurseries.

Shortia soldanelloides

Fred Hunt

A Japanese species of the Diapensiaceae family found growing in high woodland and also on open ground in alpine regions, this member of a very select genus possesses all the qualities asked of a good plant, having charming flowers and most attractive leaves.

In the case of the plant portrayed (Fig 95), the bell-shaped flowers (similar to those of a *Soldanella* as the name suggests) are of a deep-pink colour with the petals typically fringed at the ends and set off by glossy evergreen leaves which take on a red hue in autumn.

The specimen shown was raised from seed by friends and grown-on by myself in a pot containing a peat/sand compost. Throughout the year this is plunged in peat in a shaded frame thus affording it protection from excess wind and hot sun.

I have not succeeded in propagating these to date, but then very few people have. Nevertheless the challenge exists.

But, because of their previously mentioned attributes and not being prone to pest damage, shortias will always be in demand.

Specialist nurserymen advertising within this *Journal* frequently have these on offer.

Androsace vandellii

Harold Esslemont

I feel that I cannot commence this plant portrait of *A. vandellii* better than with a quotation from that fine plantswoman and botanist, the late Mrs D. E. Saunders.

"*Androsace imbricata* (its former name) is a high alpine, widely distributed in the Southern Alps and occurring also in the Pyrenees and the Sierra Nevada on granitic and volcanic formations from 5,000 to 9,000 feet, growing in shady or overhung fissures of rock. It makes very compact cushions of rounded rosettes, composed of broadly

Fig 89 *Brachycome rigidula* (see page 44) Photo: J. Cobb

Fig 90 *Polygala chamaebuxus purpurea* (see page 45) Photo: A. Stevens

Fig 91 *Ranunculus amplexicaulis* (see page 48) Photo: A. Stevens

Fig 92 *Trillium rivale* (see page 88) Photo: A. Stevens

Fig 93 *Primula rotundifolia* (see page 43)

Photo: A. Stevens

Fig 94 *Paraquilegia grandiflora* (see page 88) Photo: A. Stevens

Fig 95 *Shortia soldanelloides* (see page 46) Photo: A. Stevens

spatulate upward pointing, blue-grey or almost white, velvety leaves covered with very short hairs (Fig 80). The almost sessile flowers, borne singly, have white ovate petals overlapped at the base and a yellow eye fading to crimson with age. It is a very floriferous, long lived plant of unique appearance".

I still retain pleasant memories of an AGS Tour to the Dolomites, some thirty years ago, led by Mr Gerard Parker. Mr and Mrs Saunders were members of that party and we viewed together this androsace growing in rock crevices.

Fortunately, for conservation and collection, *A. vandellii* is best grown from seed. This can generally be obtained from the seed exchanges or from a fellow member.

Seed should be sown in December, in plastic pots, in John Innes seed compost to which I add a little Perlite. Seed is sown on the surface and covered with a thin layer of fine (chicken) grit. The pots are bottom watered and placed in a fully ventilated north frame. If there is a fall of snow, I shovel some over the pots to remind them of their Alpine home. I believe it helps.

Seed should germinate in spring and, when the seedlings are large enough to handle, I transfer them to long thumb pots.

The mixture I use is three parts John Innes 3 to one part grit. Some growers prefer larger proportions of grit and others add leaf mould, but I do not think the mixture is critical.

In their second year the plants should flower. Select three or four of the best forms and discard the rest. There is no object in spending eight or ten years on cultivating an inferior form.

Pot on each year after flowering or as required, one size up only to try to keep the plant tight and in character.

Remove the dead flowers after flowering unless you want to leave a few for seed.

Plunge the pots in sand, in the Alpine house, or double pot. Keep a look out for aphis and if infestation threatens dip the pot in a weak solution of systemic insecticide for half an hour.

Put a good layer of chippings, or some pieces of hard tufa, around the vulnerable neck of the plant to prevent damp penetrating the cushion. Keep on the dry side during the winter months, but don't overdo it. The cushion will show signs of cracking if it is too dry. Give full sun in winter, light shading in summer.

If you follow these general instructions and have the necessary patience and dedication, at the end of eight or ten years you could have a plant with over 2,000 flowers!

Ranunculus amplexicaulis

Roma Fiddes

Ranunculus amplexicaulis is an attractive easily-grown white-flowered buttercup from the Pyrenees where it grows in meadows up to 2,500 metres. The glaucous leaves are stalked at the base of the plant, but those up the stem are stalkless and clasp the stem. The plant grows up to a foot tall with branched stems ending in the white flowers (Fig 91).

In cultivation *R. amplexicaulis* will grow in most types of soil, in sun or shade. It grows taller in moist conditions. It flowers in April and May and the whole plant dies down quickly after flowering. The plant is easily increased by division in spring. It can also be grown from seed, which appears regularly in the seed lists of the SRGC and the AGS.

Ranunculus amplexicaulis is listed in the catalogues of most nurserymen specialising in alpines.

Cumulative Index

With the publication of the Cumulative Index, the Publications Manager, Mr T. G. Sprunt, reports a huge increase in demand for back numbers of the *Journal*.

Even if you are a fairly new member why not buy a Cumulative Index. It is a unique reference to a vast mine of information and there are plenty of old established members around who will be only too happy to let you consult back numbers of *Journals*.

The Cumulative Index is available from Mr Sprunt at £2.00 (plus 25p postage). His address is given at the back of this *Journal*.

What's in a number?

SOME confusion has arisen about the nomenclature of *Cyclamen cilicium* var *intaminatum* as a result of the articles by Ray Johnstone and by Kathleen Dryden in the January 1984 issue of *The Rock Garden*.

Perhaps the first thing to point out is that the photograph (Fig 73) was in fact *C. cilicium* as labelled and was not *C. cilicium* var *intaminatum* as was implied in the text on page 323. This fault was the Editor's and not the Author's.

Among the cyclamen collected by E. K. Balls in Asia Minor in 1934 was a miniature one which was provisionally called *C. cilicium* but has since been called *C. cilicium* var *intaminatum*. E. K. Balls made more than one collection of this sub-species of which two were numbered EKB 669A and EKB 628. One was said to have plain leaves, the other marbled. The argument now is which was which.

Ray Johnstone in the original draft of his article said that EKB 669A was plain but, when a proof reader pointed out that he thought it was really marbled, he agreed he was perhaps wrong and agreed to delete any mention of collector's numbers.

Kathleen Dryden had access to the collector's field notes at Wisley and they clearly showed that there was considerable variation in leaf markings at both collection sites. It seems that Doris Saunders, Author of the AGS Monograph on 'Cyclamen', was quite certain that she received a plain leaved form under the number 669A.

A further detailed commentary on 669A and 628 is to be found in the AGS Bulletin, Vol 45, page 91 in Alpine Anthology where an eminent grower pointed out the considerable discrepancy about plain versus marbled. He had a plain leaved form of 669A which he had obtained from Jim Archibald and a patterned leaved form labelled 628.

Just to add to the confusion Nightingale in her recent book 'Growing Cyclamen' says quite definitely that EKB 669A is variegated and that EKB 628 has a plain leaf.

One must ask oneself for how long these collector's numbers are relevant especially when the plants that we have today have been continually raised from seed by generations of growers, very few of whom were record keepers in any form.

Can we now leave it that *Cyclamen cilicium* var *intaminatum* exists in both plain and marble-leaved forms and just forget the numbers?

Woodlanders and other plants in my garden

ZDENEK SEIBERT

ALTHOUGH our garden in Czechoslovakia seems not to be favourable for xerophytes it is convenient for many other plants which fascinate me. I have arranged a slope to the north-east with plenty of leaf mould, peat and humus. It was easily done as the garden faces north at a height of about 500m. On this slope there grow mainly woodland plants and ferns. As soon as the blossom of Erythroniums and Trilliums has finished the ferns begin to grow so that this slope changes its appearance through the seasons. The Erythroniums and Trilliums being in full blossom in spring receive sunshine whereas the dormant bulbs are shaded by ferns. Some species of Erythronium seed themselves and the seeds germinate better in situ than sown in pots by myself.

Early spring reveals a lot of rather funnel-shaped white flowers of *Epigaea repens*. This trailing shrublet, covering about 40cm in diameter with evergreen leaves, thrives in spring in sunshine, but in summer it obtains shade from the south thanks to the ferns which have grown up in the meantime. It is hardy with us, requires no special care, flowers freely and is easy to propagate by layers and by cuttings taken from mid-May to mid-July. Seed always produces some pink flowered plants. A bit farther from the ferns and in front of them there nestles *Helonias bullata* belonging to the Liliaceae. It is an American bog plant, but it doesn't need a bog to feel satisfied. The rosettes of dark green sessile leaves resembling a robust *Gentiana acaulis* form mats bearing clear pink flowers on stems which in the course of time get longer so that the seed, which is very small, can be flicked out farther from the plant. The seed should be sown as soon as ripe. On this slope and around its edges I planted several *Primula vialii* some years ago. A friend of mine complained of this species not being long-lived. In spite of this I notice them increasing without my help. They seem to tend to occupy more and more space over the years. There often appears a plant on the most surprising place apparently sown by the wind, such as on a path among stones and it flowers. I should never have sown it there thinking it would not prosper. I always wonder how it can grow on spots like those. It is difficult to say if the plants are long-lived here because of these natural seedlings.

I can hardly imagine the spring without a host of lilac-blue flowers of our native, too well-known *Soldanella montana*. It can be found in the Šumava Mountains in west Bohemia. No matter how cold the winter the plentiful blossoms arising from the clumps of dark green glossy rounded leaves warm the heart of every gardener. Only the late frost in spring can cause damage to the blossom. This plant prefers a position in light shade and in rich leafy humus soil without lime but I have seen it growing in a woodland on a dry and meagre soil. I grow it in a sunny position situated to the north. It is easy to propagate by division.

For a long time I have wanted to get the American pink flowered Douglasias. I managed to obtain seed of *Douglasia laevigata* and to raise plants from it. I was afraid of losing them when planting them outside. I kept the plants in a frame, but one of them I planted on a place facing north where it was shelted from direct sun. To my surprise this plant is doing better in the open than those kept in the pots in a frame. Apparently it appreciates a spot away from direct sun with fresh gritty soil rich in humus and peat which I prepared for it by chance. The plant has survived two winters and flowers freely in spring and often in summer once more.

The well-known *Leontopodium alpinum,* which is certainly a gem in the wild, in the Alps or in our High Tatras in lowland loses its compact and woolly habit in cultivation. In spite of it *Leontopodium nivale* from the Caucasus retained its woolly appearance in the rock garden. It should be grown in a well-drained calcareous soil or better still on tufa. It needs protection from too much rain in autumn and in winter.

Although Campanulas are generally easy in the rock garden, some of them are not without problems. I have tried to raise from seed the American species from the Rocky Mountains *Campanula piperi* which I have grown on tufa, but it was not long-lived with me. I was more successful with *Campanula zoysii*. This species has two great enemies – winter moisture and slugs. Don't hesitate to try it on tufa. From the creeping stolons running underground between gravel and stones there rise new plants so that if not eaten by slugs there develops in a short time a beautiful carpet full of bluebells of unusual shape. Gardeners know that, if there are no pollinating insects, pollination may be carried out by opening the flowers and using a brush. I tried it but without any success. I grow this lime-loving plant in a container filled with broken-down tufa which is inserted in a frame.

Hairy and woolly plants with grey-green foliage are of great interest for the gardeners in our country. One lovely member of them is *Verbascum dumulosum* from Asia Minor. I did not dare to place this plant in the open having only a single plant, but I was told that it does well in

full sun and a well-drained position. I am going to try it because the roots are now running through the holes of the container.

As I am interested in ferns too, I should like to mention two of them. *Osmunda cinnamomea* is very hardy and doesn't suffer from winter moisture. Its first period of beauty is in spring when rather white woolly fiddle-heads arise from the ground. They must be protected from the birds which tear them away for building their nests. The second period of beauty is in summer when the fertile fronds are ripe. They turn to cinnamon brown whereas the barren fronds are bright green. Finally in autumn the whole plant becomes a beautiful bronze in colour.

The Woodsias, mainly *W. alpina* and *W. ilvensis,* are said to be difficult to grow in the rock garden. The plants hate having the rhizome and roots in mud during the winter. I spread the roots out on a flat stone and lay another stone with a flat bottom on it. Between the stones there is only a very little leaf mould. In this way the rhizome is sheltered during the winter. Both species *W. alpina* and *W. ilvensis* withstood the winters well without any other protection.

Capillary beds and benches

One of the major problems facing people who use capillary beds and benches is the unsightly growth of mosses, algae and liverworts. A new product to control these growths has now appeared on the market. It is Gloquat 'C' from Flowering Plants Ltd of 55 Well Street, Buckingham. Control lasts for 8-10 months and the product is cleared under the Pesticide Safety Precautions Scheme.

Shrouded in fog

Work in France has shown that the use of fog instead of mist has proved successful in producing a high percentage of rooting over a wide range of species when used in conjuction with bottom heat. Fog keeps the humidity higher than mist and the leaves are not over-wetted. It is suggested the lower light levels in the fog aid rooting.

The main difference between mist and fog is that in the former the droplets are 100-120 microns diameter while in the latter they are only 10 microns.

Serendipity

MAXWELL CLARK

SERENDIPITY is defined as the faculty of making happy chance finds. One of the joys of gardening, particularly 'rock' gardening in its many aspects including peat, bog and wild gardening, is the finding of self-sown seedlings. To that can be added the joy of finding something unexpected in a batch of seedlings from sown seed.

There are the odd occasions when an unknown seedling appears and it is gently nurtured until it either turns out to be a weed, albeit an unknown one, or, joy oh joy, it turns out to be an 'alpine'. Great is the thrill of watching it grow and flower. The final result is usually disappointing as yet another pale-pink Lewisia or muddy-purple Primula unfolds. Any plant breeder will tell you that he casts out thousands of poorly-coloured seedlings until he gets one that is worth keeping.

Just occasionally a seedling shrub appears from nowhere in the garden. This happened a few years ago in my garden. I had been growing a number of Rhododendrons from seed I had received called 'mixed dwarf Rhododendrons'. Quite a number had grown and flowered being mainly *R. lapponicum* types but there was one rather nicely coloured *R. hirsutum*. Admiring it one day, I noticed another Rhododendron tucked in underneath its branches. I quickly took it out and planted it in a place of its own. The next year it produced large fat flower buds which opened out in May into large waxy, dark-red crimson flowers of real beauty (Fig 87). The leaves were dark-green and glossy and the flowers over an inch across. The leaves suffered scorch out in the open and the bark tended to split so that the plant was then brought into the alpine house.

Since there are already thousands of named varieties of Rhododendron and since this plant is obviously not completely resistant to winter blast and cold there was no point in naming it. Nevertheless it was a pleasant chance find and served to make me more alert to other seedlings that might pop up and to variation within batches of seedlings. Just for interest I tried to identify the seedling. It obviously belonged to the *Neriiflorum* series and probably to the *Sanguineum* sub-series. At that point further search seemed pointless particularly in view of the remarks made by Peter Cox in Dwarf Rhododendrons (page 141) – "Of all the groups of Rhododendron species this is perhaps the most confusing. No one really knows where one species begins and another ends and what or which are natural hybrids".

The new alpine display house at the Royal Botanic Gardens, Kew

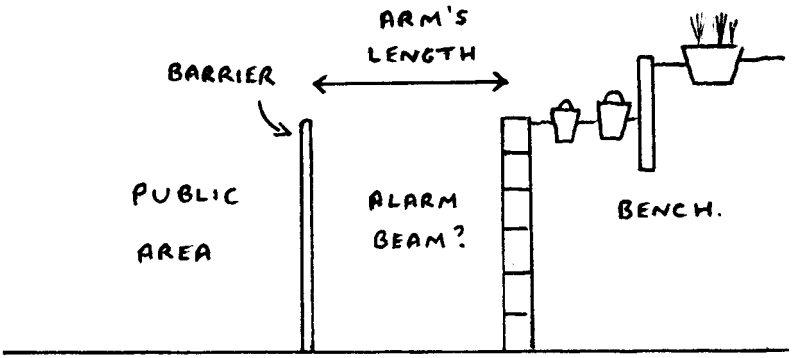
MIKE and POLLY STONE

WE HAVE to confess that, although alpine gardening has been a major factor, nay obsession, in our lives for over 10 years, we had not visited the Royal Botanic Gardens at Kew until the summer of 1983. Foremost in our deciding to make good this deficiency in our education was a desire to see the new alpine house. In order to place this house in perspective, it is first necessary to consider the function of an alpine house in a large public garden. It is not simply a well-ventilated glasshouse for the growing of those 'alpines' which are not entirely satisfactory in the open rock garden; it must also display these plants to the general public who visit the gardens. The traditional answer in providing the public with a 'good show' can be seen at the RHS Gardens, Wisley. Here alpines are grown in pots in an extensive range of frames, and transferred to a conventional low-ridged house as and when they flower. One has to admit that while *Primula allionii*, say, is magnificent for one month, it is pretty boring for the other eleven. The only differences from the normal private alpine house lie in the larger size and in the much wider central path to allow for easy circulation of visitors. This present house runs down a slope and, to allow for a level floor, steps are required at both ends. The RHS clearly consider access important as they are planning to replace this aging house with a new one to run across this slope. This will permit level entrances negotiable by wheel-chairs. We were told around 10% of the visitors to Wisley are handicapped.

And what of our own Royal Botanic Garden at Edinburgh? It is very surprising that a garden with such a high reputation for alpines should have lacked the provision of any public alpine house until the mid-1970s. Alpines were displayed in the rock garden; woodlanders and the like in the famous peat-beds. Alpines were grown in pots, of course, chiefly by the propagation department. Very few were retained in their pots as specimen plants, apart from bulbs grown in frames.

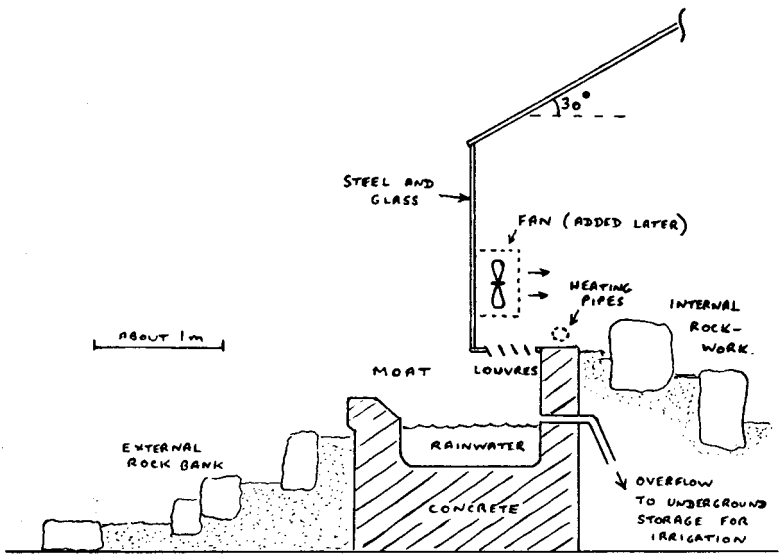
When resources were allocated for an alpine house and associated frames, the layout was largely dictated by the nature of the site, freed by demolishing existing old plant houses. Many members will be familiar with Edinburgh's alpine house; but for those who are not we include a

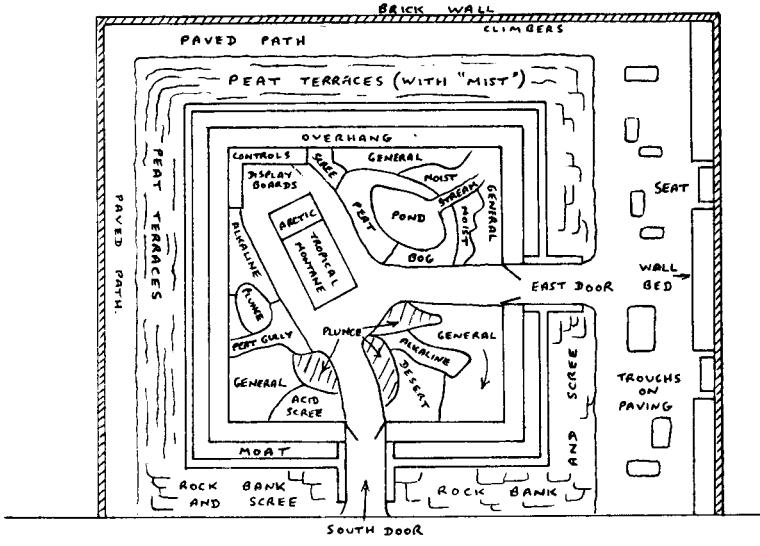
brief description. The area made available was rectangular, with a raised bed separating one of the longer sides, the south, from a lawn. The alpine house lies east-west along the centre third, with troughs attractively grouped on the paving to the west, and supporting frames in the eastern third. The house itself is a thoroughly traditional low-span wooden structure with full side and ridge ventilation, mounted on brick-built, dwarf walls. Further frames are constructed against both sides. When we last saw it, that to the south contained a linear tufa outcrop in full sun, while that on the shady north contained plants preferring protection from the sun. Some of the latter were in plunged pots, others planted directly into peaty compost. Inside the house has, like Wisley's, a wide centre aisle; and also a feature absent from the RHS alpine house, wire mesh security grills protecting the benches. However much one may regret their intrusion, impeding a clear view of the plants, they really are necessary. It isn't simply that plants are stolen; children's fingers find Draba and Androsace irresistible, and 'eyes' are found indented into their cushions. A solid transparent barrier is out of the question, it would obstruct free movement of air. The only other solution we can think of is to place the benches out of reach.



Instead of viewing the plants through a grill, one sees them clearly, but at a distance; swings and roundabouts. An even wider house would add to the cost. One of the limitations of the Edinburgh house is that it has to serve both functions mentioned above; growing and display. They could really do with 2-3 times the area in support. Owing to the financial climate one cannot see this being made available in the near future. However, as presently constituted, the area does serve as an excellent model for the amateur, who may well have a similar size and shape of site available. The only thing missing is the potting shed, which at Edinburgh is elsewhere.

Whereas the Edinburgh layout epitomises all the good points of the conservative approach, that adopted by Kew is nothing if not radical. There has been an alpine house at Kew since 1887. The original house, reconstructed and enlarged in 1938, is still in existence. A normal low-ridged wooden structure, it measures 12m long by 3.5m wide. Perhaps a little narrow for a public house, it was clearly becoming inadequate during the mid-1960s. By then it was open all the year, the necessary plants being rotated from a nearby frameyard as and when they flowered. Although these support facilities were still available when a project for a new larger house was mooted in the early 1970s, it was decided to break with tradition and adopt permanent plantings in a rock garden under glass. Not that this method of growing is in itself new: Dwight Ripley, an expatriate American, had a limestone cliff inside a glasshouse in his garden in Horam, Sussex, during the 1930s. There are probably even earlier examples to be found. Nevertheless, the layout chosen for the new Kew house does have a number of unconventional features.



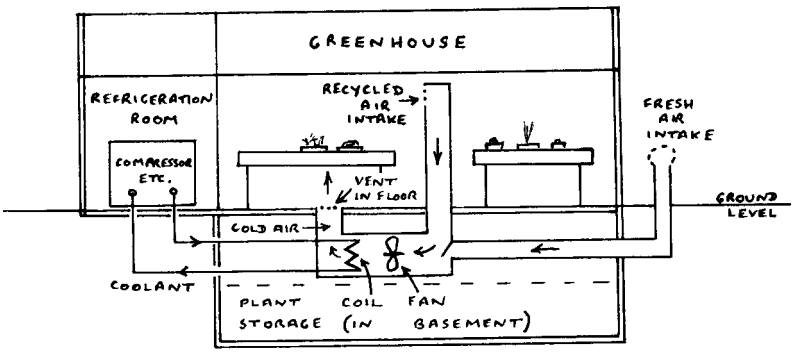


First, and most obvious, is the adoption of a 14m square groundplan, in place of the usual long rectangle. Secondly, the glass superstructure is in the form of a box on which is a regular pyramid pitched at 30°, reaching 7m high at the apex. This shape uses less glass than the normal span roof with flat ends and so is cheaper and admits more light. The superstructure is of galvanised steel, with aluminium glazing bars again helping light. Certainly when we visited it, the light level inside was impressively high and the shape seemed to fit naturally onto a square base. The architect's brief called for the collection and storage of rainwater and also a solid peripheral wall to support banks of rockwork both inside and outside the house. These two features have been combined in a moat between two parallel basal walls, really an oversized gutter. The superstructure overhangs the moat. It was hoped that the rainwater would moisten air entering the house through louvres at the bottom of this overhang. Main roof ventilation is provided by three rows of motorised ventilators on each face, totalling fully 55% of the roof surface area. Operation is automatic with internal temperature and external wind and rain sensors.

Turning now to the internal landscaping and referring back to the plan, we see that a variety of habitats has been provided. The rock banks are all constructed of Sussex sandstone, the alkaline condition in certain areas being produced by limestone chippings. Apart from the plunge areas labelled as such, some additional pot-plants are plunged into the peat area by the pond. However, the total plunge area is less than one fifth of the total. When we visited Kew it was late August, scarcely the best time but there was still plenty of interest. A magnificent *Phlox nana* showed its appreciation of permanent planting, by spreading a floriferous carpet over 1.5m across rocks above the peat gully. Over on the other side, by the waterfall, it was balanced by an equally large mat of an undescribed pink mimulus from a Cheese and Watson collection known in the trade as 'Andean nymph'. Nearby *Raoulia hookeri* var *albo-sericea* formed a silver skin across the rockwork. Around the pond were some interesting Tasmanian plants, like *Prionotes cerinthoides,* which we hadn't seen before. Also new to us were a number of xerophytes, mostly cacti or succulents, planted in the desert area. Many alpine growers will turn up their noses at such plants in an alpine house, but Kew must cater for all tastes. After all, many are true alpines, occurring at well over 10,000ft in the Rockies and totally frost hardy if dry. Also here were some well-flowered young plants of *Townsendia montana,* testifying, with their short stature and rich colour, to the high light level within the house.

Everyone knows that the term 'alpine' is a rather loose one, covering dwarf plants originating in a wide variety of habitats. However, the vast majority of the good garden plants amongst them are native to the temperate mountain ranges of the mid-latitudes. On the other hand, there are two areas from whence the plants have proved far less tractable, the high arctic and the summits of tropical mountains. This is no accident; in these latter regions the growing conditions differ far more drastically from those in our lowland gardens. Arctic alpines experience a very short growing season with almost continuous daylight, followed by a long, dark winter under snow. Even in summer the soil temperature will be low with perhaps permafrost underneath. At the other extreme, on equatorial mountains there is very little seasonal variation. This environment has been described as "summer every day and winter every night." Any day may be hot; and radiation frost can occur at night throughout the year.

With their interest in the flora of Greenland, it is natural that the Danish Botanic Gardens in Copenhagen should pioneer the use of an artificially cooled greenhouse for the cultivation of arctic plants. Built around 1960, the necessarily large refrigeration plant is installed in a separate room at one end of the greenhouse.



A simplified diagram shows the system adopted. The greenhouse is double-glazed and additional cold air from the basement is vented between the layers of glazing. The air in the house proper is changed once every two hours, fresh air from an exterior intake replacing losses through conventional ventilators. The greenhouse is divided into two sections with maximum day temperatures in summer of 9° and 16°C. During the winter the plants are moved to the basement and maintained at around −6°C. They are covered by two layers of plastic sheeting to maintain the humidity (sic) found under snow cover – so much for the "dry blanket of snow" theory. In May they are returned to the house, where eight 400w mercury vapour lamps are used to extend the photoperiod, simulating the arctic summer.

At Kew a simpler system has been adopted which seeks to cool, not the whole house, but only the root zone of the plants. A large refrigerated plunge bench occupies a prominent position in the centre of the new alpine house. It is divided into two unequal halves as shown in the plan. As at Copenhagen, arctic plants are kept in cold-store for the winter, then transferred to cooled sand plunge during April. A high pressure sodium lamp extends the daylength progressively as summer

advances, to a maximum of 23 hours. When we saw it, *Epilobium latifolium* (the Arctic fireweed) was flowering magnificently.

At the other end of the bench, the equatorial alpines stay in position all the year. In their native habitat, the air temperature varies widely over a 24 hour period, but the thermal inertia of the soil evens out these short-period fluctuations, producing a much smaller variation of temperature in the root zone. The overhead lighting at this end is used in dull weather and maintains a 12 hour daylength in our winter.

The sand plunge here is kept to a maximum of 20°C during the day, falling to 5°C at night, thus providing the necessary diurnal rhythm. All the plants here were unknown to us, but growth seemed very healthy on the vast majority. We do have reservations, however, about the siting of this bench. A large metal box with prominent overhead lighting, in the middle of rock banks, stands out like a sore thumb. We feel that it would have been better placed in a separate greenhouse.

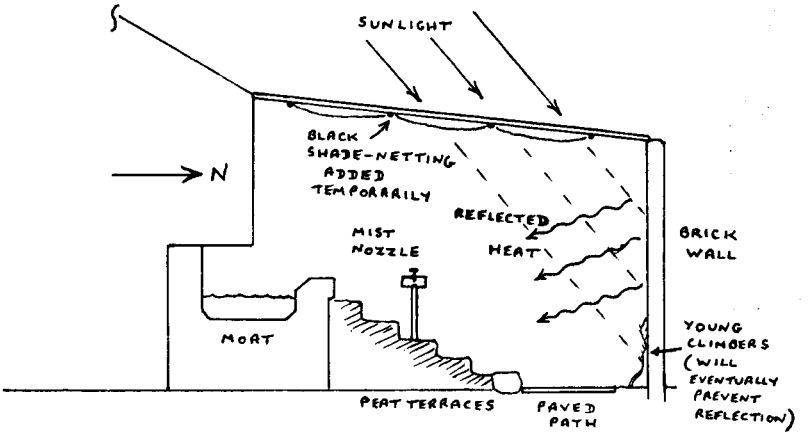
While on the subject of artificial climate modification, we must admit to a slightly uneasy feeling about this whole 'hi-tech' approach. There are some who disagree. Writing in the Alpines '81 Conference Report on 'The Introductions and Maintenance of New Plants', Jim Archibald turns to the Nototriches of the Andes of Bolivia and Peru. That comprehensive cataloguer of South American alpines, Samson Clay, describes briefly many beautiful members of this genus, some of which bear mallow-like flowers up to 5cm across on tight hairy cushions. They sound superb, but Jim Archibald pessimistically suggests our whole concept of cultivation must change in order to grow them successfully. He goes on to say that it is fortunate that we, the growers, have not yet had the opportunity to waste a collector's time and effort by failing. Further, in this context he believes that the conventional alpine house is clumsy and outdated and should be replaced by a phytotron, or growing room, with full automatic control of temperature, humidity and illumination. Personally, we find this solution as totally unacceptable as the traditional zoo. The only possible justification for either is the propagation of species endangered or extinct in the wild. Growing rooms indeed! One might as well preserve one's alpines as specimens in amber. If a plant cannot contribute to our garden, then we're sorry but we wouldn't ask any collector to spend time seeking it.

For a collector to expect that gardeners should drastically alter, not only their cultivation techniques, but also their whole concept of what is a garden, is to allow the tail to wag the dog with a vengeance. Such considerations do not apply to Botanic Gardens. They are in the business of maintaining as compehensive a sample of all the earth's

vegetation as possible. Artificial techniques, such as Kew's new growing bench, are quite justified in the context of the Royal Botanic Gardens.

Externally, the Kew alpine house is surrounded on three sides by a 2½m brick wall. Moving outside through the east door, we enter a paved area, where groups of troughs have been arranged. Tufa has been used on some to construct the outcrops; here we noticed particularly a cushion of *Acantholimon diapensioides,* so tight that it resembled a *Kabschia saxifrage*; and a very compact *Lupinus lyallii.* On the south and east sides of the house, additional rock banks of Sussex sandstone have been built against the outer wall of the moat. *Campanula piperi* was running freely between the blocks as it does in its native Olympic Mountains. The true *Globularia repens* with its tiny narrow leaves had formed a healthy mat, preferring to grow over a rock.

On the north and part of the west sides, the enclosing brick wall is much closer to the moat and the narrow partly-shaded corridors are utilised for peat-walls. Peat blocks replace the sandstone, for terracing against the moat and overhead mist nozzles provide the necessary humidity. Their success can be gauged by the happy growth of one of our old friends: *Polytrichum commune,* the 'hairmoss'. Although the north corridor is in the shade of the alpine house, during the hot summer of 1983 the brick wall opposite reflected heat onto the peat-bank causing problems of scorch. As a result overhead shading was provided.



It's an ill wind as they say, and the warmth had produced a huge crop of red fruits on a plant of *Cornus canadensis*. By way of contrast, *Gaultheria hispida* and *Sorbus poteriifolia* (Pygmaea hort) displayed their glistening white berries. A huge *Celmisia munroi* showed its appreciation of the conditions; it is not usually an easy plant at Kew.

Like any other innovative structure, the Kew alpine house had its share of problems. The Severn suspension bridge is a topical example of going perhaps a little too far, and ending up with more than just teething troubles. Surprisingly for a house with such a large area of ventilators, there have been problems in obtaining adequate air movement. A layer of turbulent air forms in the apex of the pyramid, preventing hot air from rising and escaping. Large fans have had to be installed in the side panels, blowing air into the house, and forcing the expulsion of hot air. A friend has suggested to us that the small surface area of water in the moat cannot really have much effect on the moisture content of air entering the louvres. One wonders whether any experimental measurements have been taken. Now that fans are in use, it should be easily possible to add some form of humidity screen. The water collected in the moat is open to the air; and growth of algae has been a problem. The only permanent cure is the exclusion of light, so we have come up with this suggestion.

The air passes along the length of the moat, picking up moisture, before exhausting to the house.

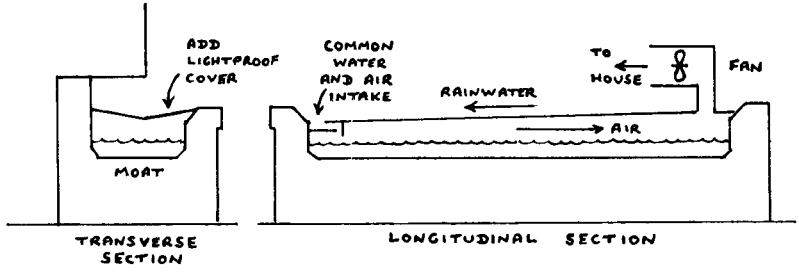


Fig 96 *Aster alpinus* (see page 37)

Fig 97 *Rhododendron ferrugineum* (see page 37)

No provision has been made for any form of shading, since it was felt that the size of the house precluded it. In a normal year it may well be totally unnecessary, but in the very hot summer of 1983 there was some damage. *Primula reptans* and *Saxifraga stolitzkae* were scorched, even though they were plunged in the refrigerated bench.

Finally we understand from Brian Halliwell, the Assistant Curator in charge of the alpine house, that the architect overlooked the possibility that panes of glass do break on occasion. When we visited, they were still considering how staff could gain access to the roof, should the need arise.

Comparisons are said to be odious, a sentiment with which we would not generally agree; context must be considered. Whenever one makes any value judgment, one is making a comparison, either directly, or against some hypothetical absolute standard. Thus when assessing the new alpine house at Kew, one must consider the alternative possible methods of interesting, and hopefully inspiring, the general public. Whatever the merits of the conventional alpine house as an environment for growing plants, there is no doubt that it has a few drawbacks from this point of view. No matter how fine the individual plants, they cannot look their best caged behind security grills. On sunny days the claustrophobic feel is enhanced by the necessary external shading. This is not intended as a criticism of Edinburgh; we are very proud of our 'Botanics' record in the cultivation of difficult alpines. Theirs is primarily a growing alpine house to which the public are allowed access.

At Kew the emphasis is slightly different. Their alpine house is a brave attempt at a more attractive method of display. It is open, light and airy and one can move freely. This, combined with the rockwork in place of pots, gives much more of the feel of the mountains. Security is catered for by a closed-circuit TV system. The house may have a few teething troubles, and possibly cultural penalties, but on the whole we feel that it succeeds in its primary function. This is to inform and educate the non-alpine specialist, encouraging him/her into our ranks; while at the same time providing stimulus for the enthusiast. If you are ever in London, go and see it. You may love it, or hate it, but it demands careful attention.

Letters to the Editor

Poisonous nectar

Station House, Achnashellach,
Strathcarron, Ross-shire.

Dear Sir,

Anne Chambers' article on poisonous nectar from rhododendrons interested me particularly as a bee-keeper living amongst hundreds of acres of *Rhododendron ponticum*.

The flowers are often loaded with nectar and much visited by bumblebees, and even occasionally tasted by myself without ill-effect. But, curiously, honeybees have never been seen on the flowers, even when there is not much else about. Possibly the nectar is just too thin here to attract them. Neither has there ever been a sudden dimunition of bee numbers in the hives at flowering time which one might expect if the bees were susceptible. One wonders anyway what survival value there is for the rhododendron in poisoning its pollinators. We can probably assume that British honey at least is safe to eat.

However, in view of Anne Chambers' well authenticated cases of poisoning by honey one wonders under what conditions this occurs. Is it the strain of honeybees, the species of rhododendron, or weather conditions? Why were Xenephon's soldiers affected while the villagers presumably were not? Or are we all being fooled by the long arm of coincidence?

Not really a subject for discussion in *The Rock Garden*, perhaps.

I would like to add how much I enjoy *The Rock Garden* – I find the AGS Journal a bit dull!

Yours sincerely,
P. H. Hainsworth.

16 Hamesmoor Way, Mytchett,
Camberley, Surrey GU16 6JG.

Dear Sir,

I was intrigued by the somewhat startling article; 'Warning – Rhododendrons may damage your health!' in the latest issue of *The Rock Garden*.

Perhaps the following note may be of interest:

While my wife and I were staying at the Paltinul Hut at Bilêa Lake in the Făgăras Mountains of Romania a large force of soldiers were building a road through the mountains there. One of the officers instructed some of the soldiers to gather large baskets of rhododendron flowers (*R. myrtifolium kotschyi*) so that the 'housekeeper' at the Hut could make 'tea' from them, apparently a common practice in these parts.

This was done in two ways, by preparing an infusion from the dried flowers and by making a 'syrup' from the flowers which could be used when required by adding hot water.

My wife and I and some Romanian friends sampled tea made from the syrup and found it very pleasant and refreshing.

We suffered no ill-effects.

Yours sincerely,
Gilbert Barrett.
PS Congratulations on the 'new look' Journal!

Primula petiolaris

Springhill, Ballater.

Dear Sir,

I was interested in the note on *Primula petiolaris* in *The Rock Garden*. The description (by Ian Douglas) does not fit the description of the plant I have which the late Mrs Sherriff gave me just after Major Sherriff died. This is a more vigorous plant than the one described with longer pointed leaves. The flowers are borne profusely, of a violet-pink colour with snow-white centres. There should be no difficulty in identifying this plant from any of the other petiolarid primulas as it is the last to flower of the genus, usually coming into flower from mid-April onwards.

The plant Mr Douglas writes about (I may be wrong of course) could be the very first plant Ludlow and Sherriff collected, L&S1, which was thought to be *P. petiolaris* when first introduced in 1886. This plant I had from Major Sherriff, who was doubtful about its being the true *P. petiolaris*, and suggested it was *P. gracilipes minor form*. We distributed it under this name for many years from Edrom where it was a very easy plant to grow and propagate. Both plants are very easy to increase from leaf cuttings. We never bothered with seed.

Last autumn I lifted a plant of *P. petiolaris* to divide it and several leaves broke away. I inserted these into a sand/peat mix and when I looked again at the end of February they had produced a fine crop of small plants. The smaller type is also easy to propagate from leaves.

I grow *P. petiolaris* (from the original Sherriff plant) on a north-facing bank and it flowers in late March. The site was previously a Scots pinewood cut down during the 1914–18 War. Jack Drake purchased the plant from us after seeing it on our stand at the Glasgow SRGC Show and sold it as *P. petiolaris*.

[After describing the collecting, growing and eventual identification of *P. gracilipes* Mr Duguid goes on to say –]

Mrs Sherriff assured me that the plant she gave me was the true *P. petiolaris*. I can find no trace of it in Ludlow and Sherriff's 'A Quest for Flowers'. It must have been collected as a living plant during their final trip. Certainly it grows freely at Ascreavie as I have seen it growing there in the primula collection. Planted at Edrom in similar conditions it grew just as freely with a marked difference as to the time of flowering. The smaller plant, *P. gracilipes minor,* flowered early February-March-April. *P. petiolaris* never flowered before mid-April and was a more vigorous plant with larger leaves and more open growth.

Yours sincerely,
Alex Duguid.

Celmisia hectori

Beech Park, Clonsilla,
County Dublin.

Dear Sir,

I noticed in *The Rock Garden,* Vol XVIII, Part 4, three notes on Celmisia.

1. *Propagation of C. hectori*
   This is an easy plant to grow under moist conditions and it roots easily in sandy peat in June/July with heel cuttings in a cold frame.
2. *Number of species*
   Another article mentions that there are only 12 species grown in the UK. There is a grower in Newcastle-on-Tyne who has over 30 species as I do myself.
3. *Germination*
   I find hand-sown seed not easy but certain species such as *C. coriacea, C. spectabilis* and *C. incana* seed themselves freely and hybridise. Often in a wet autumn you see the seed germinating in the seed head.

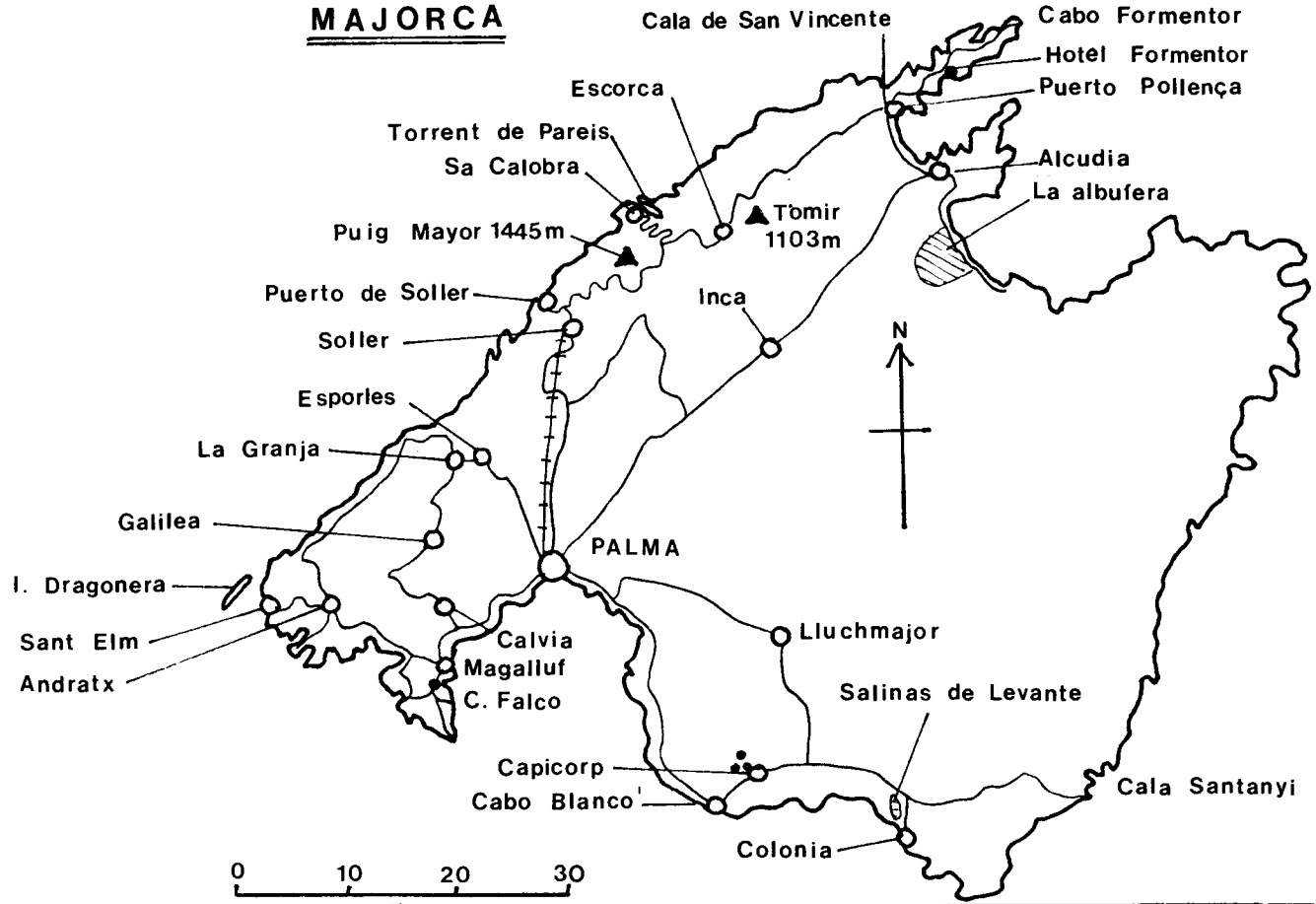
Yours sincerely,
David Shackleton.

Spring in Majorca

CHRIS and MARIE NORTH

MAJORCA, called Mallorca by its inhabitants, has spectacular mountain scenery along the north coast, some fifty endemic plant species and is of special interest to bird watchers. The natural history of the island has been intensively studied and there are several accounts of the flora, some of which have been referred to in our brief article on Minorca by North and North (1983). Much of this literature is in French or Catalan so, for many British enthusiasts, the section on the Balearics by Polunin and Smythies (1973) is likely to be the most useful reference. Nevertheless the small book in Catalan by Bonner (1977) has helpful line drawings and photographs, is inexpensive and well worth having even if one cannot understand all of the text – we purchased ours at the Monastery of Lluc near Escorca. The most extensive and up-to-date scientific treatise on the flora is the recently published book in four volumes by Bonaface (1980) but it also is in Catalan. Opportunities for bird watching on the island are well described by Watkinson (1978) in a booklet available on the island. In additon to being an 'essential' for bird watchers, it gives notes on the sites for some plants, especially orchids, and many useful tips and maps showing how to get to the most interesting areas. Eddie Watkinson refers to a book by J. D. Parrack called 'The Naturalist in Majorca', publishers David and Charles. It deals with all aspects of natural history including the flora, butterflies and other insects but unfortunately we have been unable to locate a copy.

We stayed at Magalluf on the west coast for a month from 7 March to 4 April. Although this is a crowded tourist centre there are interesting plants to be seen nearby but most of the endemic species have to be looked for in the north of the island which is the best place to see birds. Our choice of venue was determined solely by an exceedingly good value winter package holiday offer. However, our plant hunting was not unduly hampered by staying at Magalluf for we hired a car, as would have been necessary wherever we had stayed, and travelled fairly extensively (see map on page 68). For anybody especially interested in birds, somewhere in the north near Puerto Pollenca or Alcudia would be a better place to stay and a base on the south coast probably should be avoided as it would be more difficult to visit the best areas for both


MAJORCA
Cala de San Vincente
Cabo Formentor
Hotel Formentor
Puerto Pollença
Escorca
Torrent de Pareis
Sa Calobra
Alcudia
La albufera
Puig Mayor 1445m
Tomir
1103m
Puerto de Soller
Inca
Soller
N
Esporles
La Granja
Galilea
PALMA
I. Dragonera
Sant Elm
Andratx
Calvia
Magalluf
C. Falco
Lluchmajor
Salinas de Levante
Capicorp
Cabo Blanco
Cala Santanyi
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plants and birds from there, although there are said to be some interesting areas of the garrigue in the south-east of the island.

Magalluf is very much of a seaside tourist centre but within easy walking distance of interesting countryside. At a small place called Sa Porassa there was a neglected field full of asphodel which interested us because 'sa porassa' literally means the asphodel in the local Catalan dialect – 'sa' or 'son' is presumably the definite article. However, the name really refers to *Asphodelus aestivus* which also grows on the island whereas the plants in the field were *A. fistulosus*. This last species is said to be the 'asphodel' of the Elysian fields of the dead in Greek mythology and it is interesting to surmise that the belief may have arisen because it is one of the first species to colonise neglected fields such as may have arisen when isolated village communities had died suddenly through disease or from pillage. It is a delicate and rather beautiful plant when examined closely. With it grew *Anthyllis tetraphylla*, a common Mediterranean legume with prostrate branches and heads of small yellow and white 'pea' flowers having swollen calyxes.

By the roadside grew the two common Mediterranean thistles *Galactites tomentosa* and *Silybum marianum* and some plants of the tall, stately, thistle-like cardoon *Cynara cardunculus*. Another composite found here was *Urospermum dalechampii*. Farrer deigns to mention it though he tends to damn it with faint praise by saying that it "is a plant of furnishing value rather than choice charm". It is, in fact, in the wild a rather refined-looking and beautiful hawkweed with large pale yellow flower heads. There were stands of the vicious roman nettle *Urtica pilulifera* and on the edge of a field we saw *Remeria hybrida* which is a kind of cornfield poppy with mauve instead of red flowers. Climbing on a stone wall was *Clematis cirrhosa* with creamy-white bell-shaped flowers, a species which more usually blooms in January. In a copse near the golf course, growing with *Pistacia lentiscus*, was *Anagyris foetida* – a bean-like poisonous legume with yellow flowers and an objectionable smell. Aleppo pinewoods near the golf course sheltered several orchids; *Anacamptis pyramidalis*, *Ophrys bertolonii*, *O. fusca*, *O. sphegodes atrata*, and *O. tenthredinifera*.

Taking the road southwards from the golf course, past carob orchards where there was much *Anthyllis cystoides* as undergrowth with *Cistus albidus*, one comes to the holiday village of Portals Vels. The road passes through typical garrigue where the main shrub species included:

Cistus albidus
C. monspeliensis
Fumana ericoides
Globularia alypum
Myrtus communis
Phillyrea angustifolia
Pistacia lentiscus
Olea europaea sylvestris
Ruscus aculeatus
Teucrium polium

The *Globularia* is a rather tall-growing species with fine heads of powder-blue flowers. Presumably it is not hardy or it would grace our gardens. There were a few plants of the uncommon small shrub *Cneorum tricoccon* which is not particularly decorative but distinct with small greenish-yellow flowers followed by three-lobed fruits which change from green to red and then black as they ripen. It is a member of the *Cneoraceae* which embraces only two species in a single genus; the other is a native of the Canary Isles.

Amongst the shrubs were a few good specimens of *Ophrys sphegodes atrata* and *Muscari comosum* and by the roadside we were surprised to see small plants of *Blackstonia perfoliata* – pitiful specimens when compared with those that grow on the Berkshire downs at home – probably the sub-species *serotina*. Here also grew mats of the beautiful *Fagonia cretica* with magenta flowers that resemble those of a potentilla though it is not related to that group of plants. Well hidden amongst the neat foliage there are sharp thorns which become evident when one handles the plant.

On one occasion we took the road south from Magalluf and walked towards the coast. Forcing our way down through a thicket of young Aleppo pines we were nearly choked by the pollen and emerged dusted with gold. Eventually we came to a quiet secluded bay near Cabo Falco and here in the sandy soil were two flowering plants of *Dracunculus muscivorus*. This was formerly called *Helicodiceros muscicorus* or *Arum muscivorum*. It is an uncommon plant found also in Corsica and Sardinia and fairly widespread in Majorca but it rarely produces flowers. The foliage is of considerable 'architectural' interest with long, narrow lobes that cross each other in a fascinating way. The inflorescence has a rather lurid, dirty-mauve spathe, which is hairy on the inside, and the spadix has long bristle-like appendages. It does not stand upright as with *Dracunculus vulgaris* but bends over at right angles to give the impression of a gaping mouth when seen from the horizontal. Of course, it has the usual disgusting smell of its kind and is generally spoken of in derogatory terms but we thought it was fascinating and were delighted to see this rare plant in flower.

On the north side of Magalluf there is some fairly tall garrigue approaching maquis with pinewoods in places and here grew the unusual *Lavandula dentata* along with the French lavender *L. stoechas*. There were flowering plants of *Orchis tridentata*, probably the sub-species *O. lactea*, and the small 'weeds' such as *Heliotropium europeum*, *Valerianella vesicaria* with its small round balls of fruits and *Antirrhinum orontium*.

Our first car trip on the island was north-westwards out past Andratx to Sant Elm. Here was rough country with a good view over the Isla Dragonera and in the turf grew the European palm *Chamaerops humilis*.

It is found in the four main Balearic islands but is localised and chiefly grows in coastal areas of Majorca – the most westerly, northern and eastern extremities. As usual, at Sant Elm it formed matted scrub which was difficult to walk in because of the spines on its petioles but later, near Hotel Formentor in the north, we saw it as undergrowth in pinewoods where it developed into typical small palm trees 1-2 metres tall. In former times its leaves were much used locally to produce fibre for rope making.

Another sortie was made via Calvia, Galilea, La Granja, Esporles and back via Palma. Near Calvia there are orchards of almonds, peaches and carobs and it was the abode of many hoopoes. Their call is very evocative when heard individually and has a curious ventriloquistic effect but it is somewhat annoying when many sing simultaneously – like a chorus of cuckoos! However, we saw many plants of the giant orchid *Barlia robertiana* in flower which helped us to forget our irritation. By the wayside grew the charming, though common, *Arisarum vulgare* and some were fruiting with the stalk bending down into the ground like a cyclamen – a feature of the plant which we had not previously noted. Further along the road, on rocks near Galilea, grew the attractive gorse-like *Genista anthoclada* recognised by some as an endemic form *balearica*. There were moist areas past Galilea with the large-flowered celandine *Ranunculus ficaria ficariiformis, Vinca difformis, Allium triquetrum,* and a very good form of *Allium roseum* with particularly large shell-pink flowers. At La Granja there is an interesting museum of old carts, tools, farm implements and weaving machinery housed in a palace-like building put up by the Moors. The site includes delightful gardens where aspidistras and other exotic plants grow outside in profusion irrigated by canals fed by a huge water jet spouting from natural artesian pressure. One has to pay for entry but, once inside, there are unlimited free drinks from barrels of a selection of local liquors. We made the trip more than once, not to go again to La Granja, or to enjoy the free drinks, but to visit the small town of Esporles for which we acquired a special affection. We sat there in the sunshine drinking coffee and enjoying the very high-class cream cakes available at a local shop.

A longer trip from Magalluf was to the south of the island at Colonia and Cala Santanyi, going via Cabo Blanca and returning through Lluchmajor. Our main goal was the salt pans at Salinas de Levante near Colonia, where we hoped to see interesting birds, but this was rather disappointing for the wind blew hard and there was poor visibility and much blown spume at the salt pans. The only birds of interest were a few stilts. However, on waste land near Arenal on the way out we

noted very good stands of *Bellardia trixago* and the fascinating squirting cucumber *Ecballium elaterium*. In sandy areas near the salt pans grew *Ophrys bombyliflora* and a form of *Ophrys speculum* which was more vigorous and taller than usual and had a rather narrow, elongated lip; it resembled the sub-species *O. lusitanica* found mainly in Portugal but with the side lobes less developed. Another plant near here was *Linaria triphylla*, a chubby annual toadflax with glaucous leaves and pale yellow, orange, mauve or tricolour flowers. There were good groups of *Arum italicum* in flower accompanied by *Calendula arvensis* and the charming small daisy *Bellis annua* with pale, mauve-pink flower heads. A bonus to the trip was the unexpected sighting of quite extensive ruins of a neolithic village near Capicorp. Individual dwellings of this era are found in many parts of Majorca and Minorca but we had never seen anything comparable on this scale before.

The most interesting part of the island is undoubtedly the mountainous region along the north-west coast. The mountains rise here to 1,445m at Puig Major which is slightly higher than Ben Nevis. These impressive limestone hills attract much of the precipitation from the water-laden north-west winds and thus enable much of the rest of the island to enjoy the sunshine for which it is well reputed. One can cross the mountains by taking the narrow-gauge railway from Palma – an experience well worth while. The line stops at Soller but, with a through ticket, one can continue by open tram between the picturesque orange orchards to the port of Soller. This is a delightful day's outing and although we saw few plants of special interest we were entertained by a stray cat on the beach at Soller who was able to crack, shell and eat hard-boiled eggs provided by the copious packed lunch from the hotel. Small portions of cold chicken from the same source also enabled us to entice a lizard which in five minutes became so tame that he would come to eat out of hand.

More profitable plant hunting visits were made by car to the mountains on several occasions. The interesting endemic species to be found here include:

Aristolochia bianorii
**Astragalus balearicus*
**Brassica balearica*
Crocus cambessedesii
Helleborus lividus ssp *lividus*
**Hippocrepis balearica*
**Hypericum balearicum*
**Pastinaca lucida*
Paeonia cambessedesii
Pimpinella bicknelli
**Rhamnus ludovici-salvatoris*
Ranunculus weyleri
**Teucrium subspinosum*
**Viola jaubertiana*

We saw many of these (marked *) without much difficulty. *Astragalus balearicus* is a neat mound-forming spiny shrub with white flowers in

spring and superficially resembles *Teucrium subspinosum* with which it grows but the latter flowers later and has typical *Labiate* flowers. *Brassica balearica* is a dwarf fleshy-leaved 'cabbage' with typical yellow cruciform flowers and grows in rock crevices out of the way of grazing sheep. *Hippocrepis balearica* is a distinct and attractive horseshoe vetch called in Catalan 'Violeta de penyal' which presumably means 'cliff violet' perhaps because its flowers are scented for they are bright yellow coloured. *Hypericum balearicum,* sometimes grown in gardens at home, has small leathery leaves with wavy margins and typical yellow flowers. *Pastinaca lucida* is a quite distinct wild parsnip resembling our cultivated vegetable but having shiny leaves and an unpleasant smell. In Catalan it is called the equivalent of 'stinking herb' or 'devil's cabbage'. It grows by the roadside near the Col de Puig Major and a few of the plants were producing their umbels of yellow flowers prematurely when we were there. *Viola jaubertiana* is a typical wild violet easily distinguishable from the only other Viola found there – the sub-shrubby *V. suffruticosa.* We found it in one place only, near the Gorg Blau in a moist site under an overhanging rock.

Of these endemics we did not see, *Crocus cambessedesii* is a miniature saffron crocus which flowers in autumn with typical branched orange stigmas. The Helleborus is the type species of the well-known *'Helleborus corsicus'* of our gardens which should strictly be called *H. lividus* ssp *corsicus.* The one from Majorca has dusky pink, instead of green, flowers and is not very hardy in Britain.

The endemics are not the only interesting plants to be seen in the mountains. There is a tufted grass which is much taller growing when seen from close quarters than one expects from a distance. This is *Ampeledesmos mauritanica* which is also found in a few places on the Costa Brava, the west coast of Italy, west Sicily, Sardinia and especially the North African coastal region. Some of the clumps we saw in flower were as tall and impressive as a pampas grass. Its leaves are rough and hard and it is one of the few plants the flocks of sheep are unable to eat. With it one finds the true wild olive *Olea europa sylvestris,* not simply its hybrid with the cultivated form. It grows as a low, spiny bush kept well clipped by the sheep. Three other plants which caught our eyes whilst travelling through the mountains were an Ononis species, probably *O. natrix* but with exceptionally large yellow flowers, *Euphorbia characias* which is very variable here and *Narcissus tazetta.* We saw only a few plants of the last, growing on a wet slope; it was never in such abundance as we had seen in Minorca.

One can drive northwards from the main mountain road down a very twisting route to the coast at Sa Colobra and then on to the Torrent

de Pareis. This is a popular picnic place with locals and a charming green area by the river in a deep gorge. Here one can see the shrubby *Vitex agnus-castus* or chaste tree whose branches have an aromatic scent reminiscent of camphor – a member of the Verbenaceae. Amongst it there were flowering plants of *Leucojum aestivum* ssp *pulchellum,* a form of the summer snowflake. Where the water of the torrent mixes with the sea it causes it to take on a beautiful limpid blue colour, presumably due to the presence of fine suspended particles.

Back on the main road by the village of Escorca, not far from the monastery of Lluc, we saw a black vulture circling. In flight this is a magnificent bird and one of the largest in the world with a 3m wingspan – a natural hang-glider. Of all the sites in Europe, here is probably the most certain place to see one for there are said to be 35-40 in the neighbourhood, especially around the 1,103m peak of Tomir nearby. Continuing along the road northwards one comes to the most northerly part of the island past impressive cliff scenery to Cabo Formentor. Along this route we saw much *Cyclamen balearicum* in flower both under trees and in rocky, open turf and together with it grew *Aristolochia bianorii* an endemic which flowers in summer.

Turning at Puerto Pollensa in a southerly direction brings one to the charming old Moorish town of Alcudia. South of here is 'La albufera', the marsh which is one of the best sites of the island for bird watching. On a short visit there we saw marsh harriers, a solitary flamingo and hundreds of stilts at close quarters – they nest nearby. Not far from here, in sandy ground, grew *Solanum sodomaeum,* the interesting endemic *Thymelaea myrtifolia* (syn *velutina*) and the first plants of *Orchis italica* we had seen in the Balearics.

Majorca is not just a concrete jungle for tourists, it has much to offer the naturalist. As recently as 1962 a Belgian botanist Professor Duvigneard discovered a plant at Cala de San Vincente which was new to science; not only a new species but a very distinct and entirely new genus. *Naufraga balearica* belongs to the Umbelliferae and is a mat-forming plant with tiny inflorescences of mauve streaked with yellow. It can hardly be described as a desirable garden plant and in this respect is fairly safe from collectors, but it is very exciting to be one of the few people privileged to see it in the wild.

REFERENCES

Barcelo, F. B. (1980). Flora de Mallorca. 2 Vols. Moll, Mallorca.

Bonner, A. (1977). Plantes de les Balears. Moll, Mallorca.

North, C. and North, M. (1983). Minorcan wild flowers. Journal – Scottish Rock Garden Club, Vol 18, pp149-154.

Polunin, O. and Smythies, B. E. (1973). Flowers of south-west Europe. Oxford University Press, London.

Watkinson, E. (1978). A guide to bird watching in Mallorca. Fack, Stockholm.

Further thoughts along the donkey paths of Greece

BILL IVEY

The 1983 Clark Memorial Lecture

IN 1950 Miss Clark's name appears in the *Journal* for the last time as Hon Vice-President of the Club. Some years later the Clark Memorial appears in the form of a prize in one of the Shows to disappear for a short time only to reappear in its present form as the incentive behind a talk.

Although Miss Clark made the donation as a memorial to her sister, I like to think that her underlying reason was that, in her own way, she would be helping to perpetuate the need to communicate within the Club.

I read once in a gardening book that there were no primulas in Greece. I believed it and, because I was never in Greece early enough, I never saw any – until this year.

Huxley and Polunin both say that there are primulas in Greece but because I believed the first book I didn't assimilate any later reading.

This year in April I was in Metsovon, a small town perched on the western slopes of the Katara Pass which divides the north and south Pindus Mountains. I was in the baker's waiting for my order of newly-baked rolls when in walked a very pretty young lady with a bunch of flowers in her hand. This young lady, all three years of her, had little interest in the flowers except that they were a surefire way to a free supply of sweets.

Sure enough, her aunt, the shopkeeper, a ripe 17-year-old, was charmed with the flowers and the young lady went her way out of this story with her pockets bulging with Greek boilings.

The flowers were cowslips and I asked the 17-year-old about them. "They grow better in the hills here than anywhere in Greece so they are called Metsovoniki (Little Metsovon). There is also a beautiful white one".

Whether she meant that there were white cowslips or white primulas, my Greek was just not good enough to detect, but in the glorious hills around Metsovon in the following days I did find a white primrose.

These hills in and around the Katara Pass, in April, still held great slabs of snow and were alive with the first of spring's flowers, and I was

sure that, when Betty came out a week later and we would be in Kefallonia (only 100 miles south-west of Metsovon), we would see that island at its botanic best – not so! Although we climbed on the island's highest mountain, we saw not one spring flower – nor a sign of one. My own feeling is that this year on the island, the flowers, because of the spring drought, had just refused to bloom.

Last year, in October, in Rhodes we had hoped to see the autumn flowers at their best, but we were too early. The summer drought had not yet broken so the ground temperature had not yet dropped and, apart from one or two autumn crocuses, again we saw nothing.

Dr Richards and Bob Mitchell and others have written often of the particular quantity and quality of spring flowers in and around Delphi.

I have been time and again to Delphi to see for myself this plethora of flowers – I have yet to see them.

Last spring, on our road back from Kefallonia, we changed direction at Patras, and took the Thessalonika bus to Itea via the Rion Ferry. At Itea we got the local bus to Delphi where we stayed several days.

Delphi is no more than 100 miles due south of Metsovon and it was less than a fortnight since I had seen the first of spring's flowers on the snow-clad Metsovon hills, and yet, here in Delphi, all early flowers had vanished – We had to climb 6–7,000ft up into Mount Parnassus before Betty saw her first spring flowers in Greece in April-May this year.

But our journals don't tell us of these 'misses'.

Isn't there a need, especially for our younger members, maybe making their first trips abroad to have these lessons, too?

I'm not thinking of articles on 'misses' but forward accumulating addenda made removable from the journal to be placed with its complementing article.

For example, in Dr Richards' article 'Parnassus Mountain of Flowers', AGS Bulletin, No 210, between Delphi and Arachova from 6–20 May 1981, he saw and identified a myriad of spring plants yet two years later at the same time and place we saw no spring plants (excepting *Campanula rupestris*) below 6,000ft.

Wouldn't an addendum to this effect be a help?

I have a liking for the articles by Felicity and Lewis Baxter (a kind of former day Lynne and Michael Almond), and I remember with affection their article from 'Lilies 1973–74', 'Fritillaries of the Pindus Mountains', especially this paragraph which I quote.

"On the ridge above Metsovon, just west of the Katara Pass, there is a colony of large coarse-looking forms of *Fritilaria graeca* var *thessala*.

We first found these in 1970 and have covered them up each year since with thorny branches of *Prunus spinosa*, and anything else with spines to

be found, as there is a sheep fold within 150 yards of them. In fact, we covered them with such ardour that last year they had struggled up looking strangely twisted!

This year, however, there was a carpet of young plants under and beyond the spiny branches, and a great many in bud in the central and prickly redoubt".

That's dedication – not only do they defy the goats and their attendant savage guard dogs but also the equally savage spiny shrubs of Greece – year after year – to save a colony of fritillaries.

I'd love to be able to say "relax my friends, your frits are still safe" – I can't – the ridge above Metsovon is miles long and miles deep and there are dozens of sheep folds, but I'd love to add a rider to their 10-year-old article about fritillaries from the same ridge.

One hot spring morning, sitting on the low stone wall in the village square in Metsovon waiting on the 8.00am bus to Larissa to take me up to the Katara Pass, I met an AGS couple who were bound for home. In the short time we spoke, they told me of accidentally coming across a colony of dusky crimson fritillaries on this same ridge – "If I went to the sheep fold on the opposite side of the main road from the Metsovon Spring and with my back to the hut wall, looked east, I would see a shaley outcrop not a hundred yards away – and there they are" – almost every fritillary I've ever seen flowering has been *Fritillary graeca*.

I abandoned the Katara project and spent all day looking for those fritillaries in ever widening circles.

Success rewarded me about ½ mile from the sheep fold in the gloaming of a perfect Grecian evening.

Socrates said: "I know that I know nothing – and barely that". That sums up what I knew of fritillaries – I couldn't write an article about them – but this paragraph might make an exciting addition to someone else's article.

While on the subject of articles especially while that favourite article by Felicity and Lewis Baxter is in my mind, I wonder why we don't reward the article writers in much the same way as we do some plant growers and some speakers.

Couldn't some sort of token be created and awarded annually for what is adjudged the best article in our *Journals* of that year?

It's not competition I think of, but just another way of recognising work well done.

But we are in the final count, a club of gardeners, working to create around our homes, a living picture, painted by the plants of the world's high places and although we recognise (and rightly) the special grower, and to a lesser extent the speaker, and I am busy advocating the article

writer, we haven't devised a scheme to recognise the rock garden well-grown.

We have about thirty groups in the SRGC. Suppose each group chose its garden of the year, and forwarded that choice to a section of say seven groups for these groups to choose the year's favourite from that seven. The final four to be judged by a Club panel. It wouldn't be easy – but isn't it possible?

Wouldn't it be an extra crown to the Annual Discussion Weekend. When, in a short feature, the winning gardens, best aspects were shown on several slides before the presentation of a suitable token to the creators?

These donkey paths, created in marble and limestone, by generations long since gone, and maintained through the long years by their descendants, moving from village to village by the shortest or most secret route, are most insidious Grecian sorcerers. Changed from a route of necessity to a route of beauty by the alchemy of time, and sublimated by the essences of flowers, scenery and sunshine, they present the perfect platform for thought, like seeds imbedded in the amber of future hopes.

There is sweet music here that softer falls,
Than petals from blown roses on the grass,
Or night dews on still waters between walls,
Of shadowy granite, in the gleaming pass;
Music that gentler on the spirit lies,
Than tired eyelids on tired eyes;
Music that brings sweet sleep down from the blissful skies.
Here are cool mosses deep,
And thro' the moss the ivies creep,
And in the stream the long-leaved flowers weep,
And from the craggy ledge the poppy hangs in sleep.

(First verse of the choric song from the Lotos Eaters by Alfred Lord Tennyson).

Of all the paths I've walked so far, the outstanding ones are:
The path above Delphi, memorable to me because as I've already said, there were no flowers whatsoever in and around the ancient site.

In times long past, a path created by pilgrims wandered from one of the old Venetian ports on the North Corinth Gulf Coast, crossing through the coastal mountain barrier and possibly passing close to the Byzantine temple of Ossias Loukas to Delphi and going on up over the shoulders of Parnassus onto other sacred shrines.

The first part of this path to Delphi is all but gone now, but the part above Delphi can still be walked, and still are visible the hollowed-out niches in the rocky mountainside where once sacred ikons and relics rested.

Eventually the path surmounts the Phaedriades Rocks and enters an area of grassier slopes that were clothed in summer flowers – *Centaureas,* with gorgeous silver foliage, *Pedicularis, Hedysarum glomeratum, Trifoliums* and *Salvia argentea.* It was exciting to see *Cerastium tomentosum,* dwarfed by drought and contained by the solid rock on which it grew, sparkling in silver and white as nature intended it to.

From Litochoron, the village at the base of the Enipeus Gorge, a precipitous gash in the northern flank of Mount Olympus, a dirt road 16 kilometres long has been gouged out of the mountainside up to the car park at Prionia. The loose shale from the making of this road, dumped down into the gorge, creating loose scree slopes, is in places a marvellous starting place for the flowers that grow in the wetter climate of this Gorge.

I have seen a greater selection of *Linum* in the stretch just below the Agios Dionysius Monastery than elsewhere in Greece. The pink of *Linum tenuifolium* vying with the deep yellow of *Linum flavum* and the pale silver-blue of *Linum narbonnense* whets the appetite for the plants above.

From the car park, a well-marked path 4ft wide and 6 kilometres long takes you up through the gorge to the mountain hut 'A', a most suitable base to explore the alpine zone above the tree limit and in the shadow of the three dominating peaks of Stephani, Mitikas and Skolio.

Arn Strid's book 'The Wild Flowers of Mount Olympus' recounts in detail the plants to be found in this amazing gorge and they are legion, so I am content to mention those that afforded me most pleasure in the times I have tramped this mountain path.

The *Jankaea heldreichii,* great cushions of it below the rocks and deep in the woods far from the madding crowd; *Viola delphinantha* in northern rock faces close to the hut; sheets of *Gentiana verna* just above the treeline; yellow *Linaria peloponnesiaca*; but most of all to come from deep wooded paths, cold in the early morning air, into an open glade splashed in golden sunlight and filled with the purple and white of *Campanula lingulata* and *Dorycnium hirsutum.*

Of all the villages of the Pindus Range, I like Metsovon the best. Perched some 4,000ft up on the west of the Katara Pass, it has a most wonderful walking perimeter.

To the west and south is the Athamnon mountain range with valleys, gorges and pastures, rivers and forests, all mounting inevitably to the

snow-topped peak of Peristeri. To the north is no definite peak at least not for 30 miles except for the ridge of the Katara Pass at 5,500ft. On top of this, the vista is ridge upon rolling ridge snowspattered and sun-drenched to a Cerulean horizon, with the Aoos River Valley in the near foreground and the mist-filled darkened chasm of the Vikos Gorge too far in the distance to frighten. This is our Mecca.

At the Katara Pass this year in late April flowers are everywhere. Great slabs of snow punctuate the ground and in between the lifeless grass is a purple haze of muscari, crocus and scilla. One small hill rises to the north, and up we go to find large drifts of *Daphne blagayana*. Further on and up through mixed forest are fritillaries and cowslips. Down now through solid snow to cross (by wading) the freezing water of the Aoos River and on and up again, higher, into the rolling bald crowns of the Pindus, *Dianthus haematocalyx* I saw here the last time. Now there are violas, orchids and corydalis, in every hue from white to crimson, *Narcissus poeticus,* and primroses everywhere, and to my surprise a tight colony of *Soldanella pindicola.* If it weren't for the darkness falling, you could go on and on, but it's a long way back – and there's those freezing waters to wade again . . .

Half-way between Corinth and Patrae, along the south Corinth Gulf lies the small sleepy monotonous town of Diakofton. Turn south here and the monotony ends. For 32 kilometers the Vuraikos Gorge snakes up towards the mountains.

The bus avoids and overtops the gorge, but a little cog railway, taking about an hour, chugs through the most amazing rock scenery to arrive at Kalavrita.

Also nearby is the gorge of the River Styx, "whose waters were so cold and venomous they proved fatal to such as tasted them".

The wonderful properties of the waters of this river suggested the idea that it was a river of Hell, especially when it disappears, after a spectacular waterfall, into the earth a little below its fountainhead.

The Gods hold the waters of the Styx in such veneration that they always swore by them – an oath that was inviolable.

The Styx was named after the daughter of Oceanus and Tethys who herself had three daughters, Victory, Strength and Valour.

Nowadays, Kalavrita is a small modern town lying in a lush valley at 2,000ft between the Aroanian and Erymanthos Mountains. But the heritage of its fabled past is still strong in its veins for twice in the last 160 years massacre has failed to wither the flower of Greek Independence.

Encompassed in its amphitheatre of mountains, including the snow-capped mass of Xelmos, 7,500ft high, there is scope for every kind of walking from summer meandering to high ridge hiking.

Let's take the path towards Xelmos. The time is the beginning of May.

Just above the topmost house in the town where an ice-cold spring of water pours from the hillside, where the local dogs still bark their disapproval of the stranger, and where you still hear the children call a shy "Hello", is a hillside of *Iris florentina*.

The path rises steeply over well-cropped grassy hillsides to a dirt road. This road, if you follow it, will finally lead you, ten miles later, into the bulb fields of the 'Xerokambos' (the dry meadows) just below the snowline of Xelmos.

But another path crosses the steep craggy hill on the left of this dirt road not far from where you first come on to it, makes a wide sweep round a small deep fertile valley and climbs up over the long ridge of the Neraïdoraxi, a ridge flanking the north of the 'Xerokambos'. Here you are on top of the world with the whole of wild Achaea below you, rank on serried rank of peaks rolling into the pellucid blue of the west.

At first there are few flowers, but as you climb higher they emerge prolific in a kind of triumphant succession from the meadow flowers, Anthemis, Crepis, Saponaria, up to the more exciting bulbs of the colder latitudes, Corydalis, Fritillaries, Orchids, Scillas, Crocus and *Geranium tuberosum* is like heather on the Scottish mountains. It was on this path where forest gives way to the windswept ridge that I came on the two-toned *Iris germanica*.

Equalling this last path for sheer mass of flowers is another path in the Peloponnese, this time along the flanks of Mount Taygettus above Sparta. By using a taxi from Sparta along the main road south to the village of Palaiapanagia (The Eternal Virgin Mary) and from there upward in an exciting and zigzagging path we reach Torizo.

The last time I did this taxi ride, the driver wound down the windows letting in the scent of Spartium and clean cold mountain air and sang in a loud and raucous voice the whole way. If I translated him correctly when we finally paid him off at Torizo, he said "I love the hills, they free the soul – especially when someone is paying for the experience".

The path climbs through thick pine woods and there are flowers everywhere, anemones (especially *Anemone pavonina*), violas and orchids.

At a small stream flowering across the route, the path divides, the lefthand going up to the mountain hut and the high peaks, the right-hand to a lower ridge from where it slowly drops down through the mountain village of Anavriti and the Moni Faneromeni, through the Parori Gorge to Mistra with flowers all the way.

By now your appetite is sated with flowers, especially the constantly recurring one, and your eyes are open only for the unusual.

On this path, which I have walked about a dozen times, there is always the unusual.

Like the time Betty and I climbed up a little gorge near Anavriti, with a deep stream pouring down between steep stony sides and came upon a side path. Side paths fascinate me but Betty eyed the precipitous rise of it with a very jaundiced eye, left me to it and went to sleep.

At the top I came out on an area of arable fields blood-red with *Tulipa hageri*. Down I went to coax Betty up, slipped on the loose scree and fell – splat – in the middle of the stream.

It was on this path I came across the white form of *Orchis papilionacea* one only, *Anemone pavonina,* rich-red with the buff centre but with a narrow very definite streak of buff up the centre of each of its eight petals giving it a very superior starry look, *Iris unguicularis* in thick clumps growing in the mud of a weed-choked spring.

Measuring the flat distance of the walking part of this path from a map is 10 miles, but include the ups and downs, ins and outs and 16 miles is conservative, and if you elect to walk from Mistra back to your hotel at Sparta then you've walked 20.

Betty, to her credit, has done this once (the 16 not the 20) – concrete aquaduct and all (see last article). I like to think that it was the unforgettable sight of the myriad of *Cyclamen repandum* corms lying loose on top of the spring flood plant litter, all blooming fit to burst, or maybe the high grazing field not yet grazed we came on after a long mile of deep pinewoods and covered by a carpet of multicoloured anemones, orchids and fritillaries, the white limestone obtruding rocks studded with aubretia, that made the wēary plodding all worth-while.

Spring flowers give way to the solid shock of summer colour, the scent of spartium, viola and daphne surrenders to the overpowering pungency of late growing herbs, and in its turn summer slips to autumn.

With the autumn storms and the ensuing first precipitation of dew, mist and rain, the earth cools. The tired dun-coloured, dusty countryside is suddenly bejewelled again with Colchicum, Crocus, Cyclamen and Centaurea – The elation of regrowth, within me, is ephemeral – a cold wind shivers the surface of the Aegean – The warm 'wine-dark' sea disappears in a flurry of copper and steely grey – It's time to go home.

And if the cup you drink, the lip you press, end in what all begins and ends in – yes;
Imagine then! You are what heretofore you were – hereafter you shall not be less.
(Second Edition 'Rubaiyat of Omar Khayyam')

Seed exchange

JOYCE HALLEY

I WAS reminded today – mid-April – that it was time to write my contribution for the June *Journal*. We have had a fairly good distribution, judging from letters received, and thanks are due to the many donors of seed and the willing workers of the Angus group who labour for long hours on your behalf.

Will donors remember, please, to send seed – or a list of seed to follow – by *31 October?* The printers have to get the list by mid-November and we have two weeks very hard work to meet that deadline so that seed sent late could miss being included.

Please see that your seed is as clean as possible. We have a leaflet on collecting it in the garden and cleaning it which can be obtained by sending me a SAE.

It would be helpful if you would *print* the name of the seed on the packet, and please do not put the name of the seed inside the packet, it wastes our time to have to open and reseal it. Polythene bags are not a good idea for small seed, it clings to the bag. Ordinary correspondence envelopes are not suitable seed packets – they leak! I have had re-printed below an article from the September *Journal* 1978 on making seed-proof packets. They do not take long and any kind of paper will do, even newspaper, but the thin variety from air mail pads is the easiest to handle.

All donors and overseas members will be sent a list. Home members who wish a list and are not donors must send a stamped addressed envelope, preferably not less than 4½in × 8½in, or a sticky label to: Miss Joyce Halley, 16 Abercrombie Street, Barnhill, Dundee DD5 2NX.

Applications for seed must be on the form provided in the seed list, and please read the instructions! All the orders are date stamped and are dealt with in the following order: overseas donors, home donors, other overseas members and home members.

While I realise that some of you are in a great hurry to get your order in the post, it is necessary for us to be able to read it, so please see that your figures and name and address are legible and do not use pencil for either.

There was the usual demand for Androsaces, Cyclamen, Fritillarias, Gentians, Lewisias, Nomocharis, Primulas and small bulbs and, of

course, all the rarities. A new one to that list was Arisaemas, these seed were finished half way through the distribution.

I have a packet of surplus seed waiting for an owner. I am sorry I did not notice there was no name on the list, so if you asked for and did not receive your additional seed please contact me.

There is a Canadian member doing research on Calceolarias who wants seed of *C. lanceolata* and *C. cautifolia* to complete his project.

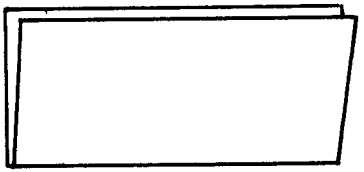
On reading this article over, it seems to be a series of do's and don'ts; sorry about that but it is an effort to make life easier for those indefatigable members who come here and spend many hours working on your behalf.

Many of you write notes of appreciation for which we thank you very much, they do help to grease the wheels.

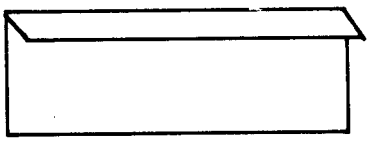
Seed-proof packets

A seed-proof packet can be made from thin paper by following the instructions below. The size given is useful but can be altered as desired.

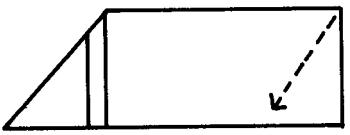
1. Start with a piece of paper 4in × 5in and fold in half.



2. Keeping edges together, make a narrow double fold along edges.



3. Turn paper over, at each end, fold short open edge onto single fold edge.



4. Fold each bottom corner up to top edge and tuck into fold.

Discussion Weekend – September 1984

St Salvator's Hall, University of St Andrews
Friday 28 to Sunday 30 September, 1984

Programme

Friday 28

5.00pm-6.30pm –	Registration
7.00pm –	Dinner
8.30pm –	'Plants of Shetland' – Professor David H. N. Spence

Saturday 29

8.00am –	Breakfast
9.00am-10.00am –	Show Entries
10.00am –	Garden Visits
10.00am-12.30pm –	Registration
12.00 noon –	Joint Rock Garden Plant Committee
1.00pm –	Lunch
2.15pm –	Welcome by the President
2.30pm –	W. C. Buchanan Lecture: 'The Alpine House at Kew and its Plants' – Brian Halliwell
3.45pm –	Tea in Lower College Hall
4.15pm –	'Plant Collectors and their Alpine Plants' – Ken Hume
7.00pm –	Dinner
8.30pm –	'Some Plants Like It Cold' – Professor Robert M. M. Crawford

Sunday 30

8.30am –	Breakfast
9.45am –	'Meconopsis' – Dr James Cobb
11.00am –	Coffee in Lower College Hall
11.30am –	Esslemont Lecture: 'The Sikkim Adventure' – Barry Starling
1.00pm –	Lunch

2.30pm –	'Propagation and Cultivation of Rare Bulbs' – Paul Christian
3.45pm –	Close of Proceedings
4.00pm –	Tea in Lower College Hall and disperse

St Salvator's Hall is situated between The Scores and North Street, in the older part of the town. St Andrews is one of the most historic and interesting towns in Scotland. It is easily reached by road. Please note that trains only stop at Leuchars, some four miles distant, and bus connections are sometimes difficult; none on Sundays. Anyone in difficulty please contact the Registration Secretary.

Free car parking is available in North Street and The Scores. Both areas are adjacent to the Halls of Residence.

Accommodation can be booked for the duration of the Conference or for the whole weekend. Members may wish to come for the day only, in which case appropriate charges will be made.

Charges (including VAT and Conference Fee)
Full board from Friday dinner till Monday breakfast – £60.00
Full board from Friday dinner till Sunday tea – £46.00
Full board from Saturday lunch till Sunday tea – £36.00
Full board from Saturday lunch till Monday breakfast – £46.00

Day Charges (including Conference Fee)
Friday: Dinner – £5.50
Saturday: Lunch, Tea, Dinner – £13.00
Sunday: Coffee, Lunch, Tea – £9.00

Applications should be sent to the Registration Secretary, Mrs Mollie Pirie, The Drum, Blebo Craigs, By Cupar, Fife KY15 5UG, enclosing the appropriate remittance, before *Saturday 18 August 1984*. Documentation will be issued at the Conference.

Donations of plants will be welcome for the 'Bring and Buy' stall.

The Autumn Show will be held in conjunction with the Discussion Weekend Meeting of the Joint Rock Garden Plant Committee which will be held at 12 noon on the Saturday of the Show (see Show Schedule).

Show Reports 1983

Stirling Show – 31 March 1984

A crisp, crystal-clear morning heralded the day of the 4th Stirling Show and fittingly reflected the characteristics of the early spring flowers on the Show benches. The Show was well supported by exhibitors from places as far apart as Ellon and Ormskirk. Also from afar were four nurseries, Christies, Edrom, Hartside and Holden Clough. Further contributing to everyone's enjoyment was a memorable display of plants, including nine species of Fritillary, staged by the Royal Botanic Gardens, Edinburgh.

Another beautiful Fritillary on display was *F. gibbosa,* which was given an Award of Merit by the Joint Rock Garden Plant Committee and first place in the class for new, rare or difficult plants. Mr H. Esslemont was also awarded a Certificate of Cultural Commendation by the Joint Rock Garden Plant Committee for his pan of four flowering bulbs. The flowers, with delicate, translucent pink flowers, are typical of the Rhinopetalum group, being open and flattish with protruding stamens. Mr Esslemont received three bulbs in 1963 collected during the Bowles Scholarship Botanical Expedition to Iran.

In second place in the class for new, rare or difficult plants was another of the Rhinopetalum Fritillaries, *F. stenanthera,* shown by Dr J. Cobb. The same species, accompanied by a pan containing the striking, green-flowered *Hermodactylus tuberosus* won a first for Mrs E. Ivey in the class for two pans of plants from the families Amaryllidaceae, Iridaceae and Liliaceae. The latter species, from the Mediterranean, belongs to the Iridaceae, but differs from the genus Iris in having an ovary with one locule and very reduced standards. Mr A. Leven's *Fritillaria carduchorum* from east Turkey, with its attractive, narrow, birch-red flowers, won the Fritillaria class. Representing the true genus Iris, a lovely pan of about twelve of the large, delicate, pale lemon-yellow flowers of *I. winogradowii,* belonging to Mr and Mrs H. Taylor, was also awarded a first place. This species comes from the Caucasus, is very hardy and may be grown out-of-doors in sandy, peaty soil.

Two classes with impressive entries were those for plants grown from seed by the exhibitor. In the three pan class, Dr D. Hardy was placed first for two attractive European primula hybrids of his own

creation, and for a pan of *P. aureata forma*. Second was Mr and Mrs M. Stone, also with plants grown from seed collected from their own plants. These were nice plants of *Paraquilegia grandiflora* (Fig 94), *Shortia soldanelloides magna* and *Epigaea asiatica*. Also in the Show was another plant of *Paraquilegia grandiflora* grown from seed by the exhibitor, and two other well-flowered mature plants which won first place in their classes for Mr A. Leven and Mrs E. Ivey. In the one pan class for plants grown from seed by the exhibitor, a magnificent plant of *Synthris pinnatifida lanuginosa*, a high alpine from the Olympic Mountains, won first place for Mr W. Kirby who was also awarded a Certificate of Cultural Commendation for this thickly felted, silvery-grey foliaged plant.

The George Forrest Medal and the Ben Ledi Plants Trophy for the best European plant in Section I was awarded to Mr R. Johnstone for his large cushion of *Draba polytricha*. Mr Johnstone was also the first recipient of the Spiller Quaich donated by Mrs E. Spiller for the best Primula in the Show. This was *P.* x 'Gloria Johnstone', a hybrid between *P. hirsuta* (the seed parent) and *P. allionii* (the pollen parent) raised by Mr Johnstone. It has retained the compactness of *P. allionii* and the floriferousness of *P. hirsuta* with the large, deep pink flowers with a white eye massed in umbels.

A very successful new class in the Show was for forms of *Primula allionii*, with ten entries, and first place was awarded to Dr P. Semple. Primulas are always well represented at this Show and others particularly noticed were Mr and Mrs Taylor's *P* x 'Tantallon' (Fig 82) (a hybrid of their own creation) and *P. megaseifolia*.

The Royal Botanic Gardens, Edinburgh displayed *P. inayatii* and *P. boothii alba*. The latter is a white form collected in the wild last year from the Himalayas and appearing to be doing well in cultivation so far. Also noted was a rare (in the wild) and lovely Japanese species, *P. reinii*, shown in Section II by Mr J. Eden.

A well contested class with six excellent entries, including *Trillium ovatum hibbersonii*, *Shortia galacifolia* and *Epigaea repens*, was the one for a North American plant. This was won by Mrs S. Maule with an 8in pan of a pink form of *Trillium rivale* (Fig 92) in which about twenty large, upward-looking flowers nestled amongst pine needles. This exhibit was awarded the Institute of Quarrying Quaich for the best non-European plant in the Show.

By contrast, the only entry in its class (for dwarf shrubs), but notwithstanding a remarkable plant, was *Diapensia obovata* shown by Mr and Mrs Stone. This is the Japanese form of our own native rarity, *D. lapponica*, the latter known in Britain from only one station, in

Lochaber. The plant shown, in perfect health, formed a low hummock 1in high covering a 5in half-plastic pot. Nestling in the foliage were eleven fat flower buds, shortly to open. Another well-grown plant of interest, as a British native alpine, was the Stones' *Thlaspi alpestre.*

Mr F. Hunt exhibited two particularly striking plants. One was *Tecophilaea cyanocrocus violacea,* a native of Chile, with large beautiful blue-purple flowers. The other was *Barlia robertiana,* a stout member of the Orchidaceae from the Mediterranean.

Two excellent entries in the classes for Saxifrages were grown in association with tufa. Mr and Mrs R. Bezzant's pan of *Saxifraga oppositifolia* 'Ruth Draper', with its large rosy-coloured flowers, was grown in its pan unprotected out-of-doors. In the 2-pan class for Saxifrages Mrs J. Stead won with a large plant of *S. burserana crenata* with its large white flowers on red pedicels, and *S. stribrnyi* with its handsome deep crimson flower buds, each grown healthily with the roots penetrating into a single block of tufa.

Another outstanding exhibit, this time many plants in one 'pan', was the miniature garden of Mr R. Brown, absolutely crammed with perfect little plants, including seven Saxifrages in flower, *Helichrysum coralloides* (Fig 86), Androsaces, Primulas and two dwarf Conifers.

The Carnegie Dunfermline Trust Trophy for most points in Section I was won handsomely by Dr J. Cobb with his numerous good exhibits. One very attractive one was *Corydalis solida* 'George Baker' with deep pinkish terra-cotta coloured flowers. Another fine specimen of this plant, which has not been very common in cultivation, was shown by Mr and Mrs Taylor.

Section II was closely contested with more exhibits than in previous years, and the Fife County Trophy for the most points in Section II, and a Bronze Medal were awarded to Mr J. Eden. Amongst his excellent exhibits were *Primula reinii,* already referred to, *Epigaea asiatica* and *E. gaultherioides, Shortia uniflora kantonensis* and *Pinus leucodermis pygmaea.*

E. STEVENS

Book Reviews

Handbook of Cultivated Sedums
by RONALD L. EVANS
Science Reviews Ltd, 1983

The genus Sedum is generally neglected and disparaged by gardeners as being too invasive and 'easy'. Yet, if the very few rampant species are avoided, it includes a number of attractive low-growing plants eminently suited to rock-garden and trough cultivation. They are tolerant of a wide range of climatic and soil conditions as long as their primary requirement for good drainage is met. The value of most Sedum species is in their foliage which varies considerably in shape and colour and often assumes different colours at differing times of the year. Those with flowers in massed heads can also provide colour, often in late summer when the flowering of most alpines is over.

The identification of garden Sedums has been difficult in the absence of a comprehensive work. This book fills a need. It is obviously the result of a long experience of growing Sedums in the garden and in the greenhouse.

190 species and variants known to be in cultivation are described in detail and illustrated by clear line drawings and colour photographs. There are sections on the botany, habitats, climates, distribution and soils. The cultivation of each species is discussed. The colour photographs are particularly useful for initial recognition which can then be checked against details in the text.

This reviewer has only one criticism, which concerns the format. The horizontal layout makes the book awkward to handle and to store on a bookshelf.

A very useful book which does justice to an unfairly neglected genus.

H.S.

Kosciusko Alpine Flora
by COSTIN, GRAY, TOTTERDELL and WINBUSH
Collins, £16.00

Although this book is intended primarily as a guide to the flora and environs of Mt Kosciusko, many of the species mentioned can also be found in other mountain areas of the mainland of Australia and in Tasmania, for both of which the notes on Habitat are applicable. We found it a useful, though naturally by no means complete, general guide and reference.

The colour of the 300-odd illustrations is so good, and the definition so sharp, that identification of strange species, often belonging to unknown families, is comparatively quick and easy, even for those with little botanical knowledge. The botanic data is concise, and backed by an extensive glossary. There is also a clear explanation of how to use the Identification Keys.

It would have been helpful if a note of the scale of the flower illustrations had been given, alongside the description, as the scale of pictures on the same page varies considerably; for a novice searching for strange species this can be misleading.

In our opinion, the beautiful scenic colour plates give a somewhat glamorous impression of a rather unimpressive mountain, which, at any rate in January, is overcrowded and beleagered by flies! There are many other accessible mountain areas which do not have these disadvantages. You will, however, have to join the throngs on Kosciusko if you wish to see those two lovely endemic ranunculus – *R. anemoneus* and *R. muelleri* var *brevicaulis*.

B.H.

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Abbreviations- FaM Farrer medal, FM Forrest medal, FCC First Class Certificate, AM Award of Merit, PC Preliminary Commendation.

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