

THE ROCK GARDEN

A photograph of a rocky mountain slope. The foreground and middle ground are dominated by jagged, grey-brown rocks of various sizes. In the lower-left and middle-left areas, there are dense, rounded patches of bright red flowers, likely alpine plants. To the right, a large, irregular patch of snow is visible, partially melting and showing some dark spots. The background shows a steep, rocky mountain face under a clear sky.

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The Rock Garden

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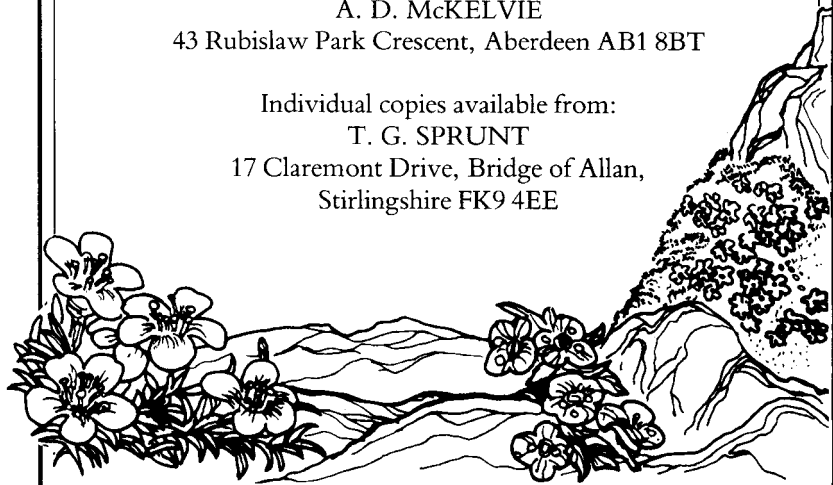
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Front cover:

Androsace ciliata (see p.286)

Photograph by Lynn and Michael Almond

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Editorial

A NEW member of the Club recently stumped me somewhat by asking me what constituted an alpine or a rock garden plant. Since they were asking me this preparatory to exhibiting at a Show I referred them to Show Rule No. 8 which says that a rock plant is "any plant suitable for the rock garden, bog garden, wild garden or alpine house". But that of course is really begging the question since what I think is suitable is not the same as you may think. (See also p.234).

This is not a new question. As long ago as the 2nd Annual Dinner of the AGS, Sir William Lawrence posed the question and argument raged for hours with no satisfactory definition being achieved. This prompted that great plantsman Fred Stoker to write a learned article for the AGS Bulletin in 1937 running to 12 pages in which he went into the detailed physiology and structure of plants which grow in mountains but he came no nearer to defining what a gardener should or should not call a rock plant.

Also in 1937, when Dr Sampson Clay wrote *The Present Day Rock Garden* to bring up to date Farrer's *The English Rock Garden* he faced the same problem. Whereas Farrer described paeonies as 'The Queen of the Mountains', Sampson Clay refused to admit them to the ranks of rock plants. His two criteria for a rock plant were ability to withstand frost and size, particularly height.

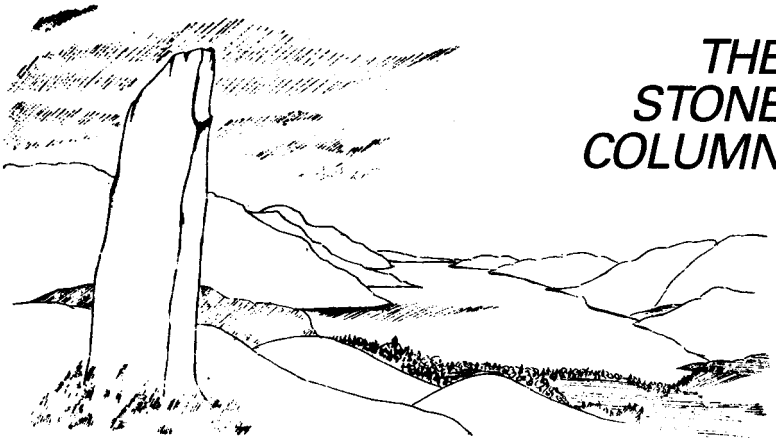
I suspect we are all agreed that kabschia saxifrages qualify as rock or alpine plants suitable for a rock garden and for Shows. Equally we would expect to see a Russell lupin gently removed from the Show bench prior to judging. But what about a dandelion? Perhaps acceptable if it was a fine specimen. Therefore daisies should also be acceptable but what if they were the double variety? After all we tend to sneer at double primroses and relegate them to some far-off class well away from the real primulas. So doubles are not acceptable? But then we have the double form of *Trillium grandiflorum* which regularly wins Forrest Medals. So where are we?

In 1958, Mr Mountfort, editor of the AGS Bulletin wrote the very sensible words that he would grow in his rock garden 'anything that looks well there and suitable, no matter where it comes from'. He would have no tender bedding plants and no large herbaceous things and certainly no annuals, with the possible exception of *Gentiana nivalis* if he could manage to grow it. His view was that 'the essential quality of real true alpinines is their long perseverance of beauty against untoward circumstances. To associate them then with some flimsy little ephemeral annual is to make the alpinines look insulted and the annual tawdry'.

When it comes to what is suitable for Shows I think I would go along with Farrer who suggested a height limit of 30cm for a non-woody plant and of 60cm for a shrub, these dimensions being the ultimate height reached in nature.

ALASTAIR McKELVIE

THE STONE COLUMN



The Winter That Never Was

I had determined not to mention the weather in the Column this time, lest continual repetition of the same theme proves irksome for the reader. Good intentions came to nought as I cannot but refer to the past “Winter that never was”. As 1988 drew to its close the changing season was only marked by the endless rain becoming a little colder. The New Year brought no respite: there were only six dry days in December, nine in January, and seven in February. Up in Shetland, it was far worse; they had only ten dry days between the beginning of July and the end of February. The local NFU has had to ask for government aid. Back here, February’s total rainfall of 310mm was a new record, beating the old one of 270mm, set in 1894, by a considerable margin. When 110mm fell in two days, the saturated hills could absorb no more, and the consequent run-off raised Loch Ness by 2.5m. The resulting torrent down the Ness to the sea carried away the railway bridge in Inverness; this even made the “national news”, briefly. That night, we received a number of telephone calls from concerned members. (Was it really us, or our plants?) A small, relatively new housing scheme in the lower part of Fort Augustus was flooded. The planners had been warned this area was vulnerable, but since when have they listened? Fortunately our house and garden lie in the older part of the village on higher, drier ground. In the old days people used common sense, not “development plans”.

During this three-month period, sub-zero temperatures were only recorded on eight nights, with a minimum of -6°C in late February when winter finally arrived borne on record 140mph winds. I wonder what would have happened had they hit the south? Up here it’s rather old hat, two more trees down in the wood outside and a large falling branch flattened poor *Rhododendron* ‘Sappho’. She has very attractive blotched flowers but a rather straggly habit, and has lost branches in gales before.

The garden acquired a top-dressing of sticks and other flying debris, but there was no other notable damage.

Still the weather taunted us with further trials, a frost of -9°C in mid March destroyed much premature growth, the spring equinox dawned to reveal 200mm of snow lying, and the total of wet snowfall in the next 36 hours reached 600mm; luckily total accumulation was rather less, as much melted as it fell.

We had feared that this snowfall would jeopardise our visit to Stirling Show but fortunately it reverted to rain and sleet and the Drumochter pass was reopened. While staying with friends near Dundee, it was inevitable that the contrast in rainfall between us, this past winter, should be discussed. While the pace of our autumn clear-up slowed to a crawl under the endless downpour and is still unfinished as I write, their mild dry weather enabled bed reconstruction and refurbishment to proceed unhindered. If we could, by magic, move our entire garden to a different location, we are tempted to choose somewhere higher, colder and drier, further east in Strath Nairn for example. But of course, even if a dedicated gardener were able to retire to the climate of his or her choice, there is a good chance that they would end up pushing their garden conditions to the limit, trying to grow unsuitable plants they happen to like. But it is not always so! A friend who came from J. C. Williams' Cornish garden to live up Glen Garry, refuses to grow camellia, on the grounds that they would be but a travesty of the ones she left behind.

Many's the time during this past winter we had come to bless our stony soil over gravel sub-soil. Thin and poor it may be, prone to leaching and drying out, but at least it never waterlogs. In a recent AGS "Alpine Gardening", Duncan Lowe recommends equal parts of soil and stones for the general purpose raised alpine bed. Our whole garden more or less fits the bill: silver saxifrages and lewisias self-sow into rose borders we have tried to enrich. We have made clear our soil conditions several times before, but they should be remembered when considering the effect of the mild wet winter on our plants.

Perhaps the most intriguing feature has been how much plants have varied in their response, even within the same genus. *Scilla bifolia* was earlier than usual, and battered down, whereas *Scilla sibirica* was virtually on time and as beautiful a patch as ever. This spring shows every prospect of being a vintage year for fritillaria in the open garden, even for species that are supposed to need drying off. No such advice is given for *Fritillaria verticillata* which is easy outside but said to be prone to splitting. We planted some seedlings from the late General Murray-Lyon back in 1975, and have left them undisturbed ever since. This year the tight clump has 10 flowering stems. I feel one answer to some inveterate splitters is to

plant them deep and leave well alone. Perhaps producing many offsets at the expense of flowering is nature's response to disturbance; the young are then available to be scattered, in the wild, to pastures new.

The Iridaceae we grow responded much more uniformly to the mildness, almost all were brought forward a month or more. *Iris histrioides* was out for Christmas for only the second time we can remember, and *I. winogradowii* was six weeks early. The various *I. reticulata* cultivars flowered very poorly, and were battered down within a day or two. The same fate befell all our crocus; we didn't see a single open undamaged flower on any species since *CC. longiflorus* and *goulimy* went over in the autumn. Friends keep asking when we are going to put up a bulb house. Now there is an extra powerful argument: "Remember what happened in 1989". Protection under glass is really necessary here for *Arum creticum*. In a rash moment we bought a tuber of the FCC form and planted it in sheltered border on the west side of the house. Even so, most years its foliage is frosted off, this year the endless gales whirled the leaves round and round until the petioles were broken. Needless to say, it never flowers.

By way of contrast, with Amaryllidaceae it has been virtually business as usual. *Galanthus reginae-olgae* flowered in late November, the first time in the autumn for many years. Usually it slightly precedes, and overlaps with, ordinary *G. nivalis*. Other snowdrops were more or less on time, as was *Narcissus cyclamineus*. So thoroughly naturalised is this species, that after I took pine-needle mould from nearby to pot up pyrola and chimaphylla, at least half a dozen narcissus seedlings had subsequently to be weeded from each one. The old Queen Anne's double daffodil has taken a few years to settle down, but is making a fine show this spring, a lovely soft yellow. *N. calcicola* has been a surprising success outside, considering how restricted it is in the wild. Seedlings flowered after three or four years, and it is now spreading mildly by self-sowing. This and *N. rupicola* are the only good garden plants here in the Jonquil group; both are on time.

Turning to dicots, *Anemone blanda* was a little early and rather flattened by the recent heavy snowfall. On the other hand, *A. apennina*, sheltered overhead by a pine branch is gorgeous, full open in the sun at present. Plants raised from seed of *Eranthis* "Guinea Gold" (in spite of some statements to the contrary, it is not sterile) have shown considerable seedling variation in flowering time this year, some 4-5 weeks ahead of others. Usually the whole patch comes up together. *Callianthemum kernerianum* flowered very early, and became rather drawn by the lack of light here in late winter.

As we said in an item on frames in the Column for June 1984, the poor light in winter is not usually the same problem here it is down south. Our lower average temperatures keep alpine plants dormant, and a dormant plant cannot obviously be drawn up. This year we have had a taste of the other

person's problem; seeds germinated in January and in the short murky days raised their cotyledons 2-3cm above the surface before falling over. In some cases the March frosts have spared Poll the salvage job.

This past winter has had its positive side, the few winter flowering shrubs we have, showed their approval of the mildness by flowering better than ever. We have about half a dozen species of mahonia, all but one raised from American seed. The odd one out is a plant of *Mahonia japonica* which we found in a garden centre with its single stem broken about 10cm above the base. An offer of £1 was accepted and, cut back, it sprouted from the stump and made a nice bush in a year or two. When buying plants rather than raising one's own, one is really buying time. The American west coast mahonias, such as *MM. pinnata* and *piperana* generally flower early, and their racemes of yellow are quite frost resistant, much more so than any rhododendron. We like them very much. Many other evergreen shrubs especially those on the margin for us, *Cyathodes colensoi*, *Gaultheria hispida* and *Epigaea gaultherioides* for example, have been spared the scorching east winds, and thus look much healthier than usual.

The mild weather still did not produce any flowers on a plant of *Chimonanthus fragrans* which has been on the south end of our house since 1974. It was threatened with the chop if it did not flower this time, and, as the boys at school know only too well, I never make idle threats. A space on a south wall is too valuable for any further procrastination.

Forsythia ovata, normally a March flowerer, was about 6 weeks early, as was its white flowered kinsman, also from Korea, *Abeliophyllum distichum*. The latter lasted about 10 days until a clear night between weather fronts frosted its flowers, along with those of *Rhododendron x cilpinense*. The forsythia was more resistant, and remained in bloom for a month or more. While it cannot compare in splendour with the large-flowered cultivars, the small light lemon blossoms have charm, and perhaps a certain snob appeal.

It is perhaps, a little too early to comment on the general run of alpines out in beds and troughs. Moss has become quite out of hand, and we shall have to experiment with chemical treatment. Some cushion plants have ominous brown patches, far more than usual. We can normally get away with growing such as *Androsace vandellii* outside, but this unreasonable downpour was just too much. In keeping with our "natural" approach, I don't always totally remove damaged cushions. The dead parts are pulled gently or cut away and a rock or two, or some gravel, used to fill in. It would not do for a show specimen but the result can be quite acceptable in the garden.

Although we are not yet far into the season, I have a feeling that there is rather less blossom on backbone genera such as saxifraga and primula than normal. Perhaps they missed the cold of a proper winter, even if Poll's

chilblains did not.

Blame It On “The Girl”

The whole of the earth’s atmosphere, and the climates within it, works like a gigantic engine powered by heat from the sun. No one part is totally isolated from any other; a change in one region can produce knock-on effects around the whole globe.

During the early part of 1988 there started in the Pacific Ocean a strengthening of the normal flow of winds and currents called by climatologists a “La Nina” event. La Nina, spanish for “the girl” is the opposite of the better known and recently more frequent “El Nino”. During the latter, east to west flow in the Pacific along the equator reverses for a few months, bringing for example rain to the coastal deserts of Chile and Peru. Droughts in the Horn of Africa and failures of the Indian monsoon can be linked to “El Nino”.

During a “La Nina” event, the Pacific cools and by June 1988 it was 2C° below normal in places. As this cooling spread around the world, the Pacific NW had a severe winter with record low temperatures in Alaska. Floods hit the Sudan, and, more recently, the usually arid centre of Australia. For those able to make the trip, early 1989 would have been an ideal time to see the outback in bloom.

Back in Europe, we had a stable anticyclone over most of the continent for much of the winter. The Atlantic weather fronts were deflected across the NW of Scotland and towards Scandinavia, leaving the rest of Europe under a clear sky. Many ski resorts suffered from lack of snow. While my heart does not exactly bleed for them, I am concerned about the damage skiing on inadequate, thin, or slushy snow cover can do to the underlying vegetation. The edges of skis can cut plants to shreds. The problem is disseminated by the current fashion for off-piste skiing. Virtually nowhere is safe from the heli-skier.

In Geneva, the high pressure produced a temperature inversion, trapping pollutants in the city which lies between the Jura and the Alps. The concentration of nitrogen dioxide in the air reached 140 micrograms per cubic metre, nearly twice the “health” limit of 80. Milan had a similar situation. Such unusual circumstances simply concentrate the problem into a limited area making it more noticeable to humans. Normally this pollution, much of it from the exhaust fumes of motor vehicles, disperses over the Alps, where it attacks the vegetation.

(with apologies) Where have all the alpines gone?
 Poisoned by cars every one!
 When will they ever learn?

Certainly our political masters show little sign of doing so, as they

bicker over how, or indeed whether, to control emissions from cars.

After our item on ethical collecting, a couple of members from California wrote to say, "Keep up the good work, and don't let the mean greenies get to you". Perhaps the green movement, including our younger daughter, should concentrate on the vital issues, scrubbers on all fossil-fuel power station stacks, compulsory catalytic converters on cars, and more, not less, nuclear power. Nuclear reactors do not kill forests, overheat the Earth, or attack the ozone layer.

A final afterthought, the last time La Nina was in full force, was in 1975. We all remember what followed in the summer of 76; by the time this appears in print, we will know whether history repeats itself.

A Large Trough, or Six!

For some considerable time it had been obvious to us that our arrangements for the storage of potting compost ingredients are woefully inadequate. Peat, coarse sand, and chippings were simply kept in piles of sacks, wherever space could be found. Polythene sacks of peat in the open air soon became saturated, water got in through any tiny hole, and did not evaporate out again. Poll wasted much time spreading out peat to dry sufficiently to be sieved and mixed into compost. Something clearly had to be done.

As most readers must be aware by now, Poll and I do most of our own work at Askival, with just a little help from our friends, and offspring, from time to time. This time we decided on no half measures and put the job out to contract with Robin, a local handyman, who also runs a tourist business in the summer. Robin and his father-in-law first laid a concrete raft, 11m long by 1.5m wide, near the potting shed. "Neil the Brickie" then built concrete block walls producing eight open sided bays. Robin finally added a wooden superstructure, well bolted down against gales, the roof overhanging the open side like a bus shelter.

Apart from the three basic ingredients mentioned above, the shelter, as we call it, also has bays for limestone chippings, loam, leafmould, and ready mixed compost. As the potting season starts it is already making life much easier for Poll. It may appear a little elaborate, but like everything else in this garden, it will probably be too small in the long run.

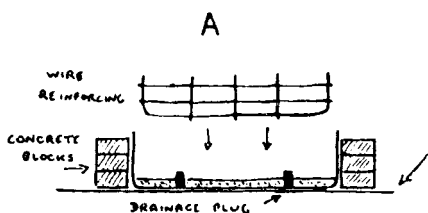
When the building work was over, we were left with five spare sacks of cement, a small pile of aggregate, a much larger pile of building sand (useless for potting, as it is much too fine) and a large concrete mixer sitting on our drive. This being the Highlands, the owner was in no hurry to uplift it. The aggregate was used to regrade a sloping path near the Stone Column, and we determined on an emergency trough-making programme to use up the sand and cement, before the latter went off in our

“damp” winter.

Over the years, our experience has taught us that larger troughs are preferable to small ones. The alpiners enjoy the larger root-run, which does not dry out, heat-up or cool down, so quickly. We have also gone for thicker walls, 7-9cm, which also adds to the weight. Sizing up the available spaces in the trough area, we had room for six troughs, two of them about a metre square. These latter would clearly have to be cast in situ, as they would be too heavy to move far.

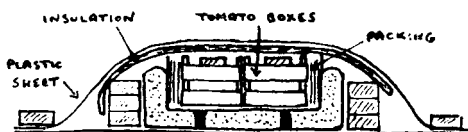
The inner and outer cardboard moulds were made ready, together with wire reinforcing baskets to fit the space between. We watched the weather forecasts carefully, awaiting a dry gap between fronts falling on a Wednesday, Saturday or Sunday. (There is no afternoon school on Wednesday or Saturday, so we would have enough time). With the aid of the mixer, once I got the knack of starting it, all six were cast in two brief, but intense, January afternoons. Normally we would not make troughs in mid-winter because of possible frost damage in their first week or so, but this was no ordinary January.

A short resumé of the procedure we followed may be of interest. First a plastic sheet was laid on the site, the outer mould placed on it and supported by temporary walls of concrete blocks.

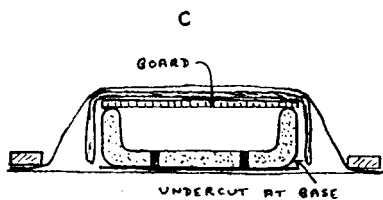


The inner mould, standing nearby was packed with wooden tomato boxes, and many layers of folded cardboard. Hypertufa mixture, to half the thickness of the drainage plugs, was spread into the outer mould, the wire basket placed on it, and the base made up to full thickness. The inner mould was lowered carefully into position, two people are a great help here, and weighed down with bricks. The weighing settles it on to the drainage plugs, and prevents it riding up when the walls are filled, and rammed to avoid air cavities. It was then covered with sacks and old worn carpet as insulation, and another large plastic sheet over the whole.

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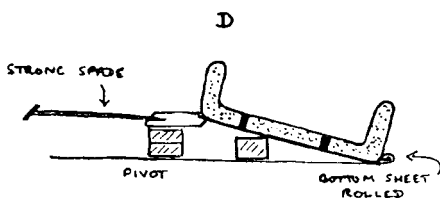


In summer the trough will be sufficiently set to carve in two days, but we left these for four or five. We had no choice but to work in the rain on the second batch, otherwise they would have gone too hard. The inner mould was unpacked and removed, the outer torn away to ground level. All corners were rounded off using a wallpaper scraper as a chisel, and mould marks removed. The external surfaces can be roughened using a wire brush. No attempt was made to move the troughs at this stage, the bottom of the outer mould was left in place. Boards were placed across the trough to stop a pond forming in the hollow, and the covers put back over.

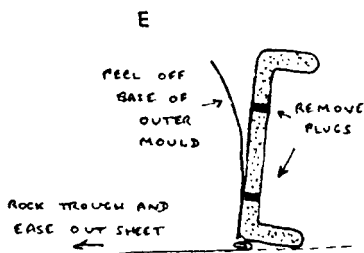


They were then left for over a month to go really hard.

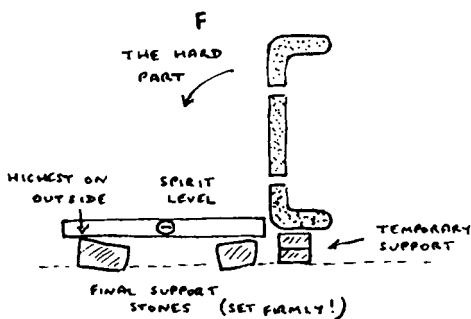
Now comes the tricky part, when all moves must be carefully worked out in advance. Using a strong spade, one side was levered up and a support inserted. The spade was moved up on to a higher pivot, the trough raised on to a thicker support and so on.



When tilted sufficiently to allow us to lift by hand, it was pushed over onto its side. Now the last cardboard could be peeled away and the plastic groundsheet eased out.



Final support stones were firmly set in place and levelled. The trough was levered up one end at a time until it stood on concrete blocks at the same height as these supports.



We could not think of any other method than brute force to control the final lowering on to the plinths, but we managed it somehow. Perhaps Poll should put on a leotard and call it aerobics, or whatever is fashionable. With trough making at least one ends up with something to show for the effort.

Western American Alpines – An Explanation

Shortly after our return from the U.S. last summer, we received a letter from the Editor of *The Rock Garden*. In it he said that, while he realised we would want to write about our experiences, he hoped that we would not write a travelogue, as he had had letters from members indicating that the latter were perhaps a little overdone. In consultation with the Editor, it was agreed that our way around this problem was to write a plant-based feature. However, when this duly appeared, there was further feedback from members suggesting that it was not really *Stone Column* material, and should stand on its own. Under a separate heading, it would be more readily retrievable as a reference source. Consequently the parts covering remaining families are being rewritten and expanded. Meantime, to keep the continuity

Other Places, Other Problems

The terms 'Rock Garden' and 'Alpine Garden', while having much in common, are not in our view, entirely synonymous. There are many possible definitions of an alpine plant; the one we prefer is those plants

whose wild habitat lies above the natural tree-line. This relatively narrow definition would exclude many plants seen at our shows, but no matter, as we are the SRGC not the SAC. Some nursery catalogues illustrate the point by listing both "Alpines AND Rock plants".

We like to think that we have an alpine garden, in the sense that many of our plants are from the alpine zone, but we have no traditional rock garden, just raised beds, terracing and troughs. On the other hand, Denver Botanic Gardens includes a rock garden in the grand manner, but how alpine is it? Indeed is it fair, or indeed relevant, to ask this question at all? To start with, our European concept of an alpine breaks down when we try to apply it to the plants of desert ranges in continental interiors. There may be few trees, scattered in favoured sites, or no trees at all; the cold steppe merging upwards into tundra.

When it was first planted, about ten years ago, the Denver rock garden incorporated many of the traditional alpine genera; there was little previous experience in the area to fall back on. Most of the rock garden is covered by a sprinkler system which can produce 'swamp cooling', and much is made of north aspects; but nonetheless Panayoti Kelaidis, the Curator, soon found that many of these plants were not ideally suited to Denver's high summer temperatures and low humidity. To look to the local flora is an obvious step, but many of the high alpine plants of Colorado disliked the summer heat. The steppe species naturally do very well. Unfortunately, some of the local pests and diseases also moved in with them. Lacking this drawback, species from the interior of Turkey, and the whole sweep of drier mountains through Soviet Central Asia to Mongolia and N. China are grist to Panayoti's mill. We feel that his current planting policy is eminently sensible, and makes the best use of the environment.

Some of the results may appear a little strange to European eyes; lilies with cacti and succulents for example, or *Origanum rotundifolium* with agave, but we found the whole effect satisfying. There were many interesting plants so we can only briefly mention a few. Greek campanulas, mostly in the *C. rupestris* group sprayed out from rocks on all sides, and a large outcrop was covered by a magnificent *Androsace lanuginosa* in full flower. This species from the drier N.W. Himalaya fails with us outside. The rich red-flowered *A. bulleyana*, out of cultivation over here, was maintained in the U.S. and is grown at Denver, reinforcing the case for spreading choice plants to different environments. There were acantholimon cushions everywhere, tight in growth and full of flower, some nice Turkish veronicas and a number of interesting labiates from the same general area. By the artificial stream, *Rodgersia pinnata* was spreading, but only reaching to around 20cm high; 'Forma *stepposa*', Panayoti joked. Ericaceous plants were present, tucked under north-facing rocks. Here in

the shade, any snow accumulates and persists longer, protecting them from Denver's temperatures, which can fall to -30°C . (I wonder if Panayoti has considered a snow gun?)

In some ways it is perhaps a pity that Denver's rock garden was not operating when Iran and Afghanistan were being explored by Paul Furse and others. The legacy of this period lives on in alpine houses and bulb frames, but has had little impact on UK gardens. As one door closes, another opens, "Glasnost" may increase the flow of plants from ranges like the Tien Shan. We look forward to seeing the possible results at Denver.

Further west in the mountains, the Ski resort of Vail is higher and cooler than Denver. Here funds are being raised in the local community to construct and maintain the Betty Ford Alpine Gardens. (The Fords have a house nearby). So far, only a test bed has been planted but the results are most encouraging. A very wide range of plants has been successfully tried: local natives, dwarf rhododendrons and other ericaceae, gentians, including both *G. acaulis* and *G. sino-ornata*, some rosette meconopsis, trilliums, even Mediterranean species. The reliable and deep snow cover must be of considerable benefit. How Marty Jones finds the time to act as Executive Director for this project as well as running his own nursery, Colorado Alpines, we cannot think. The energy of Americans! At the nursery we noted a good collection of dwarf penstemon, mostly new to us, and some fine clumps of townsendia in flower.

Out on the West Coast we also visited the Siskiyou Rare Plant Nursery, in Medford, Oregon. Founded about 25 years ago by Lawrence Crocker and Boyd Kline, it is now run, on a different site, by Jerry Cobb-Colley and Baldassare Mineo. We still grow some of Boyd's fine forms of *Trillium rivale* such as "Purple Heart" and a very good pink cultivar. The nursery is also known for its selections of the Siskiyou native *Phlox adsurgens*, various lewisias and the cyclamen-leaved ginger, *Asarum hartwegii*, with its beautiful silver-veined foliage.

Our predominant impression of this nursery was one of necessary shade, most of the standing areas and wooden-edged stock beds were covered by walk-under fabric scrim shading, supported on poles. At the front, small trees cast shadows over much of the garden, contrasts in light making photography difficult. We have to grow most kabschia saxifrages in a good light or they do not flower; at Siskiyou they were covering a large tufa lump under its own specially constructed shade canopy. The plant collection is comprehensive with some unusual Japanese species and a fine selection of the European erodiums. Few of the latter have survived for long with us.

Much propagation is carried out in a plastic covered "fog house". Water from a high pressure pump is forced out through fine nozzles, producing



Fig 38 *Habenaria tridactylites* (see p.244)

C. North



Fig 39 The "Great Wall" (see p.245)

D. Aitken

an opaque fog of much smaller droplets than the usual mist unit. There is considerable evaporative cooling, so this system is less suited to cooler climates.

When we mentioned to Jerry that we would be visiting Grand Ridge Nursery further north at Issaquah, outside Seattle, he impressed on us that it had a favourable micro-climate. When this phrase is used in Britain, it means that the garden concerned is more sheltered, and therefore milder, than average for its area. Jerry, however, meant that Grand Ridge is cooler in summer, with cold air rolling down from the surrounding hillsides. Cool is a relative term, and we actually found the afternoon at Issaquah decidedly warm. For plant growth night temperatures are just as important, and it did become quite cool later in the evening, at their barbeque.

As at Medford, shading was much in evidence, with similar walk-under cover over a series of tables holding container plants. Much of the stock was held in wooden-edged bays, about 1m wide, each with its own sloping lath shading on the south side, making an equilateral triangle with the ground space. The third, north side, is open for access, apart from the odd support strut. The laths ran up the slope, not along, so that as the sun moves so do the strips of shade. Phil Pearson is also a potter, with a kiln on site, and has produced the most beautiful range of stoneware containers used to enhance their specimen plants. Steven Doonan is an innovative grower, never afraid to experiment and always asking questions. As we have said before, one cannot improve without changing one's methods.

Grand Ridge was the most European looking of the nurseries we visited, with a good selection of saxifrages, primulas and androsace. *Campanula piperi* from across the Sound in the Olympics was very well grown. They too have introduced some good forms of plants from nearby mountains. We mentioned several in the last Column and there are many others such as clones of *Penstemon rupicola* said to be die-back resistant. *Harrimanella stelleriana*, a diminutive, but very beautiful, close relative of cassiope, by no means easy in Scotland, was thriving under Steve's care.

Divers climates, divers growing conditions, leading to differing problems, but wherever we went, we felt that here were people dedicated to the cultivation of the jewels of the mountains. More power to their elbows.

A quest for the three-fingered *Habenaria*

CHRIS AND MARIE NORTH

FOUR species of orchid grow wild in the Canary Islands: *Neotinea maculata*, which can also be found throughout the Mediterranean area as far east as Lebanon and Palestine and to the north-west in southern Ireland and the Isle of Man; *Gennaria diphylla*, which grows infrequently in south Spain and Portugal, western North Africa, Corsica and Sardinia; *Orchis canariensis*, and *Habenaria tridactylites* (the three-fingered or three-lobed habenaria). The last two of these species are endemic to the Canary Islands, they are found nowhere else. The up-to-date books on the orchids of Europe include those occurring in the Canary Islands and illustrate nearly all of the species with coloured photographs (Davies, Davies and Huxley 1983; Sundermann 1975). They give fine plates of the first three mentioned above but only line drawings of the habenaria. Furthermore, the only readily available treatise on the flora of the Canary Islands (Bramwell and Bramwell 1974) likewise illustrates the habenaria solely with a line drawing. Could we be the first to obtain a photograph and to have it reproduced in *The Journal*? Having booked to go to Tenerife to look for this plant we discovered that the answer to the first part of this question was 'No'. Another member of The Club, Mrs Doreen Fraser, showed us a good photograph of a clump of flowering plants of it she had taken on La Palma a few years earlier, though it does not show a close up of the inflorescence.

Since the habenaria flowers from about the middle of November until the middle of January, we set off for Tenerife on the 8th of December. Stationed at Puerto de la Cruz on the north coast of the island we started our search by driving southwards to La Orotava then taking the road up to Las Canadas. The car was left at the park by the trout farm near Aguamansa. From here a well-marked footpath, which we had followed during our last visit to the island twelve years ago, leads through the woods to Los Organos. This seemed a likely place for the orchid and is quoted in Bramwell and Bramwell (1974) as one of the areas where it can be found. The woods here are composed mainly of the native *Pinus canariensis*, a three-needled species which forms a conical tree when young and develops into a very large and impressive branched specimen if it is left to mature. The undergrowth is mainly *Erica arborea* and the rather tall

growing, endemic, *Cistus symphytifolius* – a fine plant that has clear pink flowers held well above the foliage but is, unfortunately, not hardy in Britain. Growing along the banks of the path was a plant with coltsfoot-like leaves that were a dark purplish colour on the underside. This is *Senecio cruentus*, the wild parent of our garden cinerarias, and it is only found in this small area of the Canaries and indeed of the world. In a clearing there were considerable groups of plants of the endemic *Orchis canariensis* which can be recognised by its leaves resembling *Orchis mascula* but completely without spots. This species, which we had photographed in flower here in April on a previous occasion, resembles *O. mascula* but with pinkish-white flowers. There were also many individuals of *Neotinea maculata* scattered throughout the woods and recognisable as the only orchid of the islands that has dark spots on its leaves. Some forms of this species in parts of the Mediterranean area have unspotted leaves – but not here. Although we searched thoroughly we found no plants of *Habenaria tridactylites* and returned to our hotel rather despondently.

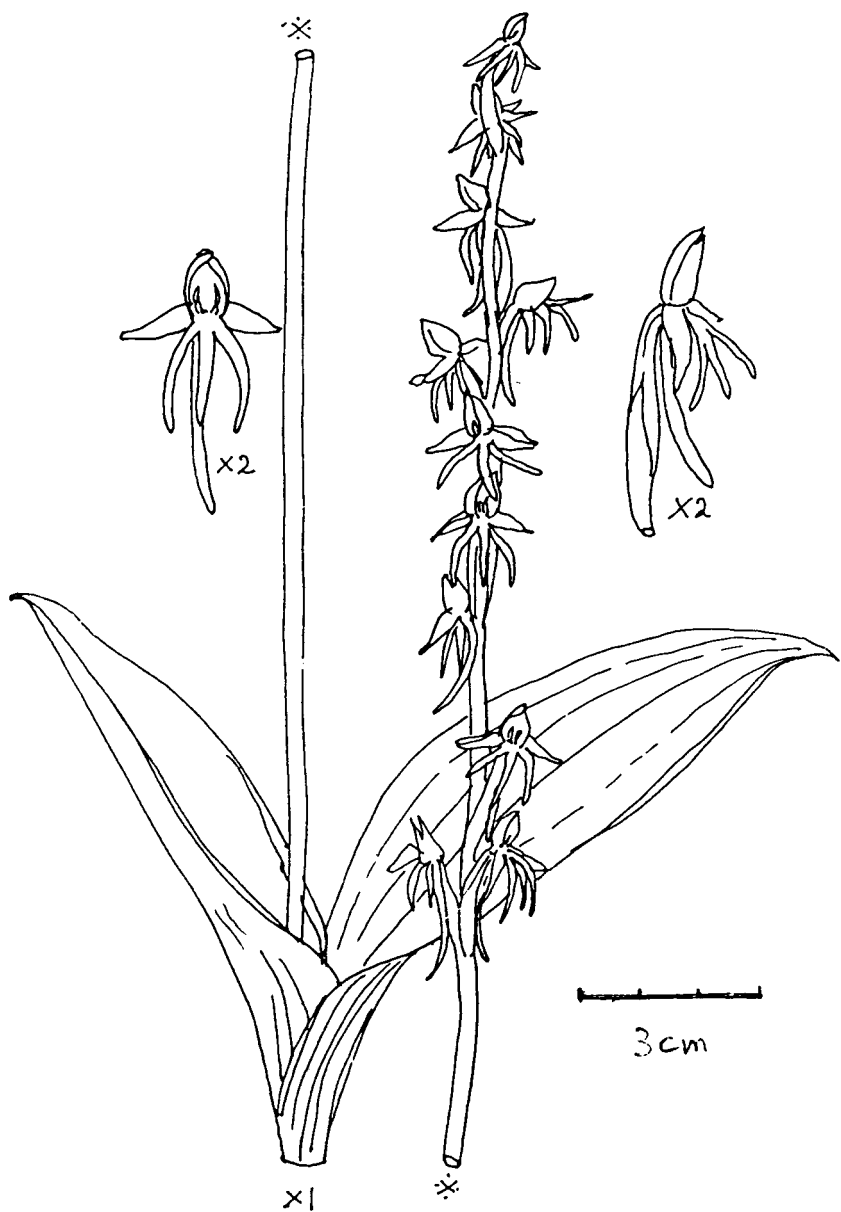
Next day we set off for the Anaga peninsula in the north east of the island. Travelling along the motorway to the old capital of La Laguna we turned off from there to the Mercedes Mountains which are very rugged hills rising to about 1,000m. They receive more rain and mist than other parts of the island mainly on account of the effects of the trade winds and are covered with laurel forest chiefly composed of *Laurus canariensis* which resembles the bay laurel but has a different aromatic smell. There are several other species of Lauraceae which make up these woods and much *Erica arborea*. Under this canopy grow many interesting endemic species, too numerous to mention here but we would draw attention to *Ixanthus viscosus*, La Reina del Monte (Queen of the mountain) which has large yellow flowers in summer and is a member of the Gentianaceae. Almost everywhere there were large groups of *Gennaria diphylla* with the inflorescences elongating and preparing to flower in January. We had thus found three of four orchids that grow on the islands but not the one we were looking for.

Returning again to the Mercedes mountains – as this seemed the most promising area – we searched again without any luck though we did find the exciting Canary bellflower *Canarina canariensis* in flower. This species is a climber with large orange bells, well marked inside and resembles a codonopsis but without the objectionable smell. Having again failed to achieve our objective we called next day for advice at the Jardín Botánico in Puerto de la Cruz which is very well kept and has a good selection of sub-tropical plants growing in the open. Here we met Senor Rodriguez who regretted that he was not an authority on the native flora and suggested that we go to the botanical department of the University of

La Laguna. Here we were very well received by Professor Dr Esperanza Beltran Tejera who assured us that the habenaria was common but she could not tell us precisely where to look for it. However, she kindly got out the eight or so herbarium specimens of this species from the university collection for us to examine. Only two of these were from Tenerife, one from the Mercedes mountains and one from a eucalyptus grove only some two or so kilometres from the university. With high hopes we drove towards the last of these sites only to find that it was adjacent to, or part of, a military firing range and as shooting was in progress we decided it would be imprudent to enter there with our cameras. Thwarted again we set off back to the Mercedes mountains and went right along the spine of the hills eastwards turning south eventually to the coast at San Andres. Stopping frequently and looking extensively we still could not find the orchid though we did see some good stands of the interesting endemic *Dracunculus canariensis* which we had seen twelve years ago in flower. This species is not the architectural monster *Dracunculus vulgaris* that one sees in the Mediterranean but a plant half the size with a narrow white spathe and yellow spadix.

Some two kilometres before reaching the coast at San Andres the climate becomes drier and the vegetation changes from mainly heather to euphorbia scrub where the predominant bushes are the interesting endemics *Euphorbia regis-jubae* and *E. canariensis*. The last of these looks like a cereus cactus but unlike it has copious milky latex. Amongst the bushes were two interesting lavenders and a scilla with small bright mauve flowers *Scilla haemorrhoidales* – could it be that it causes bleeding, prevents bleeding or cures piles? By now we were getting desperate and after refreshment at San Andres we set off back along the same road having decided to make one last effort to find our orchid by searching the undergrowth in the lowest part of the heather scrub after leaving the euphorbias.

Stopping by the roadside where the vegetation changed we saw, to our great delight, two very good flowering spikes of the three-fingered habenaria but they were up a steep bank, out of range for photography. After considerable, round-about, scrambling we got into the heather scrub behind and above them where there were more plants, though relatively few of them were in flower. The light was poor; it was raining and a 1/15 sec exposure was needed. Of course we had left the camera body with the fast film and the tripod in the car below and had no flash equipment. It was decided therefore, since we were always told that the plant is common, to pick an inflorescence to photograph at close quarters in better light. Forgive us fellow conservationists; but at least we did not dig up the tuber!



Habenaria tridactylites
North 1987

Near San Adres, Tenerife
14.12.87

The plant is somewhat more charming than we had expected (Fig.38 p.237). It broadly resembles our greater butterfly orchid and has some fifteen green flowers held close to the flowering stem but, of course, the lip of the flower is deeply divided into three fingers, the middle one being slightly shorter than those on the outside. The inflorescence seems particularly straight and tall-growing often to the height of half a metre. There are two basal leaves similar in shape to those of the butterfly orchid and they are bright green and rather substantial in texture with distinctly pointed tips. The flowers have a fairly pronounced, and pleasant, honey-like scent. The genus *Habenaria* is very similar to *Platanthera* (butterfly orchid) and some botanists do not make a distinction. The difference is that the stigma in *Habenaria* has two projections which are absent in *Platanthera*. These are small in our species but can be seen with the aid of a pocket lens and resemble two miniature shark's teeth just above the top of the lip.

Tenerife is good for botanising if one likes a unique flora. Quite a few of the species there are relics of those that grew round the ancient Tethys Sea two million years ago before the Mediterranean was formed and managed to escape the ravages of the ice age. It is easy to get around by car and not at all difficult by bus. There are many well defined footpaths, some of which go through the heather bushes like a tunnel, but parts of the island are desert-like with many succulents and there is always the 3718m snow-capped summit of Teide to explore – the highest mountain in Spain. A good countryside guide (Rochford, 1984) setting out the paths and bus timetables in detail is available on the island at a modest price.

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Plants on the 'Great Wall'

J. N. AITKEN

TO understand what is meant by the 'Great Wall' a few words of introduction to the garden are necessary. It extends for approximately half a hectare, a short distance north of Aberdeen, and is laid out in a series of beds strategically placed so that each window on three sides of the house has a view. The windowless north gable end faces the driveway, parking area, garage and utility area. As the layout of the garden neared completion a problem arose as to how to isolate this area from the rest of the garden. I could have planted a hedge or built a wall but neither of these ideas appealed. In the end I opted for a raised bed running N-S between 27 and 36m long, one metre wide and about 750mm high. Two gaps in the wall allow access to the garden and to the west side of the wall. This has proved to be a great success and between 300-400 plants are now happily established.

The bed was made using granite setts or cobbles lightly cemented in place and particularly well-cemented at the corners. A few holes were left in the face of the walls to accommodate plants like lewisias and the top row of setts was left loose to facilitate easy planting of aubrietia, phlox, etc. When completed the bed looked like a replica in miniature of the Great Wall of China (Fig. 39 p.238). Once planted I felt bound to reply in the affirmative to the Editor's request for something for the next copy of the Journal. I do hope that the following account will prove of value to other raised bed enthusiasts who may have some difficulty in choosing suitable plants. In order to provide interest over as long a period as possible at least 30 plant families have been used and more will be added with time.

Planting the side walls.

The large expanse of bare wall demanded that the stone should be covered as quickly as possible and my first choice, because of its early flowering, was *Arabis blepharophylla* from California with deep rose flowers already beginning to show in mid February. The plant is short lived but is easily raised from seed.

Aubrietia seldom receive mention in the Journal and we have to go back to Vol. VIII 1962, p.114 to find, under the title 'Aubrietias', an authoritative account of the family. A number of the varieties mentioned have been given place on the 'Great Wall' but a newer variety A. 'Grosvenor Red' is a particularly good colour, hugs the wall and makes a brilliant splash of crimson in April and May. A variegated form with blue

flowers also gives a flash of green and yellow foliage in the winter time. Good colour forms should be propagated from cuttings.

In late May and June *Phlox douglasii* comes into its own. My chosen varieties include PP. 'Crackerjack', 'Apollo', 'Kelly's Eye', 'Iceberg' and 'Red Admiral'. *P. adsurgens* is also being tried. Other plants used to clothe the walls include sempervivums particularly those with good foliage colour. *Sempervivella alba* from the Himalaya always attracts attention. *Alyssum montanum* has proved to be a better plant for this situation than its near relative *A. saxatile* which is almost too invasive. The creamy white snapdragons of *Asarina procumbens* flower continuously for a good part of the summer. It is not long lived but seed is set in quantity and germinates readily. *A.p. compacta* is a smaller neater version of the same plant, which has yet to flower.

Delosperma nubigena (syn *Mesembryanthemum* sp), once thought not to be hardy, loves to get its roots into the soil behind the wall and then spread its brilliant green foliage over the warm stone. Towards the end of June it covers itself with equally brilliant yellow flowers which fade to a not unattractive bronze. It is best planted facing south or west. East facing plants have not flowered. In response to the colder temperatures of winter, the plant turns a meaty red but quickly recovers. My original plant is nearly two metres square and has survived outside for the past 14 years. As the flowers of the aubrieta and phlox begin to fade *Silene schafta* from the Caucasus with rosy pink flowers takes over and flowers well into October. Self-sown seedlings usually abound and no one should ever be without it. Seedlings should be lifted young, before the roots have penetrated too deeply.

In order to complete the laying of the tablecloth as it were, forms of *Lewisia cotyledon* have been planted on their side at intervals along the length of the walls as so often recommended in the text books. I cannot say that growing them in this way is any improvement from growing on the flat. In my experience they grow equally well either way provided those growing on the flat are well provided with stone chips around their necks.

Laying the table has not proved to be too difficult as my intention was to provide as varied a 'diet' as possible. Some kind of perspective had to be given to the uninteresting flat surface of the top of the bed. This was achieved by planting carefully chosen dwarf trees, including *Juniperus communis compressa*, the Noah's Ark tree, a globose form of *Chamaecyparis 'Rogersii'*, *C. pisifera plumosa compressa*, *C. obtusa minima*, and *C. lawsoniana minima* none of which should outgrow their welcome in my time.

Bulbs, corms and tubers.

Among smaller bulbs a notable success has been *Iris danfordiae* which has

flowered every year for the past three years. In the past, my experience, along with that of many other people, had been that after the first year the bulbs split up into tiny bulbs the size of rice grains and these took many years to reach flowering size again. Deep planting (15cm) a dry summer habitat and an autumn feed of a potash fertilizer seems to have gone some way to curing the problem. *Iris histrioides*, *I. winogradowii* and their crossbred offspring *I. 'Katherine Hodgkin'* all appreciate a similar environment.

Dwarf narcissus species make excellent subjects for the raised bed. Among the earliest to flower is the tiny trumpet daffodil *N. asturiensis* from the mountains of Spain and Portugal. From the same area *N. cyclamineus* with its reflexed petals is most attractive and among the longest lasting of the species. Also early flowering is *N. romieuxii* from Morocco. Its reproductive growth in a pan in the alpine house is phenomenal. *N. x 'Hawera'* is useful as its flowering season extends into June.

Dwarf tulips suitable for the top of the raised bed include *T. turkestanica* with white flowers. This year it came into flower in early February. *T. aucheriana* only 12cm high flowers much later. The flowers are an attractive pink. The deep yellow flowers of *T. urumiensis* from Iran are more colourful than the better known *T. tarda*. Two closely related and very popular tulips from central Asia are *T. batalinii* with yellow or apricot flowers and *T. linifolia* with scarlet black centred flowers. A slightly taller species and rather more difficult to grow is *T. montana* (syn *T. wilsoniana*.) If happy it is well worth the effort. In the restricted area of the raised bed, there is no need to plant in groups of a dozen or so; three to five bulbs suitably placed will prove adequate.

Among the non-weedy members of the genus *Oxalis* are three worthwhile plants, which must be planted in full sun if the flowers are to be seen at their best. They are *O. enneaphylla* in both pink and white forms; *O. laciniata* in the deep blue form and the cross between the two *O. x 'Ione Hecker'*. All are from South America and revel in their environment. From South Africa forms of rhodohypoxis also relish similar conditions and flower over a long period.

Corydalis cashmeriana has proved difficult in the past but on the raised bed has proved quite amenable. Planted on the north side of the clump of *Viola x 'Irish Molly'* the blue of the corydalis stands out with stunning effect against the browns, blacks and yellows of the viola. *Corydalis solida*, seems to like similar conditions but the reddish flowers are less attractive. A near relative *C. transsilvanica* with beautiful pink flowers is seen to advantage when planted beside the white *Dicentra cucullaria*. Propagation of the corydalis is by very careful division or by seed if available.

Ever on the look out for bulbs or corms to extend the flowering season,

I find that *Cyclamen hederifolium* meets the need in September and *C. coum* in December. The beautiful leaves of *C. hederifolium* makes it a 10 months a year plant. Both plants come readily from seed. The remaining 17 members of the genus are best maintained in the alpine house if in fact you can find them.

The genus *Allium* boasts a host of species many of which are useful garden plants. A few of the dwarf species have become inhabitants of the raised bed. Possibly best of all is *A. beesianum* which flowers in late summer when 20cm stems carry substantial blue flowers. *Allium cyaneum* with thread like leaves and tiny cobalt blue flowers seeds itself happily around but cannot be said to be invasive. *Allium amabile* and the smaller forms of *A. flavum* add a touch of pink and yellow respectively. The autumn flowering *Crocus speciosus* also provides late colour but has to be kept within bounds as it seeds itself all over the place. Seldom seen is *Romulea macowanii alticola* with very fine rush like leaves and good yellow crocus like flowers in September. It must be planted in full sun or the flowers won't open. When suited it produces plenty of seed which germinates readily.

Alpines

There are many alpines which are suitable for the top of the raised bed, and I propose to discuss these in order of time of flowering. Among the first to flower in early February is *Iberis calendulacea*, a name for which I can find no authority not even in the latest index of the Journal. The plant is little more than 3cm high with typical shining white candytuft flowers spreading slowly but not invasive. It is worth a place because of its early flowering.

In February and March many of the saxifrages make a brave show. Those which have found a home on the wall include *SS. 'Jenkinsae'*; '*Cranbourne*'; *apiculata*, '*Haagii*', *x burseriana*, '*Sulphurea*' and *x 'Irvingii'*. A particularly attractive plant of small stature is *S. 'Harlow Car'* with deep pink flowers. The recently introduced Nepalese species *S. georgeii* grows well but so far has not flowered. It makes a very neat cushion with tiny tight rosettes. May and June flowering species and hybrids such as *S. cotyledon*, '*Southside Seedling*'; *S. longifolia* and *S. cochlearis* '*Minor*' have attractive foliage and flowers. In a class by itself is the widely distributed *S. oppositifolia* in all its forms. Most of the species and hybrids of this large genus may be propagated by detaching rosettes and growing on in a gritty mixture. Seed may also be used but you may have to wait longer.

Hepatica nobilis (syn *triloba*) is found throughout Europe and Asia and even in North America. The flowers may be red, white or blue and flowering as they do in late February-early March one cannot help but

notice them. Most sought after are the double forms, the double white being practically unobtainable. Propagation is by division in July or seed in March.

The genus *Draba* includes a number of cushion plants often kept under glass because they do make attractive specimens in the alpine house. Most are perfectly hardy and here on the 'Great Wall' *D. aizoides* and *D. rigida* present no problem. *D. bryoides imbricata* makes a compact symmetrical cushion and this year in early March has covered itself with bright yellow flowers on thin stems. The ravages of several winters outside are now, however, beginning to show in the form of dead patches and mess accumulating under the tiny rosettes. It is to be hoped that some manipulation with the tweezers will overcome the problem. Most can be raised from seed but the seedlings require special care.

Primulaceae contains in excess of 600 species and probably more hybrids so that there is a wide choice, the difficulty lies in making it. My first choice because of its small size was *P.* x 'Blairside Yellow' a member of the Auricula section which is planted in a position where it can be viewed in comfort. It is never at its best in a pot and seems to prefer being outside. Propagation has to be by division. It appreciates an occasional top dressing of bone meal. One of the easiest and best of recent introductions is *P.* 'Lismore Yellow' with larger flowers of clear yellow. It has an appeal all its own.

P. clarkei is another tiny but desirable species with pink flowers seen at its best at table top level. It requires frequent division if its demise is to be prevented. Thriving in the same environment is *P. scotica* which must be planted well above ground level as the flowers are so small and can quite easily remain unnoticed. Flowering in June it sets viable seed which germinates readily. *P. minima alba* further extends the colour range of these delightful miniatures as do the magenta flowers of *P. clusiana*, another species which resents pot culture.

A *P. juliae* hybrid has given particular pleasure this year. I became aware of the deep crimson flowers in early January and, at the end of March, it is still flowering although the leaves have yet to appear. From last years experience it will continue flowering until the end of May. Portions of root taken in autumn and potted on will ensure a build up of stock.

Other European species for which I have found places include *P. marginata* with its varieties 'Alba', 'Beamish', 'Caerulea', 'Kesselring' and 'Pritchard's form'. The hybrids 'Linda Pope' and 'Hyacintha' have also settled down. *P. pubescens* is the result of a natural cross between *P. auricula* and *P. hirsuta* but over the years hybridisers have produced a number of named forms including 'Boothmans Variety', 'Freedom', 'Mrs J. H. Wilson', 'Rufus', 'The General', 'Ruby' and 'Crichton Red'. All have been

given VIP treatment on the Great Wall. Another member of the section Auriculac given me by Mr David Tuckwell and aptly named by him 'Rusty Dusty' adds an unexpected brown to the colour range.

In the shadiest part of the bed two members of the Asiatic group of primulus have been planted with added peat and leaf mould at their roots. *Primula reidii* and *P. reidii williamsii* are surely among the most beautiful of alpine plants with their widely bell-shaped scented flowers of ivory white and delicate blue respectively. The leaves are primrose-like with long hairs. Their appearance and their scent demand that they be brought as near to the eye and nose as possible. As both plants die back to a resting bud, they should be carefully labelled, as over-exuberant forking could result in their being thrown out. They are not long lived, but under good conditions they set plenty of seed which should ensure their continuance. New growth may not be detected until late in May.

The rosette-forming *Morisia monanthos* (syn *hypogaea*) is an entirely suitable plant for the top of the raised bed yet is seldom seen. The delicately-cut green leaves and bright yellow flowers appear in succession over a long period. A native of Corsica and Sardinia it may be propagated from seed but quicker results may be had from root cuttings. In fact the rosettes may be cut off at or just below soil level and planted in a mixture of sand and peat where they will root; while the bare roots will themselves grow new rosettes. With this abundance of material it is difficult to understand why the plant is apparently so scarce.

Calceolaria darwinii from the southern tip of South America is disliked by some and appeals to others. Any plant which has defied the rules and produced a pouched flower with a prominent white waxy lip ought to be taken seriously and deserves its prominent position on the 'Great Wall' where those who like it can appreciate it. Seed is the best method of increase and percentage germination is high when sown fresh even green. This has one disadvantage in that the young seedlings may be difficult to take through the winter. A double sowing in August and in February is recommended.

A suitable place has also been found for *Calceolaria tenella* from Chile where it will be found wandering at the base of a rock. The extra elevation of the bed allows the small yellow flowers to be seen against the background of tiny green leaves. Whether the plant will be entirely hardy in this situation remains to be seen. Propagation is by division in June or July in peaty mixture.

Soldanellas are splendid subjects for the raised bed provided they are planted in an area regularly visited. Slugs have an avid predilection for the young immature flower buds and regular visiting and inspection ensure that damage is minimised. Propagation may be by seed or division.

Spring-flowering gentians are particularly good subjects for the raised bed but many would say that autumn flowering species are best left in the open garden at low levels where they are less likely to be affected by drought in summer. When a large number of species and hybrids are grown in this way even when properly labelled, the labels get pulled out, are broken and lost and re-naming becomes a nightmare. Keeping and labelling representative examples of each plant on the raised bed where the labels are less likely to be damaged or lost is a great advantage. My choice of species and hybrids has again been made with a view to providing as long a flowering period as possible. In May the various forms of *G. acaulis* such as the Cambridge blue *G. coelestina* and the white form are invaluable. The spring gentian *G. verna angulosa* is a must, despite being short lived; it is easily replaced by seed sown in October. These two species together with *G. alpina* will provide some colour until the end of June. A distinctive feature of the flowers of *G. loderi* which flowers in early July are the deeply cut lobes and finely fringed plicae. The colour is a good blue. The plant occasionally sets viable seed and reproduction is best by this means.

Gentiana saxosa from New Zealand gives an excellent account of itself in August with white flowers in profusion on dark stems. The fact that it is not long lived is not important as under the conditions of the raised bed hundreds of self sown seedlings are produced.

One of the finest of the autumn-flowering gentians and one of the last to flower is *G. veitchiorum* with rich cornflower blue flowers. The plant is slow to increase but hand pollination followed by seed sowing is probably the best way to achieve this. A form of *G. sino-ornata* which I acquired last year has proved to be an excellent plant. The flowers are a good medium blue but its outstanding feature is its compactness. The flowers huddled together and standing perfectly upright constantly attract the eye. Two forms of *G. ternifolia*, one less floriferous than the other, have as yet to show their mettle (see p.276).

Over the years I have obtained from different sources many plants of *G. farreri* none of which fit the description of the plant first shown in 1916. It is quite possible, as suggested by G. H. Berry, that, due to different growing conditions, the plant has lost its original greeny-blue colour. The principal aids to identification are the leaves which are very narrow and reflexed.

Many of my favourite gentians are to be found among the hybrids, these include *G. x 'Bernardii'* with large deep blue flowers and dark purple patches inside the corolla. Flowering in midsummer *G. x 'Caroli'* is unmistakable with slender trumpets of sky blue. The plant is small, frail but beautiful. It is also slow to increase. Even smaller in stature and even slower to increase is *C. 'Glendevon'*. This is the ideal gentian for a trough

with flowers large in relation to the size of the cushion but quite small compared to others of the same ilk. Also deserving of a place nearer eye level is *G.* 'Elizabeth' probably a *G. farreri* x *ornata* hybrid, the narrow leaves indicating the *farreri* influence and the tubby trumpet that of *ornata*. The flower lobes are an indescribable blue while the inside of the corolla is almost French grey. Other hybrids on the bed include x 'Iceberg', a very pale blue; 'French Barker', dark blue; 'Edith Sarah' with deep blue flowers and prominent white stripes the length of the corolla; x 'Ida K' with large sky blue flowers is outstanding. A plant bought as 'Blue Heaven' does not fit the current description as it has deep royal blue flowers on long stems. A fortuitous buy on my lucky day.

Other hybrids which have all found a place on the Great Wall include x 'Christine Jean'; 'Devonhall', x *hexafarreri*; 'Inverleith' and its seedling 'Midnight'; 'Stevenagensis'; 'Susan Jane', x 'Veora' and 'Kidbrook Seedling'. Planting all these gentians at random along the top of the Great Wall gives the impression of a gigantic bracelet studded with sapphires.

Other plants, grown for late spring and summer flowering, and which have found their proper place on the raised bed include, *Celmisia argentea* which when grown in a pot refused to flower but outside on the wall is quite spectacular when covered with its stemless white flowers in June and makes a handsome silver cushion when not in flower.

During July and August *Dianthus* species and hybrids are a godsend. Among the best are *D. callizonus*, pink with a dark coloured centre zone. This is not the easiest of plants to grow and keep but some success should be obtained by taking cuttings in July or sowing seed in February. *D. pavonius* (syn *neglectus*) and its offspring 'Inshriach Dazzler', the white form of 'La Bourbrille', 'Inshriach Startler' and the oddly named 'Joan's Blood' easily earn their keep. All can be propagated from cuttings.

Campanulas because of their late flowering are seldom seen on the Spring Show benches but plants such as *Campanula aucheri*, *C. tridentata* and *C. turbinata* are all worth a place. *C.* 'Dixons Gold' has yellowish gold leaves and blue flowers and is an all the year round plant. Propagation is best by division. A close relation of the campanulus is *Edrianthus pumilio* which produces neat tufts of narrow leaves and carries violet blue bells in profusion. It is also a good trough plant, 5-7cm high, not long lived but easily propagated from seed.

A recently acquired plant is *Pratia oligodon*, again a name for which I can find no authority. It is a creeping plant with bright blue flowers and dark green leaves an improvement on *P. pedunculata* which is the only other species I grow. Whether *P. oligodon* will have a permanent place on the raised bed remains to be seen as like its relative it will probably become invasive. Propagation will consist of tearing the plant apart and re-potting.

Places have been found for various forms of *pulsatilla* and in particular a floriferous form of *P. alba*. A seedling from the pink form has not yet flowered while *P. vernalis* has been included because it flowers early and thus extends the flowering season of the group as a whole. Seed which is always available after flowering is the easiest means of increase and is best sown straight off the plant.

In addition to dwarf trees a few shrubs and sub-shrubs have been used to give further perspective on the otherwise fairly flat table top. All have been chosen for their known reliability over a period of 30 years or more. *Hebe buchanani* 'Minor' has a reputation for being shy with its flowers but here it has flowered regularly. Congested branchlets carry dull green leaves on bun shaped hummocks. It is easily propagated from rooted pieces taken from the base of the plant.

Daphne arbuscula could make an attractive addition to the bed if it would only flower. I bought it 35 years ago and grew it on in a pot for a number of years and then transferred it to the rock garden. In all that time I have never seen it in flower. Re-siting it on the raised bed may work wonders this time!

In contrast to the daphne, *Penstemon rupicola* makes a wonderful splash of colour in June. Like a number of penstemons this plant also suffers from die-back but the dead branches are easily removed and the plant with its rosy carmine flowers comes away as good as new. A less shrubby plant but well worth growing is *P. scouleri alba*. Both plants may be readily propagated from cuttings.

Perezia recurvata from the Falkland Islands makes a dense mat of stiff stems with dark green leaves and produces its blue daisies every summer. In some locations it is less free flowering. Cuttings root readily.

Nardophyllum bryoides from Patagonia is still quite rare in cultivation. When grown outside it produces myriads of narrow stems clothed with tiny greyish leaves following the contours of the ground and of any stone which may be nearby. When grown inside it grows more upright and loses some of its character. Over the past 10 winters it has appeared to be quite hardy and has covered an area of $\frac{1}{6}$ square metre but has not flowered. This winter one of the mildest on record and, here in Aberdeenshire, one of the driest, it has begun to show signs of distress and large blackish brown patches have appeared. However, there is still plenty of fresh material from which cuttings can be taken.

From the Olympic mountains in the State of Washington comes *Petrophytum hendersonii*, a plant which I have had for at least 30 years. Initially I grew it in a pot in the alpine house and eventually took a magnificently flowered plant to the SRGC show where it was considered for the Forrest medal. Sadly I heard afterwards that the judges, quite

rightly, considered it unsuitable because having been inside for a number of years it had grown out of character. It has been outside ever since and now it is on the 'Great Wall' where its creamy white bottle brush flowers can be seen to advantage. It is easily grown from cuttings.

These are some of the plants on the 'Great Wall'. There are many more which publishing and editorial deadlines prevent me mentioning. Perhaps the most surprising thing about the wall is the diversity of plants which it supports. No special attempt has been made to prepare soil mixtures for lime lovers or lime haters as they all seem to thrive on a $\frac{1}{3}$ mixture of peat, coarse sand and loam with added fertiliser. It is the ease of access and the very diversity which holds the interest and makes weeding and maintenance a pleasure.





Fig 40 *Ajuga bombycina* (see p.260)

C. North

Fig. 41 *Dorystoechas hastata* (see p.264)

C. North





Fig 42 *Colchicum bowlesianum* (see p.287)

H. Esslemont

Fig. 43 *Crocus scepusiensis* (see p.288)

H. Esslemont



In praise of lattice pots

R. NORTCLIFFE

I CAME across lattice pots three years ago, sold for tomatoes in grow-bags, although I cannot see why they are needed for this purpose.

Having heard them mentioned for bulbs I gave them a try and found them to be marvellous; now I can't over-water.

My glasshouse is given over to bulbs growing in beds, some soil and one filled with sand. In the sand bed, I am struggling, none too successfully, to grow *Calochortus* in lattice pots. In the soil-filled beds, most bulbs are planted direct in the soil but bulbs which I fear may romp away are in the standard lattice pots, 5½" diam x 4" deep. Tiny bulbs such as *Crocus fleischeri* and 2nd year cyclamen are in the egg-cup size, obtained from redundant house plants so they don't get lost. I have also made lattice Long Toms from large yoghurt cartons or large polystyrene cups, easily done with a piece of hot metal.

Lattice pots are also handy in the garden, especially for 2nd year bulbils and off-sets. You know where they are and they are easy to protect, using plastic domes held in place with a goal post made from a wire coat-hanger. I usually dig a hole, fill it with grit and sand and place my lattice pot in the middle. It is a most successful method which I can thoroughly recommend.

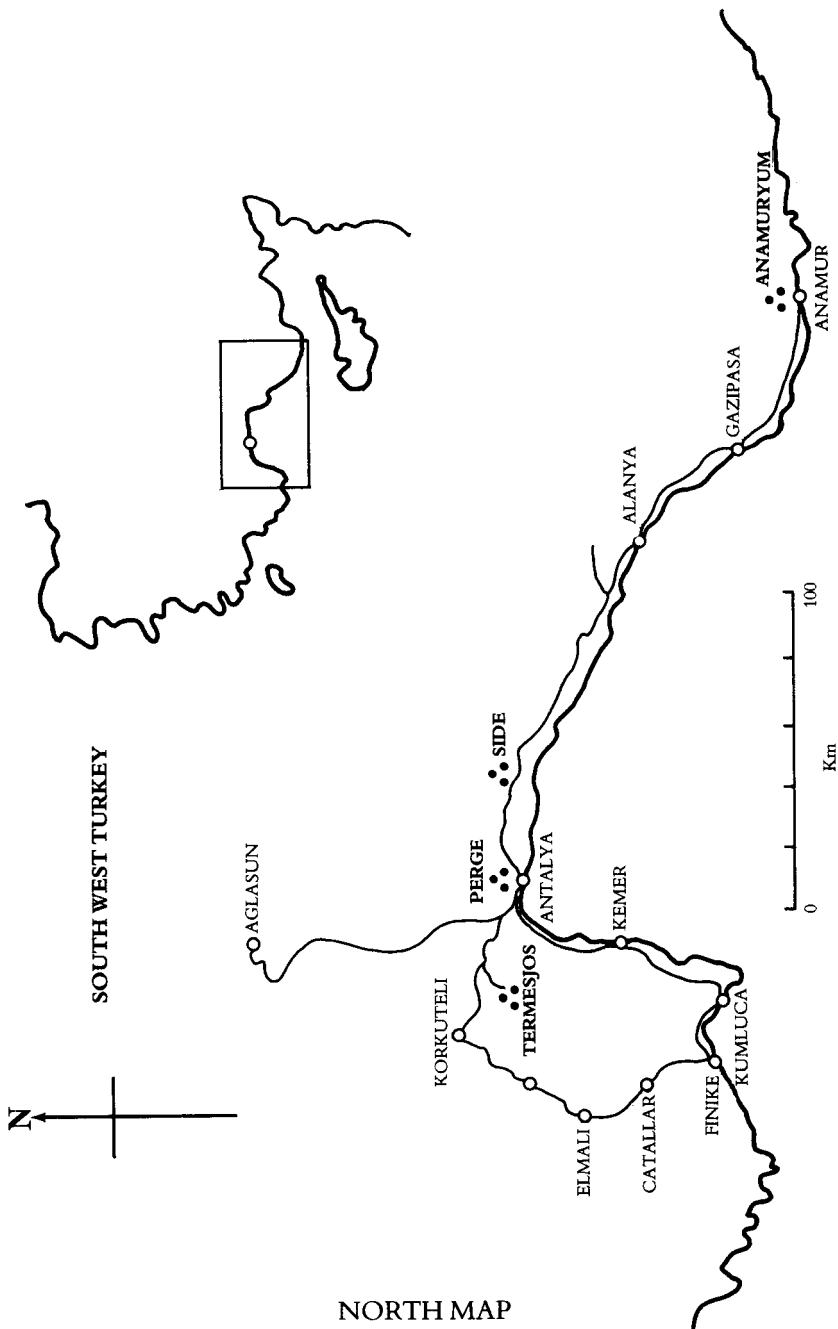
South West Turkey – Alanya and Antalya

CHRIS AND MARIE NORTH

GOING to Turkey in the 70's was thought of as something only for the more adventurous traveller but, in the last few years, resorts along the Mediterranean coast of west and south west Turkey have been developed rapidly and now compete in popularity for holiday traffic with those of Greece and Spain. We spent two weeks there in 1982, based at Alanya and Antalya. The ancient Greeks called this region Pamphylia, meaning 'land of all tribes', and there is plenty of evidence of classical civilisation left there today. It covers part of the ancient countries of Lycia in the west and Cilicia in the east and the sites of Aspendos, Perge, Side and Termessos which are all within easy reach of Antalya rival those of mainland Greece. Plenty of other small reminders can be seen; for example, at one petrol filling station the owner had erected a Greek column he had found in the garden, cemented it in to stand upright, and painted it bright blue!

For some 30 kilometres east of Antalya there are beautiful stretches of sandy beach and the area has been called 'the Turkish Riviera' or 'the Turquoise Coast'. Behind the beaches lies the backcloth of the impressive west end of the Taurus mountain range which becomes the Bey mountains to the west and north west of Antalya. They are snow-capped well into April and destabilise the weather to cause thunderstorms and rather frequent hail showers so that the crops of bananas, which are grown in places along the coastal strip, have to have the bunches of ripening fruit protected by thick plastic bags. Needless to say, the springtime is not all thunderstorms, there are long periods of warm sunny weather.

For the plant enthusiast Turkey presents a problem. Although its flora has many plants which are found throughout the Mediterranean there is, of course, a large Asian element and many interesting pockets of endemic species which are not easy to name. The plant hunter is more or less on his own there, there is no homely 'Polunin' or 'Huxley' to act as a guide. Only recently has the first comprehensive flora of the area been produced by Professor Davis and his colleagues of the 'Flora of Turkey Unit' at Edinburgh. It is a superb work and ranks with the very best of its kind but there are some nine volumes, it is not cheap and there are no illustrations. If one could carry it to Turkey and use it on the spot then it would be



possible to name all one saw 'correctly', but few of us can do that. There is an excellent book on 'The Bulbous Plants of Turkey' (Baytop and Mathew, 1984) with fine coloured illustrations though it does not cover all the monocots and leaves out descriptions, for example, of the many interesting species of asphodeline for they are not bulbous. The only sure way of identifying plant species from Turkey, if one does not take the new flora, is to collect herbarium specimens and have them identified when one gets back home; as we did on behalf of the Royal Botanic Gardens of Edinburgh. In this article we include an asterisk before the names of those plants which are special to the region. Many of the others are illustrated in Polunin (1980), Polunin and Smythies (1973) or Polunin and Huxley (1965) or are commonly known to most enthusiasts. We hope that this convention will be of help to readers who go to the area.

Alanya. This interesting small town is the centre for the beach-loving holiday makers in the area. It has a castle associated with Alâeddin Keykubad and a 'magic' cave where sufferers of respiratory diseases may spend a period of cure, that is, according to one of the locals, if they do not die of a heart attack through the heat and humidity – the Turks like a joke! Unfortunately there does not seem to be any connection with Aladdin and his magic lamp.

A visit to the castle was quite rewarding botanically. Our hotel lay a few kilometers to the east of the town and as we walked there we noted some very good plants of *Arum dioscoridis* with velvety, dark blackish spathes. Passing a marshy area we saw many egrets and glossy ibis, some pratincoles, purple herons and we saw a 'frozen' bittern at close quarters. There were acres of *Iris pseudacorus* in flower and the moisture-loving *Veronica anagalloides* (Syn. *V. anagallis-aquatica*). Near Alanya along the upper reaches of the beach in the sand grew *Medicago marina*, a small rubiaceae *Valanta hispida*, the attractive small *Campanula stellaris* with fairly large, mauve-blue flowers and *Trifolium pamphylicum* appropriately in its home area, Pamphylia. There were echiums and verbascums not in flower so it was impossible to identify the species. Climbing up to the castle we noted fine bushes of *Styrax officinalis* growing in surprisingly dry places and the evil-smelling, but showy leguminous shrub with yellow flowers *Anagyris foetida*. Round about grew *Asphodelus microcarpus*, *Hyoscyamus aureus* on the walls, *Leopoldia comosa*, *Phagnalon rupestre*, *Ruta chalepensis*, *Salvia viridis* and *Vicia hybrida*. The salvia is the species grown in gardens as *Salvia horminum* an annual with bright coloured upper bracts that, in the wild form, are usually purple though they may be pink or white in cultivation. The real find here was **Ajuga bombycina* with balls of hairy leaves dotted with yellow flowers (Fig.40 p.255). It resembles a very compact, hairy form of the ground pine *Ajuga chamaepitys* and would

make an attractive plant for the rock garden. Apparently it has only twice been found before and on both occasions from this area near Alanya castle. Alongside it grew *Rosularia globulariifolia*, a succulent plant resembling a large sempervivum covered with viscid hairs and having a characteristic smell. The small flowers have white petals.

Back at the hotel there were a number of interesting weeds in the garden. The lawn contained a creeping, verbena-like, plant with heads of purple, yellow-eyed, flowers – **Phyla canescens (Lippia repens)*. This is a native of South America and is sometimes, appropriately, cultivated as a substitute for lawn grass in dry areas. Here it shared the lawn with a small clover having flat heads of pink flowers, *Trifolium resupinatum*. In the flower beds grew *Geranium purpureum* like a leggy form of our herb Robert with smaller and darker flowers. In rough ground near the hotel there were many fine specimens of *Arum dioscoridis*, plants of the shrubby chaste tree *Vitex agnus-castus* that has a pleasant camphor-like smell, (its buddleia-like flower heads are produced in late summer), a coronilla-like plant with yellow flowers, **Melilotus sprunerianus*, the bright pink *Silene papillosa* and in sand by the shore the interesting annual *Campanula stellaris*.

To the north of the main coastal road that ran close to the hotel there is a rocky bluff that had been roughly cultivated in irregular patches with cereals and broad beans and lightly grazed by sheep. The plants we saw here were typical of those we encountered in many other places and are listed in some detail:

The most evident shrubs were:

<i>Calicotome villosa</i>	<i>Euphorbia caracias</i>
<i>Cistus salvifolius</i>	<i>Myrtus communis</i>
<i>C. villosus</i>	<i>Olea europaea</i>
<i>Ephedera fragilis</i>	<i>*Phlomis leucophracta</i>
<i>Erica sp.</i>	<i>Quercus coccifera</i>

The phlomis was like the well-known Jerusalem sage but had narrower leaves. With it grew another phlomis with broader leaves that had a navy margin and on some plants a silvery and on others a golden felty surface. The plants evidently started flowering later than *P. leucophracta* and the flowers were brown and yellow. From the herbarium specimens we collected it was identified as a hybrid **P. lunariifolia x leucophracta* – certainly a plant worth having in the garden, but probably not hardy.

Smaller species growing amongst the shrubs included:

<i>Agrostemma githago</i>	<i>*Gladiolus anatolicus</i>
<i>Ajuga chamaepitys</i>	<i>Orobanche caryophyllacea</i>
<i>Anagallis arvensis</i>	<i>Plantago cretica</i>
<i>Anthemis sp.</i>	<i>*Scrophularia pinardii</i>
<i>Centaureum maritimum</i>	<i>Serapias vomeracea</i>
<i>C. pulchellum</i>	<i>Sherardia arvensis</i>

The two centaureiums *C. maritimum* and *C. pulchellum* are rather similar, small, more or less unbranched herbs with grassy leaves and yellow and pink flowers, respectively. They occur throughout the Mediterranean area but are often overlooked because of their small size. *Orobanche caryophyllacea*, parasitising the broad beans, had fairly large spikes of straw-coloured flowers with a strong scent of clove carnations.

As it was impossible to hire a car in Alanya we joined a bus tour that went eastwards along the coast some 80km to Anamur. The road passed by many banana plantations until reaching Gazipasa when the surroundings became rocky with rugged pine-clad slopes where wolves still live and it is said that it is inadvisable to get out of one's car at night for fear of being set upon by the mongrel dogs that have bred with them – wolves themselves respect humans. The rocky ground was covered with cistus scrub, mainly *C. salvifolius* and *C. villosus* and there was a showy vetch identified as *Vicia villosa* or *V. cassia*.

During a brief stop at Anamur we sampled the local herb tea called 'Adacay' (meaning island tea in Turkish) which was very pleasant, especially when drunk in the small Turkish tea glasses. We managed to get a sample of the dry material and had it identified as a species of sideritis but various species of sage are also used under the same name and some of these are less palatable.

It seemed that every house in Anamur had its stork's nest and not only did we see these birds sitting but at least 25 of them soaring in the warm air currents for pleasure. They are considered as 'lucky' and respected by the locals for they come and leave from the direction of Mecca. Other birds here included the beautiful blue rollers, choughs on the rocky areas and red-legged falcons. Anamur is a centre for peanut cultivation but we saw no crops though the plants are occasionally found as a weed round here growing in sand by the shore.

At a short distance from Anamur is the old Roman city of Anamurium that was adopted later by the Byzantines. There was no grazing here. The lush vegetation included: *Coronilla parviflora*, *Trifolium pamphylicum*, *Mandragora officinalis*, *Campanula stellaris*, *Styrax officinalis*, *Laurus nobilis* and a very fine robust onosma with hairy grey foliage and large white flowers that turned crimson-purple as they aged. The exact identity of the onosma was discovered never but it seemed to be *O. alboroseum* which, we discovered on a later visit to Turkey, is fairly widespread. Seeds from it produced vigorous plants that did well in the garden but failed to survive our winter in the garden without protection. It is probably the same as the *O. albo-pilosum* described in the RHS Dictionary of Gardening. There is a well-preserved 12th century castle at Anamur – the nearest fortress to Cyprus. Here we saw no new plants but the rosularia and *Salvia viridis* were plentiful and there were tortoises.

Back at Alanya we made short outings to the classical sites of Side and Aspendos. On the way we encountered a group of shepherds who were leading their flocks and clad in the local 'kepenek' – a stiff cloak made from felt by boiling wool repeatedly in soda. They were friendly but we were glad to have protection from their dogs which are the main hazard to tourists 'on the loose' in the area. At Side we saw *Anagyris foetida*, *Clematis cirrhosus* and a black bryony *Tamus communis* ssp. *cretica*. Near Manavgat there is extensive cultivation of cereals and cotton and we noted no special plants though in the irrigation ditches there were snowy egrets and marsh terns flying around.

Antalya The coach ride from Alanya to Antalya was very comfortable with an up-to-date vehicle. Tickets had to be booked at an office before boarding the bus and passengers allocated a numbered seat. The driver, and presumably the passengers, received comfort from an exhortation to Allah – 'Bismillahirrahmanirrahim' – printed above the driver's seat and passengers held out their hands for a gratis squirt of rose water from the conductor.

Antalya is a pleasant small town with lively cafes and a magnificent view over the sea to the snow covered Bey mountains. At night swarms of bee-eaters flew around enjoying the street lighting, settling on wires and television aerials and burbling in their special way. As soon as possible we hired a car and went off first to the classical site of Termessos. Here there has been little restoration of the buildings and pine, oak, holly and birch trees grow amongst the fallen ruins. We noted:

<i>Arabis ionocarpa</i>	<i>Galium cruciata</i>
<i>A. vernalis</i>	<i>Geranium tuberosum</i>
<i>Bellevalia</i> sp.	<i>Lilium candidum</i>
<i>Cardamine graeca</i>	<i>Muscari</i> sp.
<i>Colchicum macrophyllum</i>	<i>Ornithogalum</i> sp.
<i>Doronicum orientale</i>	<i>Symphytum orientale</i>
* <i>Dorystoechas hastata</i>	<i>Vicia narbonensis</i>
<i>Fibigia eriocarpa</i>	<i>Viola kitaibeliana</i>

Of the crucifers *Arabis ionocarpa* is a small plant with white flowers, the cardamine also has white flowers and *Fibigia eriocarpa* is a tall robust plant with yellow flowers and bat-shaped fruits. *Symphytum orientale* has small white flowers and was badly eaten by insects. *Viola kitaibeliana* is a miniature annual heartsease. The really interesting find was the dorystoechas, a monotypic labiate species which is quite distinct and confined to a very small area of Turkey (Davis 1971). It somewhat resembles our garden sage with leaves having the same sort of surface and smell but mainly hastate (shaped like a halberd). The flowers are quite different; small, white and carried close together on upright inflorescences

so that they look rather like candles (Fig.41 p.255).

The most exciting part of our visit was when we drove northwestwards to Korkuteli and then south over the Bey mountains to Finike on the coast and back to Antalya. Between Korkuteli and Elmali (2506m) the road passes through high, limestone country which is excessively grazed and turned to steppe in places. There were a few small pines and junipers and when one got out of the car to look around there were a surprising number of scattered small plants. It was very calm, bright and cool and one could hear cuckoos and bee eaters. Interesting plants included:

* <i>Aristolochia maurorum</i>	<i>Leontice leontopetalum</i>
* <i>Aubretia pinardii</i>	* <i>Moltkia aurea</i>
<i>Ceratocephalus falcatus</i>	* <i>M. caerulea</i>
<i>Geranium tuberosum</i>	* <i>Onosma frutescens</i>
<i>Lathyrus aphaca</i>	<i>Ornithogalum nutans</i>
<i>Prunus prostrata</i>	* <i>Wiedemannia orientalis</i>
<i>Ranunculus argyreus</i>	

The aristolochia had large, rather wide-open and sinister Dutchman's pipes. *Leontice leontopetalum* is a showy, tuberous-rooted plant with heads of yellow flowers sometimes available from bulb specialists – surprisingly it is a member of the Berberidaceae. The *Lathyrus aphaca* had very pale yellow or white flowers – apparently this species splits up into a number of varieties or sub-species in the area. Both of the moltkias were very attractive plants, especially *M. caerulea*, and it is a pity that they are almost impossible to grow in cultivation though they behave as weeds in Turkey. The onosma had small yellow flowers and the wiedemannia is an interesting dead nettle with red flowers.

Passing through Catallar one comes to the coast near Finike. From here along the shore through Kumluca and Kemer there are some fine deserted beaches backed by woods in which grew the following:

<i>Bupleurum sp.</i>	* <i>Dorystoechas hastata</i>
<i>Carduus acicularis</i>	<i>Lagoetia cuminoides</i>
<i>Coringia grandiflora</i>	<i>Smilax aspera</i>
<i>Cymbalaria longipes</i>	<i>Viola kitaibeliana</i>

The carduus is a slender unbranched annual thistle with slightly winged stems and purple flowers. The coringia is an interesting small crucifer with perfoliate leaves and yellow flowers. *Cymbalaria longipes* resembles a robust form of our ivy-leaved toadflax having pale violet flowers with a yellow throat boss; it is a species confined to the eastern Mediterranean and usually found near the sea. The smilax was interesting because it is generally known as a prickly scrambler in garrigue but here it grew up the trees, even to a height of 10 metres.

Our final sortie was northwards to the Isparta region. We intended to

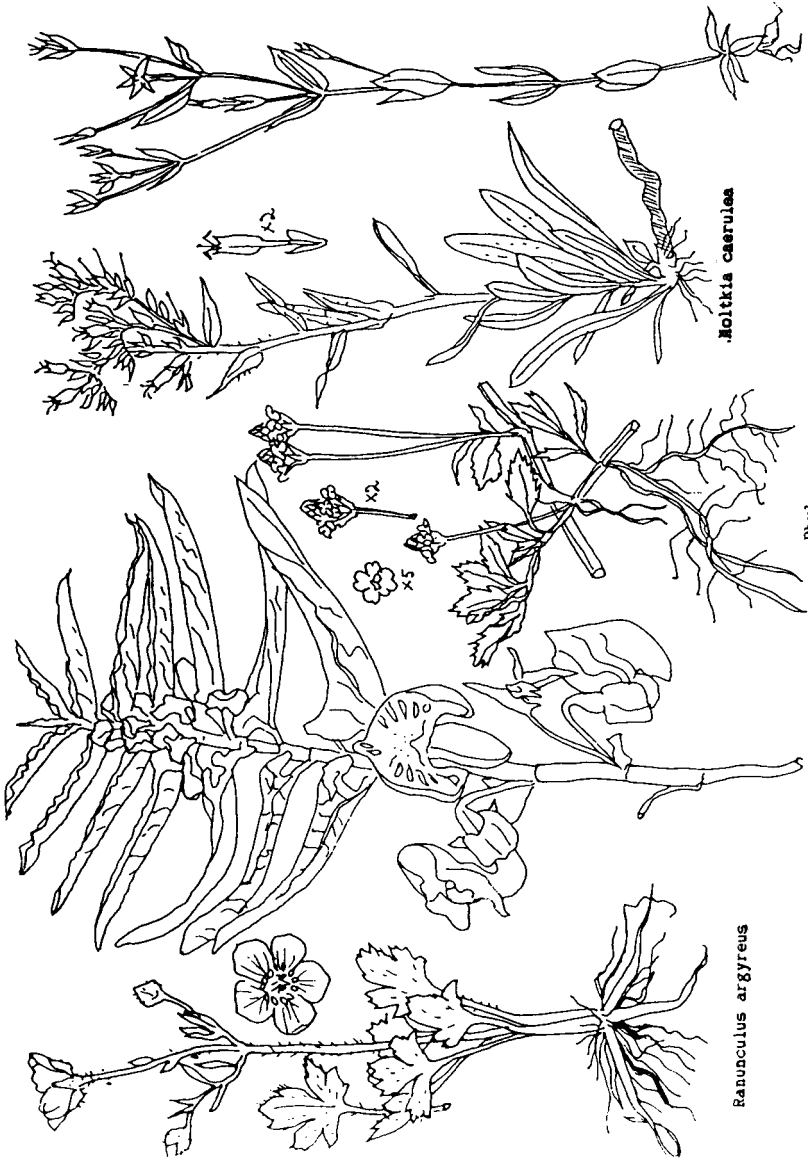
look there for the orchid *Comperia comperiana* as the Edinburgh Botanic Garden had a herbarium specimen collected from a village in the area. Near a place called Dag, the garrigue, comprised mainly of *Quercus coccifera*, contained many plants of a beautiful pink-flowered chamomile-like plant **Anthemis rosea*. There was also much *Daphne sericea* in flower – a dingy pink colour but a beautiful scent. Many fine plants of *Arum dioscoridis* had been eaten off by sheep or goats; the grazing was excessive here. Approaching Aglasun, we saw a tall arum flower spike in bud in a daphne bush in the path of a rapidly approaching flock of sheep so we picked it and took it to the hotel to open. It proved to be **Arum conophalloides* which is not generally found so far west and it was a form with a pink-flushed, instead of the usual yellowish, spathe. This rather curious plant produces its inflorescence on a stalk reaching to a metre in height and the leaves tend to wither before flowering takes place. At this point the camera began to give us trouble and we do not have a photograph of the prize, unfortunately. There is, however, a picture of it in *The Bulb Book* (Rix and Phillips 1981). It has been cultivated but tends to be short-lived. The area round here was well watered and had the air of an alpine valley. In kermes oak scrub we saw plants of *Orchis anatolica* growing on its native ground but many had been eaten by sheep.

Our search for the comperia was unsuccessful. We went to Aglasun and gave a lift to some locals who wanted to go to the village of Baskoy where it had been found. There were plants of euphorbias, ornithogalum, astragalus and muscari and the buttercup *Ranunculus argyreus*, somewhat resembling *R. paludosus*.

Our short visit to this interesting part of the world had come to an end and we returned with the herbarium specimens to Edinburgh. We greatly appreciated the help of Professor Davis and his colleagues for without it we would not have been able to identify many of the more interesting plants with certainty. Our assessment for plant hunting in S. W. Turkey is that it is very exciting, but come before the hoards of tourists begin to arrive and expect to find the most exciting plants hard-grazed.

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Ranunculus argyreus

Aristolochia maurorum

Phyla canescens

Moltkia caerulea

Centaurium pulchellum

Bulbs from seed

DENIS HARDY

THE arrival in mid-February of some of this year's requests from the Seed Exchange prompts a review of the pleasure that growing bulbs from seed has given over the last decade. There is a saying that a man should conduct his affairs as though he might die tomorrow, but plant his garden as though he would live forever. "Man" here embraces "woman" of course. The last part of the saying is certainly relevant to the growing of bulbs from seed since three to five years will elapse before any flowers are seen, and the last species described below takes seven or more years.

The trick is to make sowings each year so that after the first flowerless years, each succeeding year brings something new, as well as increases in those already flowered. A crystal ball would be fine to divine which species will provide most interest in the future; changes take a while to work through the system. The literature, viz. articles, books and catalogues (especially catalogues) is useful; a friendly expert, invaluable. No claim to expertise is made here but some description is given of a variety of bulbs that have been rewarding, from the quietly discerning to the spectacular.

Most of the plants are growing outside at 150m, north of Inverness overlooking the Beaully Firth. To plagiarise Jack Drake's catalogue (and work in a joke first heard in primary school) any plant that survives here must be Hardy. That includes a number of fritillaries, though some of these are kept in the unheated greenhouse. Seedlings are coddled there also, or in a frame.

Seed is sown in the same way for all bulbs, usually fresh or on receipt, in small pots with a free-draining compost. Both clay and plastic pots have been used with equal success, and sometimes lack of it. Compost for plastic pots is better with a higher proportion of sharp sand; both soil-based and peat-based mixtures are satisfactory. No, of course I don't use crocks, though a piece of fine wire mesh at the base of a clay pot keeps compost in and slugs out. Seed is sown thinly since seedling bulbs are best left a year or more until they are big enough to move. The seeds are covered with a thin layer of 3mm grit and kept in open shade outside. Frost and snow may be required for germination of some species.

Seedling cyclamen may be potted on at any convenient time, but most other bulb seedlings are best moved en masse to a larger pot in a richer compost during the dormant season. In this way the tiny bulbs are not

disturbed, and within one to three years should be large enough to be separated and treated individually. This is essentially the method of Henry Tod, republished in *The Rock Garden* 18, 262(1983), also available as a leaflet from the Club's Seed Exchange.

Cyclamen hederifolium (formerly *C. neapolitanum*) was the first bulbous species I ever grew from seed, though it was sown by my daughter Alison who was given the seed at an Aberdeen Show as "suitable for a beginner", with which to start. It flowered after a few years in our Aberdeen garden and the tubers increased in size annually. They and their descendants now grace the north side of a red sandstone trough outside our patio window. The trough was made from several large pieces of the local Devonian sandstone that formed a fireplace surround in the original cottage here. I can see the cyclamen as I write, the snow falling onto the varied patterns of marbled silver and dark green that mark the leaves, which range in form from arrow-head to oval with crinkled or smooth edges. These leaves are as fresh in appearance as when they came out last autumn. A great authority on the genus, E. A. Bowles, is frequently quoted as writing of *C. hederifolium* "it pays rent for eleven months of the year".

A native of the Mediterranean basin from Italy to West Turkey, this species is very hardy and has survived winter temperatures here of 10°F (-12°C). The pink flowers appear in August, followed by the new leaves in September. The leaves persist while the seed heads form, like small marbles on stalks that coil until the ripe heads are pulled down to tuber level. The large sticky seeds are easily collected in late summer, some being returned to the Seed Exchange to complete the cycle begun with the gift of seed to Alison. Some seed is left uncollected in the hope that the ants are aware of the books that refer to the attraction of the sticky seed for these insects, which then carry them off to germinate elsewhere, like discarded lolly-sticks with a genetic code instead of a joke imprinted. Seedlings have appeared round about although the mode of transport has not been observed.

There is also a white flowered form, *C. hederifolium album*; seed of this produced a mixture of white and pink flowered plants, perhaps due to collector error. *CC. cilicium* and *coum* from the Eastern Mediterranean, which should be hardy, are growing outside but have not yet flowered.

My introduction to the dwarf members of the genus *Narcissus* came many years ago from my wife Elizabeth who grew the small species and hybrids such as *N. bulbocodium*, the Hoop Petticoat Daffodil, and *N. triandrus* 'Angels Tears' from bulbs bought cheaply on the five bob (25p) for ten basis. Bearing in mind that the more readily available (cheaper) bulbs are less worth the time spent in growing from seed than those less abundant in the trade (dearer), I decided to attempt some of the latter. This

strategy has the satisfaction of growing some of the rarer plants in numbers that one might hesitate to buy at market prices, ideal for an Aberdonian by adoption.

Narcissus rupicola came with a recommendation in Collins Guide to Bulbs as an excellent species for a pan in the alpine house and also quite hardy outside. A single sowing produced a 4" pot of flowers in the fourth year, now after ten years there are two large pans in the cold greenhouse and several clumps outside. Last year the pans gave early pleasure in March, followed by those outside in mid-April. They lasted for weeks and set masses of seed. This dwarf jonquil from Spain and Portugal has solitary almost flat deep yellow flowers and erect greyish leaves. In the wild it is said often to be found growing against rocks (hence the specific name) and the outside plants are placed in that way.

Flowering now in mid-February for the first time in a trough outside is *N. bulbocodium tenuifolius*, with quite different narrowly funnel-shaped rich yellow flowers. So far I have not grown any of the Cyclamineus or Triandrus group that might be suitable for outdoor cultivation, from seed, nor any of the rarer species that do better in pots in our climate. Two examples of the latter are *N. calcicola* from Portugal, a jonquil with several deep yellow flowers in an umbel, and *N. watieri*, a pure white counterpart of *N. rupicola* from the Atlas Mountains. Both appear in this year's Seed List. Too late now but there's always next year.

The genus *Nomocharis* is native to the high meadows of the Himalaya, Burma and China, and does well in Scotland in the peat garden. Closely allied to *Lilium* and *Fritillaria*, the half-dozen or so species are graceful beauties with large open usually nodding flowers of white or pale pink, often fringed at the edges of the inner segments and spotted with deeper pink or purple. *Nomocharis saluenensis* has a cluster of upward facing flowers. The stems are around 60-90cm high.

These plants have a tendency to hybridise freely amongst themselves and it may be that there is now a race of hybrids in cultivation, perhaps with more vigour than the true species. True or not, seed named for most of the species is offered regularly in seed exchanges. Since the bulbs do not multiply as many lilies and fritillaries do, seed is the only way to enlarge a collection (other than by purchase or gift) so that even if true species were obtained it would be difficult to keep the collection "true".

Nomocharis aperta first flowered in a pot in June, four years after sowing, and was then moved into a raised peat bed in full sun where it has flowered for the last two years. *N. pardanthina* and *N. saluenensis* are coming along, and writing this article has persuaded me that more of this genus must be grown. Interbreeding there may be, but the magnificent *Lewisia cotyledon* hybrids now in cultivation show that miscegenation can be good for you.

If *Nomocharis* consists of six species or thereabouts, *Fritillaria* is some dozen times more abundant with 80 or so spread around the Northern Hemisphere from Europe through the Near and Middle East to Russia, China and North America. There is a British native, *F. meleagris* the snake's head fritillary that naturalises well in moist semi-shade and whose wide nodding chequered bells will be well-known to most readers. Its flowers have been described as varying white with green chequering to deep chocolate through shades of pinkish-lilac and reddish-purple, strongly chequered. Much of the attraction of the genus lies in the variation between flowers of different plants of the same species. As with *F. meleagris*, descriptions rival those of the wine writers' "velvety blackcurrant flavour with a hint of damsons" when one reads (of *F. michailowskyi*) "polished garnet, lower third brilliant yellow, superb". It certainly whets the appetite, as does the sight of such elegant specimens on the Show bench as *F. aurea* ("huge golden eggs"), *F. gibbosa* ("delicate translucent pink") and *F. stenantha* ("pink mob-caps with purple nectaries").

Back down to earth, one might split the frits into three groups; garden-worthy, not too difficult but best under cover, and rare/tricky. Since only *F. meleagris* is cheap to buy and the rest start at about £2 each, seed offers a good way into this fascinating genus. It's not quick, but what's the hurry?

There are no frit experts in our family and so seed savings have been limited to the first two groups above. Those grown under cover are in pots since we have (as yet) no bulb frame. Some 16 species are recommended by various sources for garden use and about half of these have been raised from seed and are now planted outside. "About" half because some species present taxonomic difficulties; it is as well that, unlike *Nomocharis*, hybrids are rare between the species of *Fritillaria*.

Those generally regarded as suitable for garden use are *FF. acmopetala*, *camschatcensis*, *crassifolia* (close to *kurdica* and *olivieri*), *graeca*, *hermonis amana*, *imperialis*, *involucrata*, *latifolia*, *meleagris*, *messanensis* (close to *gracilis*), *pallidiflora*, *pontica* (close to *ionica*), *pyrenaica*, *ruthenica*, *tenella* (close to *nigra*) and *verticillata*. The list could be expanded or reduced on grounds both of taxonomy and practical experience. It contains none of the North American species except *F. camschatcensis* which occurs in both Asia and America. *F. imperialis*, the Crown Imperial, is much the largest at 120cm high with bulbs up to 10cm in diameter and a large umbel of flowers.

"Garden use" in practice can embrace a range of conditions from heavy loam, ideal for *F. meleagris*, to scree. No more shall be added here to the screeds on scree but to remind the reader that it consists of stone chippings,

peat or other organic material, loam and sharp sand in variable and sometimes (except for the chippings) negligible proportions.

F. acmopetala is said to do well in scree and has been planted out into a very gritty mixture. *F. graeca gussichae* produced its distinctive pale green bells with a definite "shoulder" last year in a pot and is now outside in semi-shade. *F. involucrata*, from open limestone areas of the Maritime Alps, also flowered for the first time last year in five years from seed and is now thrusting vigorously through limestone chippings in a fairly rich scree. *FF. kurdica* and *olivieri* are nearby, without limestone.

F. ionica nestles in semi-shade by the greenhouse door, not far from *F. pallidiflora*, both in a well-drained peaty mixture. The last named produced a number of its large pale yellow flowers last year, having first flowered in 1986, four and half years from seed.

With those species that generally do better under cover, there arise questions of dormancy (should one dry off, what about re-potting?) and natural increase other than by seed (offset bulblets). Current thinking favours a warm dryish but not baked period from about June to September, with re-potting just before the first watering from September onward. Bulbs should not be left in fresh dry compost for long. Water is given sparingly at first, then more generously as leaf growth increases. Occasional feeding with fertiliser not too rich in nitrogen builds up the bulbs. A gritty loam based compost is suitable for clay pots, best plunged in sand to reduce temperature variation. For plastic pots a soil-less (some still say soul-less) compost of peat and sand is the thing.

Flowering time is February (this year) to May. Hand pollination is recommended. Hybrids are not unknown but are uncommon.

Some species produce many tiny offsets, or "rice". It is reported from the 1988 RHS Fritillaria Conference that in some American species these do not develop but shrivel if not removed from the parent bulb. Grown on separately they offer a ready means of increase. *Fritillaria pudica* from California to Western Canada is yellow flowered, small and graceful. One of the easier American species, seed from the Siskiyou Mountains produced one flower after five years; the following year seed was set and is now germinating. A pan of rice-grain offsets was also obtained.

F. caucasica has just produced its pendent dark plum blooms; *F. lanceolata*, a tallish American species, usually flowers about a month later. *F. bithynica* (Greece and Turkey), *F. elwesii* (Turkey), *F. nigra* (France, Italy, Balkans to Russia) and *F. ruthenica* (Eastern Europe) have not yet flowered. There are many other species suitable for pot culture, from easy Europeans to difficult Americans.

As related, the impetus to grow *Cyclamen* and *Narcissus* was not self-generated. *Nomocharis* and *Fritillaria* do seem to have been my own idea,

in a manner of speaking. My last two species, both aristocrats, owe their presence in our garden to gifts of seed from Harold Esslemont, who first suggested I might like to try *Crocus banaticus*. Nothing like starting with one of the most unusual and distinct members of the genus. With such a provenance the seed, not to mention the grower, hardly dared fail. Thus in the March following sowing ten months earlier the little group of seedlings was shifted bodily into a larger pot. The process was repeated the following year. This species grows wild in Eastern Europe in moist meadows and light woodland, and so was never allowed to dry out completely in the dormant period.

In June three years after sowing the small corms were separated and potted up in a peaty gritty compost. The large mid-lilac flowers appeared in October before the leaves. These very distinctive flowers have three outer segments that are larger than the inner ones, and that tend to flop outwards giving the whole a superficial resemblance to an iris. It is a pity that the older, descriptive name of *C. iridiflorus* has been lost for this species; it has also been known as *C. byzantinus*. Another striking feature of each flower is the purple style, deeply frilled.

The succession being assured with the germination of seed from the original plants, collected from the ripe pods at ground level in June, the first generation has been planted outside where some shade is provided by troughs. Several healthy clumps of leaves suggest that the corms are settling in.

It was while looking through indices to past Journals that I found a reference to a black and white photograph of *C. banaticus*, (14,209 [1975]) – taken by H. Esslemont. More interesting still, opposite the photograph, there begins an article by C. F. Derrick entitled Bulbs from Seed. These discoveries were made after most of this article was written. Old hands may now intone in unison, “Plus ça change”

As with *Narcissus*, a number of fine *Crocus* species, and hybrids, are available fairly cheaply in the trade. It is thus only worth growing the dearer ones from seed. I leave the reader to his own research into the genus; this year the Seed Exchange offered 55 choices.

Cardiocrinum giganteum yunnanense is last but will never be least, with its stately spike up to 2.5m it is visible literally for miles. When Harold Esslemont offered a dozen or so packets of seed at an Aberdeen Group meeting some ten years ago I guessed he was issuing a challenge – “see what you can do with this, boys!”

In spite of my ignorance of the fact that germination in this species is hypogeal, i.e. the cotyledon remains initially below ground so that nothing is seen until the year *after* germination, all went well and the seedlings were grown on in the usual way with annual moves to larger



Fig 44 *Gentiana ternifolia* "Dali" (5 petals in jug and
"Cangshan" (7 petals in pot) (see p.276)

H. Taylor

Fig 45 *Ranunculus alismaefolius* (see p.293)

A. Evans



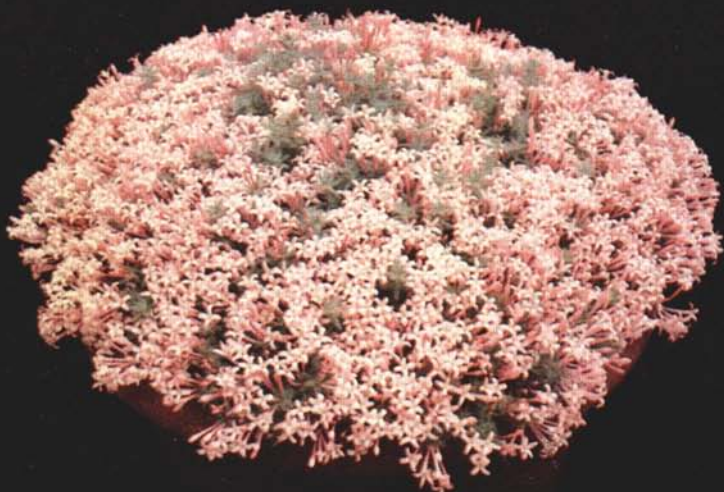


Fig 46 *Epilobium obcordatum* (see p.287)

H. Esslemont

Fig 47 *Asperula arcadiensis* (see p.288)

H. Esslemont



pots. Having the plants in pots was fortunate since the move from Aberdeen to Ross-shire was thus no problem, and new quarters were found with some shade near a hedge in what had been a kitchen garden. That was the second piece of good fortune for the plants since they are gross feeders and Collins Guide to Bulbs recommends heavy manuring.

Cardiocrinum is very close to *Lilium* and there are many references still to *Lilium giganteum*. Of the three species now included in *Cardiocrinum*, only *C. giganteum* from the Himalaya and its slightly smaller variety *C. yunnanense* from China are widely cultivated. As the years go by the broad basal leaves appear annually, glistening mid-green, large and cordate, fuelling the bulb below for the blast-off of its first, and last, flowering. After that the bulb dies, leaving several offsets to be divided up and replanted. The large, handsome seed pods remain relict reminders of the glory long after the seed is dispersed.

In June 1987 a spike emerged from the basal leaf cluster, growing almost visibly to well over head height before bursting out in early July with about 15 slightly pendulous trumpets, each 15cm long, glistening white with a tinge of green. One day that month the Editor and I visited Jim Sutherland's new nursery at Ardfearn by Inverness, visible from here about 12km along the Firth as the crow flies. Jim had a telescope set up outside the house to observe the many birds that flock to the shores of the Firth. I announced that I would show him a plant of mine and suggested a peek through the telescope. The Editor can confirm that *Cardiocrinum giganteum yunnanense* was visible in all her glory just next to our house up the hill from Beauly, 12km away.

A number of people took the seed that evening at the Group meeting in Aberdeen. I often wonder how many were as fortunate in their return from it.

Two new autumn flowering gentians, possibly ascribed to *Gentiana ternifolia*

I. CHRISTIE and I. McNAUGHTON

GENTIANA TERNIFOLIA was first discovered in 1882 in the Hee-chan-men Mountains at 3,000m above Lanking, near Tali, China, by the French botanist Delavay. It was officially described by Franchet as a new species in 1884. The type specimen was placed in the Père Vial Herbarium, Paris. Several other herbarium specimens of *G. ternifolia*, also collected by Delavay at or about the same time, are to be found at the Royal Botanic Garden, Edinburgh.

It is interesting to note that *G. ternifolia* was one of the first autumn flowering gentians to be discovered, pre-dating by twenty-two years the well-known *G. sino-ornata*, first found by Forrest in 1904.

G. ternifolia, from the original collection, has seldom, and possibly never, been grown in gardens. It has not, as far as is known, been available commercially over the hundred years since its discovery.

In 1981, during an official expedition (SBEC) to China led by Robert Mitchell of St Andrews University, plants resembling *G. ternifolia* were found near Cangshan in the Dali region. Four plants, found growing at 3,100m near Huaianba were collected and brought back to Edinburgh Royal Botanic Garden.

In 1984, thongs (vegetative offsets) from one collected plant were planted by I. Christie at Kirriemuir, whilst thongs from other plants were grown at Edinburgh by I. McNaughton. On flowering, these two groups of plants were thought to be distinct. In order to substantiate this observation plants of each clone were compared at both Kirriemuir and Edinburgh in 1985. Differences in several characters were confirmed.

In September 1988 an SRGC workshop meeting on Autumn Gentians was held at the RBG, Edinburgh. The two clones were demonstrated and discussed. It was decided that they should be distinguished by the cultivar names 'Cangshan' and 'Dali', after the region and town where they originated (Fig.44 p.273).

G. ternifolia 'Cangshan':— This clone produces fairly small, tubby flowers, nearly always with seven petals. Six petals are sometimes produced and, very occasionally, only five. An eight-petalled flower has

been noted. The petals are distinctly convoluted, especially in the bud. Flowers are pale, sky blue with a darker stripe within the almost white corolla tube. Plants grown out have compact, dark green foliage with, nearly always, three cauline leaves per whorl, thereby corresponding with the original description of *G. ternifolia* by Franchet. Two opposite leaves also occur in 'Cangshan' but are much less prevalent.

G. ternifolia 'Dali':— This clone is generally more vigorous than 'Cangshan', although I. McNaughton has noted some plants to be quite stunted. The sky blue flowers are slightly violet tinged, paler than 'Cangshan' and have predominantly five petals, occasionally six. We have not seen 'Dali' with seven or more petals. The flowers are less convoluted than in 'Cangshan'. 'Dali' has normally only two leaves per whorl.

Both 'Cangshan' and 'Dali' seem to be distinct and identifiable from any of the other autumn gentians generally grown. However, neither may be *G. ternifolia* as originally described. It is obvious that neither 'Cangshan', in possessing predominantly seven-petalled flowers, nor 'Dali', in having mainly only two leaves per whorl, conforms properly with the original, diagnostic description of *G. ternifolia* which mentions five petals per flower and three leaves constantly per whorl as being characteristic.

The above observations point to the need for a more critical taxonomic investigation. It is intended that such a study should be carried out and the results published in due course. In the meantime plants of 'Cangshan' and 'Dali' are available from several nurseries and both show promise of being garden worthy plants.

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Soils, composts and growing alpines

Part II: Compost-making

EVELYN STEVENS

IT is all too obvious to write that plants are dependent to a large degree on the soil or compost in which they grow. But it is perhaps not so clear to many of us in exactly what ways this is so. Therefore in Part I of this article in *The Rock Garden*, (20, 277(1987)), I attempted to summarise what soil scientists have learnt about the structure and composition of soils insofar that these are relevant to the demands made on them by plants. In this article, I am going to pursue this further and then put theory into practice in describing how to make composts for growing alpines. Composts, in the present context, are the special mixes we make for growing our plants in containers of one sort or another, e.g. pots, troughs and raised beds, or that we prepare for planting out individual plants into 'planting holes' in the rock garden or open garden.

At the outset I acknowledge that I must not be very dogmatic about compost-making; I am aware that it is a very individual matter, and that the experts who produce the marvellous plants seen on our Show benches, for example, will vary quite widely in how they make their composts. Many other factors come into play as well, as for example, geographical location of the grower, local climatic differences affecting such things as rainfall, prevalent humidity levels and amounts of sunshine, local variations in garden soil composition and in the other materials needed to make the composts. However, I feel it is worthwhile to consider compost-making in the light of the facts and principles outlined in the earlier article and also from what follows below.

First, I will summarise some of the pertinent points from the previous article. Plants are dependent on the soil or compost in which they grow for anchorage, by means of their complex networks of root systems, and for a great many of their nutrients, which are taken up into plants, in watery solutions, also by the roots. These nutrients include nearly all requirements for nitrogen, and all of the macro-nutrients (phosphorus, potassium, sulphur, calcium and magnesium) and micro-nutrients (also called trace-elements). The soil also provides plants with all of their water requirements, and with the oxygen which is essential for the respiration or breathing of the roots.

To meet these requirements thus enabling optimum growth, for the

majority of plants their soil or compost must have the following characteristics:

- i) be well-aerated (i.e. well-drained)
- ii) be water-retentive
- iii) contain adequate nutrients
- iv) be friable, or readily crumbled, thus encouraging root-extension in the quest for nutrients

Many alpiners differ from many other plants in that they have a greater need for good aeration (enabling plenty of oxygen in gaseous form to be present for root respiration) or, to put the same phenomenon in other way, good drainage (thus both preventing persistent wetness around the crown of the plant and preventing water-logging of the soil which can lead to the roots being suffocated for want of oxygen). These needs are reflected in the composts that are used for growing them in.

Another strategy which helps in preventing water-logging is growing alpiners in troughs and raised beds (see Duncan Lowe's excellent article on the latter – *The Rock Garden*, (20, 308(1987)) thereby raising them well above the water-table of the surrounding garden. The raised beds or troughs are filled with a well-aerated, well-drained compost, which is also water-retentive and nutritious. The need for preventing excessive wetness around the crown of alpiners may also be catered for by growing alpiners in pots which are housed under shelter in frames or an alpine house (of course, growing alpiners in pots also means that they can be conveniently taken to shows), or by supporting a pane of glass over plants particularly susceptible to the excessive wetness of the winter months in the open garden.

I am going to confine my remarks on compost-making for alpiners to soil-based composts i.e. composts based on mineral soils. However, a number of people, some of them with exceptional results, are now using soil-less composts, at least for growing alpiners in pots. So-called soil-less composts are composts made basically of peat, with added sand and nutrient fertilisers, for example, the Arthur Bower and Levington composts. I have no experience using these, but the basic principles outlined above must apply to these also.

However, to return to soil-based composts, these are composts in which one of the major components is a mineral soil. Mineral soils are largely made up of particles of various sizes. These mineral particles range in size from sand particles (2mm–0.02mm in diameter), to silt (0.02mm–0.002mm in diameter) down to the tiny particles of clay (less than 0.002mm in diameter). 2mm = about 1/10" and 0.002mm = about 1/10,000". Diagram 1 is a diagrammatic representation of soil to emphasise the range in size of the various soil components. Soil scientists recognise

about a dozen different types of mineral soils, ranging from sandy soil at one extreme to clay soil at the other, each having varying amounts of sand, silt and clay. In order to understand how the different types of soil particles affect the properties of soils in regard to plant nutrition, I think it is helpful to consider the characteristics of each of the two extreme types of soil:

Sandy soil This is composed largely (85% or more) of sand particles. Being relatively large, but also varying in size as well as in shape, there are relatively large spaces between the particles of a sandy soil. Therefore when it rains, water drains readily through these spaces, air from the atmosphere above replacing the water as it drains away to lower levels. This means that a sandy soil is well-drained and well-aerated. But a corollary to this is a proneness to drought. A second detrimental feature for the well-being of plants is that sandy soils are poor in nutrients because sand is largely made of chemically inert substances like quartz, which neither themselves provide plant nutrients, nor do they attract to themselves and hold onto other nutrients which may enter the soil. But a second beneficial feature of sandy soils is that they are friable, and easily crumbled, so that root growth is encouraged as the roots find it easy to push their way out into the surrounding soil in their quest for nutrients.

Clay soil This consists of a high proportion of tiny particles of clay, with tiny spaces between them. There are strong electrostatic attractive forces between the soil particles and between them and water molecules. Therefore the spaces tend to readily fill with water and once filled tend to hold on to it. As a result, clay soils tend to be poorly aerated, or to put it the other way, poorly drained, and therefore prone to water-logging. Another detrimental feature from the point of view of plant health and growth is that because of the small spaces between the soil particles and the presence of these strong attractive forces resulting in the 'stickiness' of clay soils, a clay soil tends to impede root extension physically and growth. A beneficial feature of clay soils, however, is that they are rich in nutrients – not only do the clay particles themselves provide some of the plant nutrients, but they also attract and hold on to other nutrients that may enter the soil, dissolved in, for example, percolating water.

Between the two extremes of a sandy soil and a clay soil is loam, with intermediate amounts of sand, silt and clay particles. Loam has intermediate properties and thus is the most favourable soil for plant growth and well-being. It is reasonably well-aerated and well-drained, water-retentive, but not prone to drought or water-logging, has reasonably high amounts of nutrients and is quite friable.

Apart from the presence of air and water, the constituents of soils that I have just outlined are all mineral particles. Another important constituent of soils is organic in nature – both living organisms and dead organic

material. Dead organisms are important because of their chemical composition. They constitute a reservoir of “locked up” plant nutrients – “locked up”, because the chemicals of which they are made are complex and they need to be broken down into simple chemicals in watery solutions for plants to be able to feed on them. In fact, dead organic material provides most of the nitrogen required by plants, and also often forms the most readily available source of the macro-nutrients, such as phosphorus and potassium.

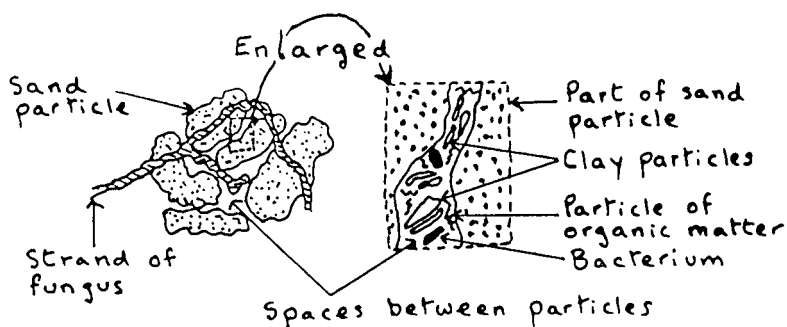


Diagram 1

This illustrates the wide range in size of the various soil components. Note that the right-hand side of the diagram is an enlargement of a small part of the left-hand side.

Many soil micro-organisms, that is, the beneficial soil bacteria and fungi, along with animals such as earthworms and other scavengers, play an important role in the re-cycling of the nutrients ‘locked-up’ in dead organisms. Material of plant origin (e.g. the roots of dead plants within the soil, leaves falling from deciduous trees in autumn, and uprooted trees) forms by far the largest component of dead organic material in soil. Animals, dying both above the soil and within the soil, together with their excreta, also contribute to this. This also applies to the soil micro-organisms when they have lived out their life-span.

The process of re-cycling of dead organic material to provide plants with nutrient solutions in the soil for uptake by their roots is illustrated in Diagram 2. The processes involved are very complex, so what the diagram does is to highlight the main principle of nutrient re-cycling, but omits many of the details.

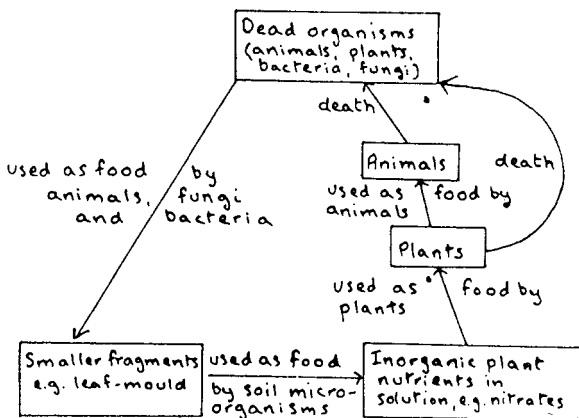


Diagram 2

This outlines the process of re-cycling of dead organic material in the soil to provide water soluble nutrients required for plant development and growth.

It follows from the foregoing that the presence in soils, no matter whether sandy, clayey or loamy, of both living organisms and of dead organic material is essential for plant nutrition and healthy growth.

Compost-making

Now, having considered what most plants (and alpines in particular) require of their soils, and having considered the various components of which soils are made, I will now consider the 'raw materials' that we gardeners have at our disposal to make up special composts to suit our alpine plants. We must bear in mind that our aim is to make composts which are adequately nutritious, are well-aerated and well-drained, and are friable thus encouraging the development of a good system of roots to go in search of the nutrients. The various 'raw materials' will help to provide one or another of these requirements.

Some of these 'raw materials' can be obtained from our gardens, others need to be bought, either from quarries or builders' merchants or from garden centres, and still others can be collected in the countryside if we feel free to do so or obtain permission from land-owners.

We can list the 'raw materials' under four headings: (i) loam; (ii) sand and grit; (iii) organic material; and (iv) fertilisers.

A mixture consisting of equal parts of (i) loam; (ii) coarse sand and/or grit; and (iii) organic material, along with the addition of a little fertiliser, makes a very nice, friable, water retaining, yet well-aerated and nutritious alpine compost. Having said this, I will now discuss each of these com-

ponents a little more fully.

If we are lucky we can use our garden soil as the loam component. But if our soil is very clayey it may be very discouraging to persist with using it for making special composts. In that case it might be as well to buy some good top-soil loam, or to buy John Innes potting compost from a garden centre. The John Innes composts are specially formulated soil-based composts suitable for many plants, but on the whole are not well-enough aerated for alpines. However, they can be used as the loam component of the recipe given above. A good policy, if one is able to, is to make some 'horticultural loam'. This is loam made by stacking turves of grass and leaving them for a year or so until the grass roots and leaves have decomposed. This will then be a loam enriched with organic material.

To provide the particularly good aeration and drainage needed by alpines, sand and/or grit is used as a second component for making special alpine composts. Cement sand sold by builders' merchants for making cement is *not* suitable. The particles are far too small. What is needed is a coarse, sharp sand. Builder's concreting sand is coarser than cementing sand and it obviously varies to a degree from quarry to quarry. I feel that the material local to myself is too fine to be suitable, but I have to say that there are people who do use it, especially to lighten a heavy clay soil in the open garden. If you can get hold of it 'horticultural sand' is excellent. The horticultural sand that I have been fortunate enough to acquire (a friend with a lorry obtained a couple of tons of it for me, and I feel that I am well provided for for some time to come) has particles of the following sizes:—20% is between 1/4" and 1/8", 70% is between 1/8" and 1/16" and 10% is less than 1/16" in diameter. Members living in Scotland might like to know that the quarry that this sand comes from is Tilcon Capo Quarry, near Edzell (telephone 067 484 278). I have heard that it is marketed as far away as Berwickshire, which I take as an indicator of its relative rarity and its usefulness. Strictly speaking, taking the soil scientist's definition, this horticultural sand is not sand as it contains many particles which are more than 1/12" (2mm) in diameter. Another material which is excellent for improving the aeration and drainage of composts for alpines is grit. This is also not recognised by the soil scientists, but it comprises particles at the lower end of the size range of the soil scientist's gravel. A quarry near to Dunblane, Perthshire where I live produces a grit with the following sizes of particles: 40% is between 1/2" and 1/4", 40% is between 1/4" and 1/8" and 20% is between 1/8" and 1/16" in diameter. The horticultural sand and grit mixed in equal amounts is excellent as the sand and grit component of the alpine compost recipe given above. If you want to buy your sand/grit from a garden centre, for members living in Britain at any rate, the SilvaPerl range of Cal-Val products can be recommended. They market

two products called Cal-Val coarse grit and Cal-Val sand grit. These mixed in equal amounts are excellent. If your garden soil is sandy, it is presumably not necessary to use so much, or even any, grit and/or sand.

The third component for an alpine compost is organic material. This may have the following beneficial effects: to add nutrients, to help with water retention (especially beneficial in sandy soils), and to improve aeration and drainage of a heavy clayey loam. There are various types of organic material at our disposal.

The best is leaf-mould or leaf-litter (see my previous article for an explanation of these), but it is not generally available in very large amounts. People tend to think of leaf-mould in terms of beech or oak leaf-mould or leaf-mould derived from other deciduous trees. However, decomposed conifer needles and bracken also make leaf-moulds suitable for certain purposes: I think especially of using them in the open garden or in the compost used to occupy the lower layers when you are filling a raised bed or trough. I would only use them for plants in pots if I was making a compost for particular plants, such as pleiones.

Properly made garden compost is also excellent as a provider of organic material, rich in nutrients. The same applies to well-rotted manure. On the other hand, peat, which is readily available from garden centres is lacking in nutrients, but it is very good for helping with water retention and for making a compost friable and for helping with aeration and drainage. Peat is widely used as the organic component of an alpine compost, often being used instead of, or as well as leaf-mould.

If the loam and organic components of your compost are of high quality there is probably no need to worry further about the nutrient status of your compost by adding fertilisers. To "make quite sure" I usually do add a little fertiliser to my composts, and I believe other people do the same, while there are others who do not. In composts for raised beds I add some bone-meal. This is obviously an organic fertiliser, of animal origin, and it releases its nutrients slowly, while it is undergoing breakdown under the action of soil micro-organisms feeding on it. In composts for plants in pots I usually add a little of an artificial 'slow release' fertiliser. These fertilisers are expensive as they are specially designed to release their nutrients slowly, not in the rapid way that occurs with the readily soluble artificial fertilisers like Liquinure, Growmore, Tomorite etc. The 'slow release' fertilisers recommended by most growers now are Phicote or Osmocote. These are expensive and they are not sold in the garden centres, but are sold in large sacks for commercial growers. But if you are determined, it is possible to buy them – a good idea is to share a bag with a couple of friends. John Innes base fertiliser is a good fertiliser to add to alpine composts; it contains both inorganic components which are readily

soluble and also an organic component, hoof and horn. John Innes base fertiliser can be bought if one chooses to make one's own John Innes composts from the individual components listed in published recipes.

Local conditions and materials vary and plants vary in their needs. For example, *Lewisia rediviva* needs a very, very well-drained compost if one is to grow it in a trough exposed to all weathers (even so, it is probably best to cover the trough with a sheet of glass during winter). Therefore it is good practice not to blindly follow recipes, but try to assess the suitability of your compost as you are making it, and add more of one or another ingredient as you think best. One good practice, if you are filling a raised bed, for example, is to pour water from a watering-can onto your raised bed. I like to see the water drain away pretty quickly rather than remain as a puddle on the surface for more than a moment or two. I suppose gaining confidence in making up composts comes with experience: I certainly feel freer and happier about what I am doing than I did a few years ago. Another hint – I think it is good advice, in general, to aim at a compost, which when slightly damp, will fall apart in a nice comfortable way when you have crushed a handful of it in your closed fist, and then opened your fist. I then imagine the roots of my plant reaching out through this nutritious, water-retaining, yet well-aerated and well-drained medium – and loving it.

One last point must be mentioned. Loam from the garden, garden compost, leaf-mould etc., not only contain beneficial organisms, but also harmful ones like weed seeds, pathogenic fungi, slugs, harmful insects etc. For plants grown in pots, and especially for seedlings, it is preferable, some would say necessary, to sterilise these materials. This will be the subject of a later article. Of course, John Innes composts, such as the excellent, Cal-Val products already referred to, should be suitably sterile.

Plant Portraits

Androsace ciliata

Lynn and Michael Almond

Androsace ciliata, a plant endemic to the central Pyrenees, is one of the most attractive of the Aretian androsaces, with its large, bright pink flowers and compact habit. Its cushions are more lax than most other Aretian androsaces. Although 'Androsaces' (G. F. Smith and D. B. Lowe; AGS; 1977) states that *Androsace ciliata* probably does not occur on limestone, the photograph on the front cover of this issue of *The Rock Garden* shows it doing just that.

There are some poor forms in cultivation, so it is better to buy your specimen in flower or grow it from seed and select the best forms (it is available from some specialist nurseries and from the seed exchanges). The plant is not long-lived and is somewhat prone to greenfly. Although it is difficult to grow a large cushion, it is generally prolific in production of seed. As its natural habitat is on high, rocky ridges, it needs a well-drained compost and can be grown outdoors in a trough or raised bed. You may, however, need to cover it in the autumn and winter to prevent too much moisture rotting the plant (which, in the wild, would be covered with snow at these times of the year).

As you sit astride the smelly little donkey that is lugging you from the village of Gavarnie up the track to the base of the cliffs that make the world-famous Cirque de Gavarnie, you will doubtless raise your eyes (as you hang on for dear life to the donkey's mane) to contemplate the stupendous view in front of you. If you abandon your donkey and exert yourself a modicum, at the very top of the four-thousand-foot-high cliffs, about half way between the top of the fourteen-hundred-foot-high waterfall (the highest in Europe) and the great breach carved in the cliffs by the sword of the legendary Roland, you will find the mat of *Androsace ciliata* illustrated on the cover, and lots more besides – many the size of a large dinner plate. There is little competition for space here in the arid limestone scree and the androsace has the cliff tops more or less to itself. It also occurs in similar exposed positions on the tops of other ridges in the area (usually on acidic rock), but nowhere have we seen bigger clumps and nowhere else is the backdrop (with the emphasis on *drop*) so spectacular.

Colchicum bowlesianum

Martin Brown

In most species of *Colchicum* the perianth segments are uniformly coloured; longitudinal veins are due to thickening rather than to the presence of pigment. In some species, however, the surface is broken up into rectangular patches by coloured cross veins. This gives rise to chequered flowers as in *C. byzantinum*. In some species every alternate square is darker in colour giving rise to a pattern which is known as tessellation.

This tessellation is at its most obvious in *C. variegatum* but also occurs in *C. bowlesianum*, a species from northern Greece. It was originally thought to be a form of *C. sibthorpii* but it is now recognised that it is sufficiently different to warrant being accorded specific rank. Mr B. L. Burt described it as *C. bowlesianum* in the Kew Bulletin in 1950.

It has deep rich green leaves which are fairly erect and not floppy as in many species. They are around 3cm wide and 25cm long; usually nine leaves are produced which is high for a colchicum. The flowers are around 5cm in length with pointed tips to the segments (Fig.42 p.256). The degree of tessellation varies widely within the species.

This species is easily grown like most colchicums but there are always problems with the amount of space taken up in spring and early summer with the huge leaves which choke smaller more delicate species. The leaves die back in June and there is only a short dormancy as new roots appear in August with flowers opening in early September. They will in fact flower on a window sill without any water.

Propagation is by splitting the bulbs as the leaves die back or after flowering. Seed is freely produced in large seed capsules which nestle in the cup formed by the inner leaves.

It can be grown readily in any decent soil but also makes a good alpine house plant, flowering in time for the autumn shows.

Epilobium obcordatum

George Brown

Most species of the willowherb or *Epilobium* genus are rampant weeds, tall and shading or flat creepers, spreading all too rapidly by clouds of airborne seed parachutes or by underground rhizomes. It is certainly a genus to be aware of and one should never accept an unknown willowherb without finding something out about its potentially nasty habits. There are, however, a few good garden plants in the genus. The creeping New Zealand species, *E. alsinoides*, *E. glabellum*, *E. vernicosum* and others tend to

be prostrate rambling plants with attractive white or pink flowers on short stems. They thrive in cool corners and seed readily. Some of the alpine species are, however, more attractive and of these, the best by far is *E. obcordatum* from the mountains of California.

It grows on high cliff ledges and sends up masses of shoots, not exceeding 15cm in height, with bright green oval leaves, often tinged with red. The flowers at the end of these leafy shoots are large and of a deep rose-pink colour (Fig.46 p.274).

It requires a dry sunny spot in a good gritty soil and is ideal for the alpine house. Outdoors it needs protection from winter wet. The flowers are produced in profusion in July and August. It is not long-lived but cuttings root readily when taken after flowering.

Crocus scepusiensis

Peter Smith

The plant illustrated (Fig.43 p.256) as *Crocus scepusiensis* is really a variety of the variable and widespread species *C. vernus* which is the common white or purple crocus of European mountains. A large-flowered purple-tipped form to be found in eastern Europe is referred to *C. heuffelianus* if it has a glabrous throat and to *C. scepusiensis* if it has a hairy throat. Modern taxonomy splits *C. vernus* into two main sub-species; *C. v. vernus* being the larger flowered variant with style branches overlapping the stamens and *C. v. albiflorus* with smaller flowers and the stamens exceeding the style branches. *C. scepusiensis* is a form of *C. v. vernus*.

It is usually a woodland plant of deciduous forests at low altitudes and also of damp alpine meadows but never in high alpine pastures. It is very readily grown in the northern parts of the UK as it appreciates a cool moist climate where the soil does not dry out in the summer since it does not require a dry dormant rest period.

C. vernus is the parent of many garden hybrids which are also suitable for growing in bowls indoors.

Asperula arcadiensis

Alastair McKelvie

When we think of asperulas we perhaps tend to imagine the woodland species such as *A. odorata*, our native woodruff, but there are many other species from the high cliffs of Greece and Turkey which need full sun and resent winter wet.

Of these mountain species, *A. arcadiensis* is something of a puzzle as it is seldom grown and is frequently confused with other species. Before

describing *A. arcadiensis* it is worthwhile mentioning the characteristics of the two species with which it is most commonly confused.

A. suberosa or *A. athoa*, as it used to be called, forms a close cushion with upright narrow leaves in whorls of four and is densely hairy with grey velvet hairs. The flowers arise from the tips of the branches but also from axillary leaf axils, with pink petals covered with soft bristly hairs.

A. sintenisii or, as it used to be called, *A. nitida puberula* is a tufted species with trailing stems covered in hairless leaves. The flowers are also pink.

A. arcadiensis, from the mountains of the Peloponnese, can be distinguished from the two above species by its short trailing leafy stems completely covered in fluffy grey woolly hairs. The long pink flowers (longer than in *A. suberosa*) come in bunches of 6-8 at the tips of the shoots, appearing, according to Farrer, "to sit almost upon the cobwebby grey tuffet". It is grown much less than the other two species because it is much more difficult and requires alpine house treatment but it is an absolutely lovely plant and is worth all the care and attention it requires.

It hates winter damp so that great care needs to be taken in watering. The plant illustrated (Fig. 47 p. 274) was grown by Harold Esslemont who was always careful to give it water from the bottom, especially in dull weather, as otherwise it tended to damp off as it came into flower. Harold grew it in a gritty limy mixture and cut it hard back, like aubrietia, after flowering. It was loathe to set seed and it was difficult to strike cuttings. Seed is only very occasionally available in the Seed Exchange and when it is it is quite likely to turn out to be a different species.

In an article some years ago in the Journal, the late Mrs Boyd-Harvey wrote about how hairpins were essential for rock-gardeners. One example she gave of their usefulness was using them to pin down branches of *A. arcadiensis* to stop their being turned over by strong winds. She obviously must have grown this species outdoors, presumably covering them with a pane of glass in the winter as recommended by Farrer. *A. arcadiensis* seems to be a plant which is now rare in cultivation. Every effort should be made to build up stocks again as it is such a lovely plant.

The genus *Ranunculus* Part VII – American species

ALASTAIR McKELVIE

AS WITH the Asian members of the genus *Ranunculus* those in America comprise very many of absolutely no garden merit but also include a number of really aristocratic species which would be a tremendous addition to our gardens if we could grow them decently. There is a group of alpine species from western North America which are seldom seen but are most desirable, while in South America almost all of the few species of the genus recorded are beautiful plants worthy of cultivation; they do present problems nevertheless.

The garden-worthy species from America tend to spring into growth immediately the overlying snows melt and die back quite early in the season as water becomes scarce. This raises problems of how to handle the resting period. Seed germination tends to be erratic which further adds to the problems. For most of them the alpine house would seem to be the best place to grow them.

North America

Ranunculus adoneus Gray

This is a high alpine found at around 3,000m in the mountains of Nevada, Wyoming, Colorado and Washington State, flowering as the snows melt around June. It is particularly fine on Mt. Evans in the Cascades. It is a dwarf plant with the small deeply cut leaves emerging from the snow and the large golden yellow flowers nestling among the leaves.

These deep yellow goblets are as much as 4cm across. According to Eric Hilton the wet mountain banks are breathtaking with their massed display of flowers; everything else was an anti-climax. After flowering, the stems, of which there are about 9 per plant, elongate to a height of 15cm as seed develops.

There are very few records of successful cultivation but it is clearly a species worth trying if fresh seed could be obtained. It will obviously require plenty of water during the growing season then a period of restricted water as the flowers die down. Watering should begin again in

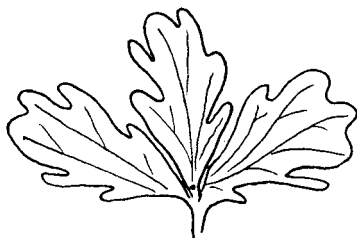




Fig 48 *Ranunculus andersonii* (see p.294)

H. Zetterlund



Fig 49 *Ranunculus semiverticillatus* (see p.298)

R. B. G. Edinburgh

Fig 50 *Ranunculus weberbauerii* (see p.299)

R. B. G. Edinburgh



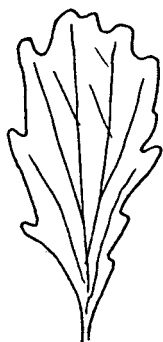
early spring. It tends to grow in the wild on limestone rubble which may give a clue to its soil needs.



Ranunculus alismaefolius Geyer

This is a fairly large species found from south-west Canada southwards to Colorado, growing at the edges of ponds and alpine meadows. It is mentioned here because it has been in cultivation from time to time but is really of no great garden merit. Its smallish yellow flowers (Fig.45 p.273) are borne on 15cm stems.

It should be tried at the edges of ponds but there are many better plants to grow than this. *R. alismellus* is reported as being a dwarfer and more refined version of *R. alismaefolius*.



Ranunculus alpeophilus A. Nels

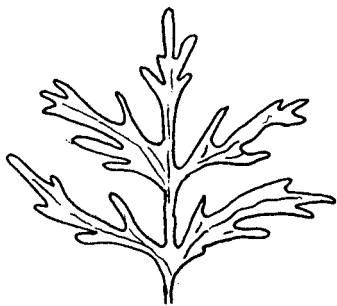
This species is synonymous with *R. inamoenus* Greene and is another plant from the snow melt fields, this time from the Big Horn Mountains of Wyoming and extending into Nevada.

It produces its yellow buttercups in great profusion but they are fairly small so that it is not all that imposing. There are a few old records of it in cultivation but nothing recently and it does not seem worth trying out when there are so many more desirable ones to have a shot at.

Ranunculus andersonii Gray

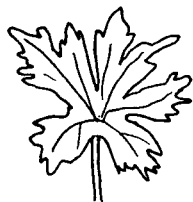
This species is sometimes placed in a genus of its own and called *Beckwithia andersonii* but most botanists keep it in *Ranunculus*.

This is another species from montane snowdrifts. It grows at altitudes from 1500-2700m in south-east Oregon to south-central Idaho, flowering from April to June. It inhabits



areas of stony non-calcareous red clay between clumps of sagebrush which may be some guide as to its cultural needs.

It is a fairly dwarf plant with soft grey-green leaves rounded in outline but divided into many narrow pinnatifid segments, hairless and smooth. The stems are leafless and terminate in a single large white-pink or rose-pink flower, 2-4cm across (Fig.48 p.291). It is a most desirable species and obviously worthwhile any effort to obtain and grow. It has only fleetingly been in cultivation and there are few references to it in gardens.

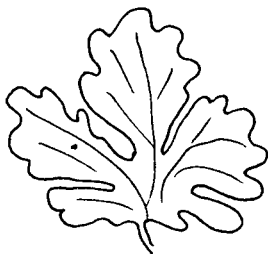


Ranunculus californicus Benth.

This is a species of dry ground from western California to Oregon. It resembles nothing more than a large *R. acris* and is too large and coarse for most gardens. Perhaps starved in a scree it might make a neater plant. It is mentioned here because seed is often listed in Seed Exchanges. I have flowered it in two years from SRGC seed and although it is easy enough, but loved by slugs, it is not worth growing.

Ranunculus eschscholtzii Schlecht.

This is one of the finer of the snow-melt species of north America. It grows over a wide area of the western mountains from Canada to Colorado, being particularly abundant in the Cascade Mountains of Washington State. It is to be found at around 2500m, flowering at the edges of snow melts.

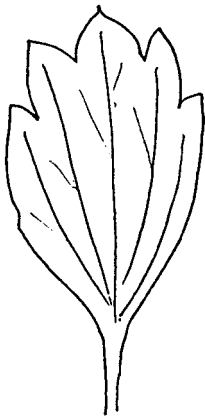


It has small smooth, deeply cut fleshy leaves from which arise stems 10-18cm tall. There are 1-3 soft yellow flowers per stem, comprising a large yellow calyx covered with brown hairs on the outside, giving them an almost double appearance. The flowers are about 3cm in diameter. In the wild it grows with such gems as *Phacelia sericea* where the soft yellow of the buttercup and the dazzling purple of the phacelia must be a spectacular combination.

It is surprising that such an attractive plant has not been much in cultivation in the UK since it is apparently not too difficult apart from a poor germination. Seed is regularly available in Seed Exchanges.

Ranunculus eximius

This is yet another of the snow melt species from western North America. It grows at around 4,000m in the Central Rockies where it blooms at the



edge of the melting snow.

It is quite a dwarf species with one or few fan-veined leaves from which arise 15cm stems carrying the bright yellow flowers. Opinions vary as to the size and shape of these flowers. Farrer in "The English Rock Garden" described them as great golden stars an inch across but Sampson Clay in "The Present Day Rock Garden" contradicts Farrer and says that the petals are broad, more than five in number and overlapping so that the flower rim is a smoothly unnotched outline. Both these authors tended to describe from herbarium specimens and therefore I rely more on the description given by Kathleen Marriage in the AGS Bulletin in 1943

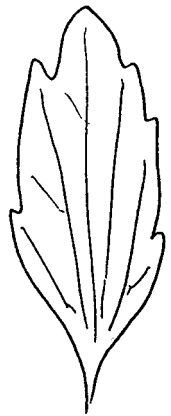
who had obviously seen the plants in the wild and had grown them. She said that it was distinguished in flowers, leaves and general appearance. The foliage was finely cut and refined while the delicate flowers were 4-5cm across, a clear daffodil yellow with a beautiful centre boss of yellow stamens.

She claimed that it was easy to grow (presumably in America) in a scree that was not too sunny. The seed germinated well if frozen but was regularly eaten by marmots and conies when only half-ripe. Whatever the reasons it has only rarely been in cultivation in the UK but seed is often available. I have just seen signs of germination in seed sown in January this year and look forward to trying to grow it.

Ranunculus glaberrimus Hook.

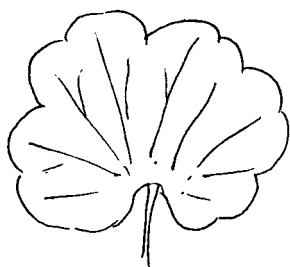
This species extends in the wild from damp lowland sandy gravel, desert and pinewood in many parts of western America to snow melt areas of Mt. Evans in the Cascade Mountains where particularly fine specimens occur. Known as the sagebrush buttercup, it is very similar to *R. eschscholtzii* but the leaves are oval-elliptic rather than round.

It does not seem to have been in cultivation in this country.



Ranunculus hystriculus A. Gray.

This species is sometimes incorrectly spelled *R. histriculus* and has also been named *Kumlenia hystricula*.



This species has a rather restricted circulation on wet granite rocks on the western slopes of the Sierra Nevada at around 1700m but growing as low as 1,000m.

The glossy leaves are orbicular and scalloped. The flowers arise on 10cm tall stems and are white and around 15mm wide. The white flowers with a green centre and a mass of white stamens are

most attractive. The species was given a PC (Preliminary Commendation) when shown in 1985 by Mrs J. Hulme who grew it from seed collected by Wayne Roderick. She grew it successfully in an alpine house in a gritty compost in full sun. She gave it plenty water in spring but none after May, keeping it just moist from autumn until spring which would roughly correspond with its natural cycle of no rain from May until it springs into growth with the autumn rains.

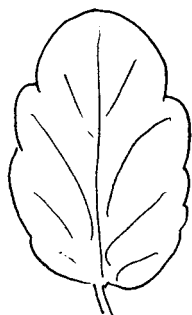
Ranunculus juniperinus

This is a species of limestone in Utah and south and east Nevada. It is only worth mentioning because of its rosy pink flowers which might sound worth seeking out were it not that most accounts are somewhat disparaging about the dinginess of the colour. It does not seem to have been in cultivation.

Ranunculus macaulayii A. Gray.

This is a species from the White Mountains of New Mexico growing at around 2,000m.

The ovate rosette leaves are glossy green, entire except for the apex which has several deeply notched teeth. The beautiful butter yellow flowers are borne on short thick stems. The calyces are little forests of dense black hair which set off to perfection the yellow petals. It resembles *R. glaberrimus* but the leaves are narrower and rounded at the apex. Some people regard *R. macaulayii* as the finest of the *eschsoltzii* group.



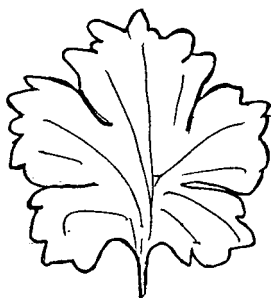
There have been few accounts of its cultivation but in the AGS Bulletin of 1942 Dr A. Q. Wells described it as a really magnificent plant, looking like a high alpine, perhaps resembling *R. glacialis* and said that it was not at all hard to grow. He had obtained seed from Dr Worth collected at 3,600m in the White Mountains of New Mexico. Since then there have

been almost no accounts of its successful cultivation.

Ranunculus occidentalis Nutt.

This species which is known as the Western buttercup grows throughout Alaska and the Yukon on moist well-drained soils. It is typical of a group of common American buttercups with small neat foliage and flowers which in some forms are large and many-petalled making them garden-worthy. The leaves are softly pubescent and toothed with the flowers on stems around 20cm tall.

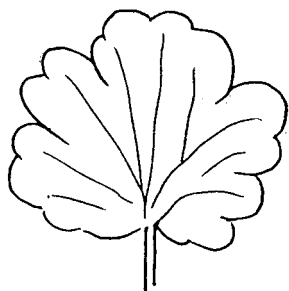
This species does not appear to have been in cultivation in the UK.



Ranunculus suksdorfii L. Benson.

This species is often referred to as a form of *R. eschscholtzii*. It grows at the edges of snow melts in wet alpine meadows at around 2,500m in Oregon. It is doubtfully different from *R. eschscholtzii* but perhaps has broader and more kidney-shaped leaves while the flowers are larger and taller.

It has been grown successfully in the UK but tends to become rather coarse unless it is starved in a scree.



South American species

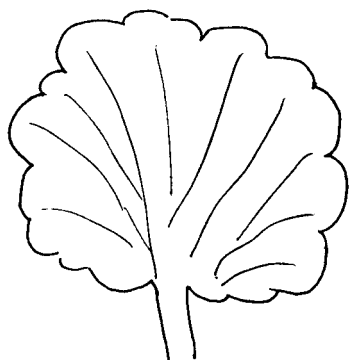
Ranunculus guzmanni

This is something of a mystery since the only gardening person to refer to it seems to be Sampson Clay and the name does not crop up in recent expeditions to South America.

Sampson Clay suggested that it would cause a flutter if it appeared at a RHS Show. It comes from high altitudes in the northern Andes with the typical buttercup leaves gleaming with a solid mat of silky hairs.

The flowers are large and erect with an inner cup of broad petals and hairy petaloid sepals. The effect is as of a great double champagne glass, uniformly stained from base to brim an intensive ruby crimson.

Further information is obviously needed about this fabulous-sounding species.



Ranunculus macropetalus

This is another of Sampson Clay's species which he felt should one day be a special pride of Cornwall and south-west Scotland. He described it as a noble plant with broad rounded leaf blades on stout petioles and thick stems up to one metre tall carrying six great red bowls on each stem. In general appearance it seemed to resemble a caltha. It is a plant of the Andes but there is a great scarcity of information about it and especially about its cultural needs. More

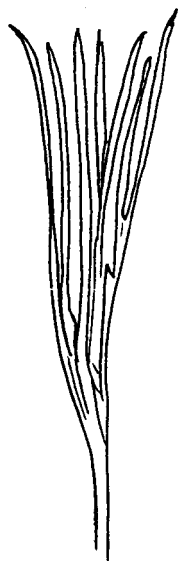
research is obviously required. Sampson Clay compared it to a similar species, *R. raimondii*, but gave no further information about it.

Ranunculus semiverticillatus

This is another South American gem but about which a good deal more is known. It grows on moist sandy soil high up in the Andes in Argentina. From large fleshy roots it produces a whorl of fleshy glaucous finely cut leaves at ground level. Nestling among these leaves are the shallow saucer-like flowers of many purple-backed white petals with a central boss of red achenes and yellow stamens (Fig. 49 p.292).

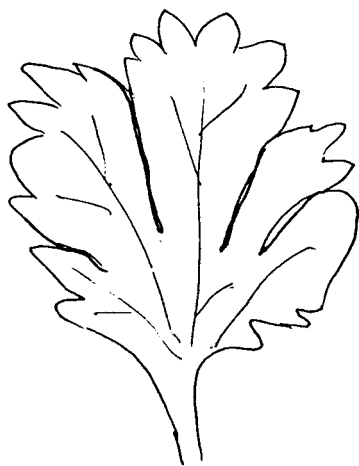
From the various accounts it seems to be a breath-taking classic alpine plant equal to the best New Zealand species. It grows in the wild in the aristocratic company of *Cruckshanksia* species and *Oreophilus citrinus*. It was introduced into cultivation in the UK in the 1920s by Harold Comber who contributed a lot of the information on South American plants to Sampson Clay's book.

Robert Rolfe described this species recently in the AGS Bulletin (55,321 (1987)) from Cerro Catedral in the southern Andes at around 2,500m. He described it



as having a neat tuft of finely cut silver-grey foliage and flowering stems no more than 5cm high carrying silky white narrow-rayed buttercups at least 5cm across. The flower stems elongate markedly after flowering. The soil was a loose grey grit with a pH as low as 4.4. A flowering plant from a Chilean source was shown at Morecambe in 1987 by the RBG Edinburgh.

It is to be hoped that this beautiful species can be brought successfully into cultivation.



Ranunculus weberbauerii

Yet another fabulous South American species but one which shows signs of becoming successfully established in this country.

It is endemic to the Andes and was collected recently by Michael Jones from Durham among damp shady rocks at around 4,000m in the Cordillera Blanca in Peru. It has large glossy toothed leaves and a huge flower bud on a short stout stalk, opening out like a single globular peony. The calyx lobes are dark green while the broad petals are deep rosy-red on the outside and greeny-

white or biscuit yellow inside (Fig.50 p.292). It was awarded a PC when shown by the RBG, Edinburgh at Harrogate in April 1987 from material sent from Peru in 1985.

Ron McBeath's recipe for cultivation is to grow in J1 No3 compost plus peat and grit and to keep in a semi-shaded cold frame, open to the weather from April to October and covered with lights during the winter. Hopefully this splendid plant will settle down in our gardens as it is a real eye-catcher.

Addenda

The following notes are supplementary to Part VI on Asiatic species of *Ranunculus* in the previous issue of *The Rock Garden*. (January 1989).

Ranunculus albertii

This species was also described by Sampson Clay as a species from Turkestan, 15cm tall with solitary broad-petalled flowers.

Ranunculus hirtellus

This species grows in a wide range across Asia and varies according to Sampson Clay from "arrant weediness to real desirability". The best forms are like 5cm celandines of white, yellow or pale rose which bloom beside the melting snow. The flower stalk has a whorl of three fleshy leaves half-way up the stem.

Ranunculus psilostachys

This was mentioned in the previous article as being synonymous with *R. nyssanus* but was not actually described.

It is a species from western Turkey growing at around 1,200m. It is a hairy-leaved handsome plant which runs about in full sun. The leaves are fine and furry and the 30cm stems carry large golden yellow flowers, 2-3cm across. It is sparingly in cultivation and seed has been available in recent Seed Exchanges.

Since this series was first published I have received much information from members about many of the species described. This information plus more detailed researches of my own on species where botanical or cultural information is missing will be incorporated in a revised version to be published in book form. I would be grateful for any further information on the genus *Ranunculus* which readers might like to bring to my attention.

Book Reviews

Orchids for the Garden and Frost Free Greenhouse

by Phillip Cribb & Christopher Bailes

Published by Christopher Helm Ltd.

130 pages. 96 colour plates and 41 line drawings.

Price £30

If you have ever been tempted to grow some of the hardy orchids but have been put off by their difficult reputation or high price then this is the book for you. It does not help with the cost of buying the plants but it will ensure that they have the best possible chance of survival once you have got hold of them.

The first part of this book gives all the information you are going to need to grow and propagate these intriguing plants. Sections on their structure, their history and their ecology provide valuable references which all helps to build an understanding of the plants' cultural requirements.

The comprehensive section on cultivation describes the different growing methods for pot culture in the alpine house, an environment the authors say is eminently suitable, in the garden and even in purpose-built artificial bogs.

Much information is given on the different types of composts and the correct ingredients to ensure a healthy medium with the correct pH and an adequate food supply for the different species.

The importance of the relationship between some orchids and their mycorrhizal fungi is stressed, giving information on an "ecological growing method". Here they suggest that if you can satisfy the fungi's needs then your orchids will thrive.

This section encapsulates years of experience of successful orchid cultivation by the authors giving you the answers to all the questions that are liable to arise when you are growing these orchids. If you can succeed in establishing some of these orchids then there is excellent advice on how and when to propagate from them so you can spread them around your friends.

The second part of this book is an alphabetical list of hardy orchids full of useful information for the grower.

It is not a field guide nor a precise botanical description but a practical plantsman's guide detailing the plant's main characteristics, natural habitat and any particular cultural requirements.

With 96 colour plates and many line drawings this thorough book will surely become the main reference work for those wishing to grow hardy orchids.

J.I.Y.

A Manual of Alpine and Rock Garden Plants

Edited by Christopher Grey-Wilson

Published by Christopher Helm Ltd.

270 pages. 32 colour plates and 50 line drawings.

Price £15.95

This newly published book resembles in many ways Ingwersen's "Manual of Alpine Plants" in being a compendium of rock garden plants. Ingwersen tends to list a lot of names without necessarily saying much about some of them while Grey-Wilson mentions fewer species, concentrating on the more garden-worthy ones about which he gives more information. For instance, Ingwersen lists 57 species of *Dianthus* while Grey-Wilson just gives 20.

The above comparison is in no way to disparage the new book. Its information is always full, giving facts and measurements wherever possible so that you know what size the plant is going to be, when it is likely to flower and how large the flowers will be as well as cultural hints on soils, light requirements and difficulty in cultivation.

As you would expect from someone of Christopher Grey-Wilson's background and experience, the book is botanically correct with the most up-to-date names being used, but synonyms are also given. It is not, however, a botanical book but very much one for the average gardener. It will be an invaluable guide to understanding commercial catalogues which sometimes make out that all their plants are swans and none are geese.

Every new rock-gardener should avail him- or herself of this book which is the most comprehensive and up-to-date reference book on rock plants suitable for beginners to grow outdoors. It also lists some more difficult plants and ones more suitable for the alpine house but the basic list is for outside.

It does not list bulbous plants but as the author rightly says there are plenty of good bulb books on the market.

It is attractively produced and good value for its price.

A.M.

CLUB TREASURER SITUATION VACANT

The Council is looking for a successor to Lewis Bilton who is retiring as Treasurer after 13 years in office.

No particular qualifications are required so long as the applicant can cope with simple book keeping.

The subscriptions are collected by the Subscription Secretary and the Treasurer only needs record the monthly totals from the Bank sheets.

The present Treasurer is prepared to continue the work of dealing with subscription covenants and tax claims, which constitutes a very considerable part of the duties.

The office carries an Honorarium.

The Treasurer can call for assistance from a small Finance Committee, the members of which are extremely supportive, and reports twice a year to Council.

The Council is anxious to make an appointment at the next Annual General Meeting on 21 October.

Anyone considering taking on this appointment could find the management of the Club's finances a rewarding and interesting way of spending his (or her) leisure and should contact the Club Secretary:

**Dr E. Stevens, "The Linns" Sheriffmuir,
Dunblane FK15 0LP.
(Tel. 0786 822 275)**

or the Treasurer:-

**L. N. Bilton, Kilmagadwood Cottage, Scotlandwell,
Kinross KY13 7HY
(Tel. 059 284 261)**

for further details.

Discussion Weekend

September, 1989

University of Stirling Conference Centre, Stirling
Friday 8 September to Sunday 10 September 1989

Stirling District, where the Highlands of Scotland meet the lowlands is known as The Big Country. Most rock gardeners live and garden in lowland areas but their hearts are in the mountains. The beautiful campus of the University of Stirling is surrounded by hills and mountains – Ochil Hills, Campsie Fells, The Trossachs, Ben Lomond, Ben Ledi and Ben Vorlich.

This years programme covers a wide range of subjects.

Lectures on three favourite genera, Saxifraga, Rhododendron and Primula, expeditions to the mountains of Western North America and The High Pyrenees to see their treasures and an expert's advice on cultivating these choice plants are the ingredients of this year's Discussion Weekend. A List of local hotels and tourist attractions will be sent on request (SAE please).

Stirling University is situated on the A9 between Stirling and Bridge of Allan. Accommodation is available in Andrew Stewart Hall until Monday morning, 11 September. There are a few double rooms available. Members **needing accommodation on the ground floor or Vegetarian meals** should request this at the time of booking. All lectures and the Autumn Show will be held in the Pathfoot building. There is a regular bus service from Stirling rail station to the University.

As usual there will be a club plant stall and a plant auction. Donations of plants for these will be much appreciated. We are also hoping to have a large entry for the Holiday Photographic Competition (details in Show Schedules) and for the Autumn Plant Show. If these are both well supported it will increase everyone's enjoyment of the weekend.

An informal programme will be arranged for those staying till Monday morning.

Programme

Friday 8

8 pm **Choice Plants in Suburban Tayside**
Mr Fred Hunt, Invergowrie

Saturday 9

10 am **SRGC Question Time – Panel of Experts**
Please come prepared with your questions.

11 am **Walk in the University of Stirling's Magnificent Campus or Woods**, using Evelyn Stevens Guide and Map

2.30 pm *The William Buchanan Memorial Lecture*

A new look at Saxifrages

Mr Brian Arundel, Hemel Hempstead

4.15 pm *The Harold Esselmont Lecture*

Plants of the Western American Mountains

Mr Eric Hilton, Bristol

6.45 **Reception and Banquet at Stirling University**
'How to hug' by Mr Alastair McKelvie, Aberdeen

Sunday 10

9.45 am **Dwarf Hybrid Rhododendrons**
Mr Peter Cox, Glendoick

11.30 am **European and Asiatic Primulas**
Mr Jim Jermyn, Edrom Nursery

2.30 pm **The High Pyrenees**
Margaret and Henry Taylor, Invergowrie.

Residents

A. Friday evening meal-Monday breakfast £77.00

B. Friday evening meal-Sunday afternoon tea £67.00

C. Saturday morning coffee-Sunday afternoon tea £51.00

The above prices include the cost of the Saturday Evening Banquet.

Non-Residents

D. Saturday or Sunday morning coffee, lunch, afternoon tea and all lectures on that day £16.50

E. Reception and Banquet at Stirling University £12.00

Applications for bookings together with the appropriate remittance should be sent to the Registration Secretary, Mrs A. Leven, 2 Leighton Court, Dunblane, Perthshire, FK15 0ED. Telephone (0786) 824064.

Members wanting further information should write to Anne at the above address (SAE would be appreciated).

David Douglas, 1799-1834

JAMES T. AITKEN

DAVID DOUGLAS, born in Scone in 1799, was the first and principal botanical explorer of western North America.

In 1823 the recently founded Royal Horticultural Society determined to send an emissary to eastern North America where it was understood that there were particularly fine varieties of hard fruits. The task was entrusted to Douglas when working as a technical assistant to Professor William Jackson Hooker in Glasgow University Botanic Garden. Hooker was the foremost botanist of his day and was later to become the first Director of Kew Gardens. Douglas discharged the assignment with outstanding success.

The Society then more ambitiously offered him employment to go to the west of North America. After a nine-month voyage he landed at the Hudson Bay Company's Fort near present-day Portland, Oregon. On that first day he found the flowering currant (*Ribes sanguineum*) in an open dry situation. Before he returned overland through Canada to Hudson's Bay and thence to London he had secured a wonderful harvest. His own *Douglasia nivalis*, *Lewisia rediviva*, *Erythronium grandiflorum*, *Mimulus moschata* (the musk), are a few. There were 21 new species of lupin. There are trees – the Douglas fir most notably (*Pseudotsuga menziesii*) whose botanical name commemorates an earlier Scot who botanised in these parts – Naval surgeon Archibald Menzies from Aberfeldy.

After a year at home, the Society again sent him in 1829 to northwest America, this time at the enhanced salary of £120 p.a. During this expedition he forayed south into California which yielded the harvest of annuals which was to lead to the Victorian bedding garden – *Eschscholtzia*, *Antirrhinum*, *Clarkia*, *Nemophila*, *Nicotiana*, *Heliotrope*, *Sidalcea*, *Limnanthus*, *Phlox drummondii* (commemorating Thomas Drummond from Forfar, naturalist on Sir John Franklin's Arctic expedition whom Douglas met at Hudson's Bay in 1827). Described as the 'greatest curiosity' of this expedition is *Garrya elliptica*, the winter flowering shrub.

"You will begin to think I manufacture pines at my pleasure", he wrote to Hooker, and no wonder for as well as the Douglas fir, he introduced the Sitka spruce, the Monterey pine (*Pinus radiata*) which has become the main cultivated tree of the southern hemisphere, *Abies grandis*, the sugar pine (with 40cm cones) and many more.

He took ship for home in 1834. While at Hawaii he determined to tramp over the island botanising and was killed by a fatal fall into a bull trap.

RE-PRINT OF JOURNALS 1-8

Following the notice in the January 1989 issue of The Rock Garden about the re-printing of Numbers 1-8 of the Scottish Rock Garden Club Journal, sufficient orders have now been placed for printing to go ahead.

It is expected that the re-print will be ready by the middle of May.

The price will be £2.50 per issue post-free or £18 post-free for all 8 issues.

We are only printing sufficient copies to meet the orders already placed with some spare to meet future demand. We can not guarantee how long the stock will last so any member interested should place an order as quickly as possible.

This is a unique opportunity to obtain a copy of these early issues and to see how gardeners 50 years ago were coping with the problems of growing rock plants.

Orders should be sent along with remittance to:

Mr T. G. Sprunt
17 Claremont Drive
Bridge of Allan FK9 4EE.

Plant Collecting

GLASSFORD SPRUNT, our President, has received a letter from the President of the AGS concerning collecting of seed from certain protected alpine plants in France. Our attention is drawn to the fact that there is quite a large list of species of which it is not only illegal to collect plants but also to collect seed.

The impression is given that this is something new but in fact most countries with legislation concerning plant collecting also include seed in the regulations. In the UK it is actually illegal to pick or uproot **any** wild plant or part of such a plant, which includes seed, without the consent of the owner of the ground. In addition there is a list of rare wild plants, including *Cypripedium calceolus* for example, which it is illegal to pick any part of even with the owner's permission. The only way to be sure of not infringing a country's regulations if collecting seed is to ask in advance what is permissible.

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Secretary

E. M. UPWARD, THE ALPINE GARDEN SOCIETY, LYE END LINK,
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The American Rock Garden Society



Membership in the American Rock Garden Society is available to rock garden enthusiasts everywhere. United Kingdom members may pay the annual \$20 dues in equivalent sterling cheque, since we maintain an account in England just for that purpose. ARGs publishes quarterly Bulletins and a Seed Exchange List.

For further information, contact:

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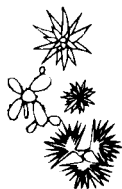
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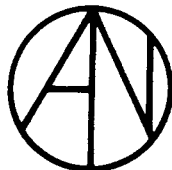
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Chris Chadwell (Leader of several Himalayan expeditions) has strengthened his four-man team with the inclusion of Magnus Ramsay (depute Principal at the Threave School of Gardening and joint collector on their 1985 visit to Kashmir). Shares are £25 or £50.

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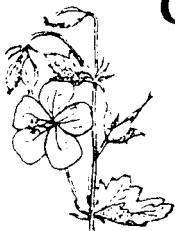
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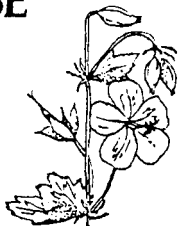
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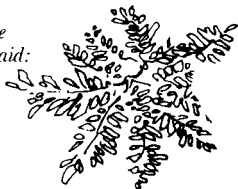
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This will be the last issue of The Rock Garden to be produced under the Editorship of Alastair McKelvie who is retiring from the position after six years.

From July 1989 the new editors will be:

Dr Carole and Dr Ian Bainbridge
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All articles and correspondence should now be sent to Carole and Ian Bainbridge.

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