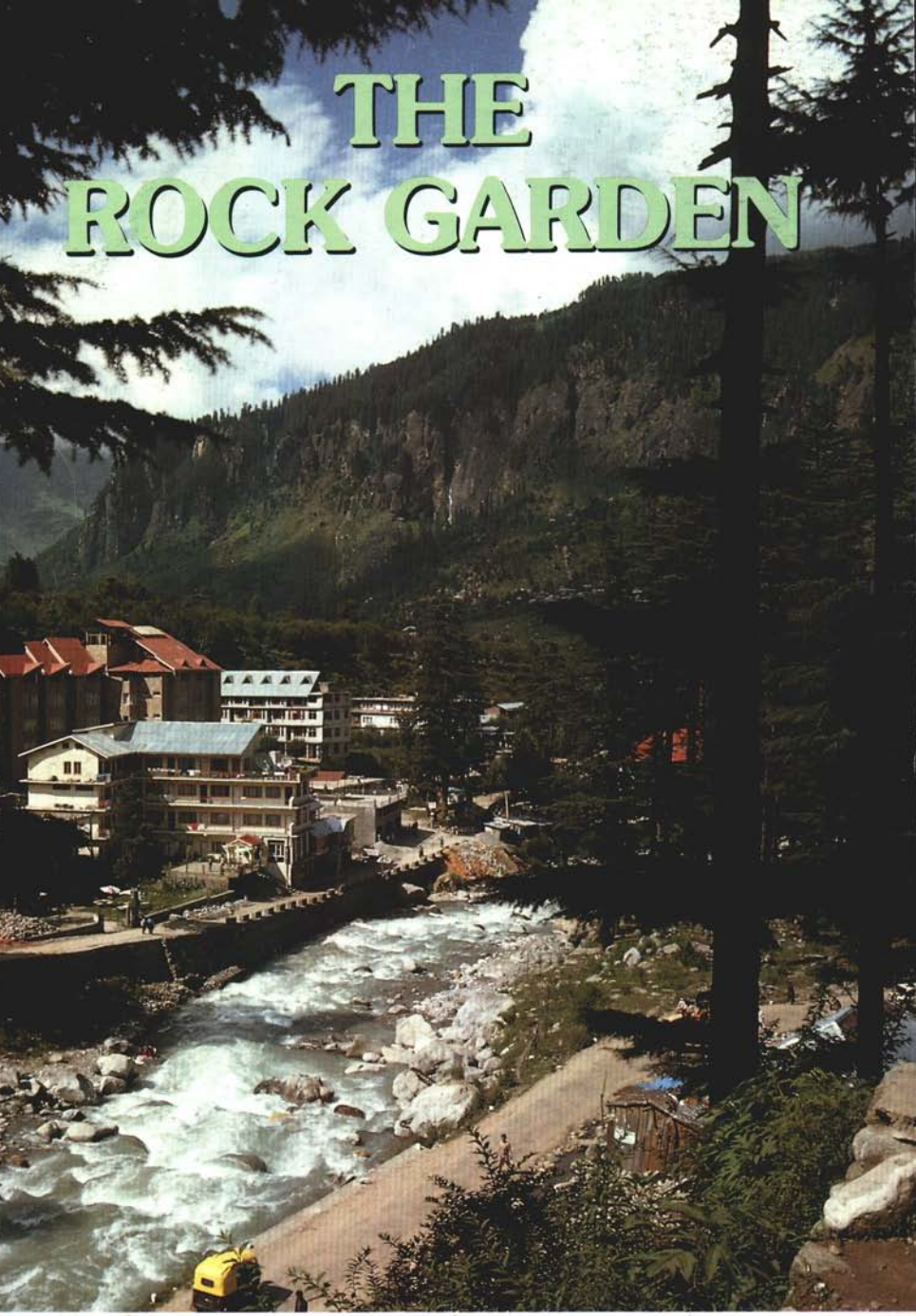
THE ROCK GARDEN



THE JOURNAL OF THE SCOTTISH ROCK GARDEN CLUB

Volume XXIV Part 3 Number 96

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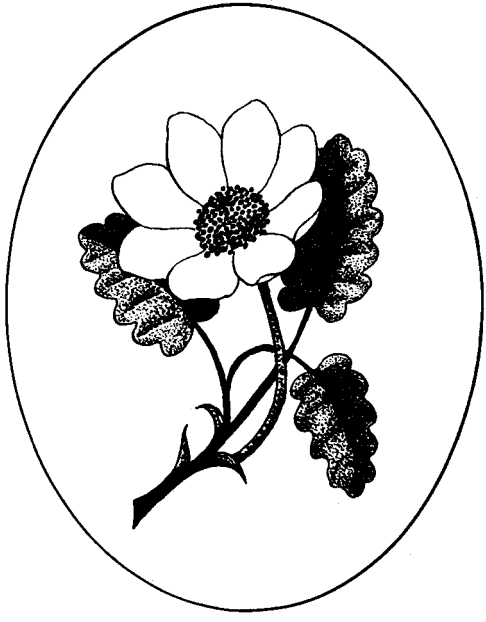

THE JOURNAL OF THE
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Volume XXIV Part 3 Number 96

June 1995

ISSN 0265-5500

Front cover: "Manali in Himachal Pradesh, India, the gateway to a treasury of high alpine plants" Alastair McKelvie.

THE ROCK GARDEN

Edited by
Alastair McKelvie
43 Rubislaw Park Crescent
Aberdeen AB1 8BT

The Rock Garden
is published twice yearly by the Scottish Rock Garden Club
on 31 January and 30 June.

The Editor would welcome articles for ***The Rock Garden*** on any aspects of alpine and rock garden plants and their cultivation. Articles should follow the format of previous issues with colour transparencies and line drawings if appropriate.

Pen and ink drawings and vignettes are also welcome as are colour photographs in a vertical format for the covers. Articles should be typed in double spacing.

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The deadlines for contributions are 1 November for the January issue and 1 April for the June issue. These dates also apply to material for the Yearbook and Show Schedules.

Enquiries about advertising should be addressed to the Advertising Manager as detailed on p.322.

Enquiries about illustrations should be addressed to:
The Illustrations Manager
F. Carrie
West Haybogs Farmhouse
Tough
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Aberdeenshire AB33 8DU

Individual copies are available from
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17 Claremont Drive
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Stirlingshire FK9 4EE

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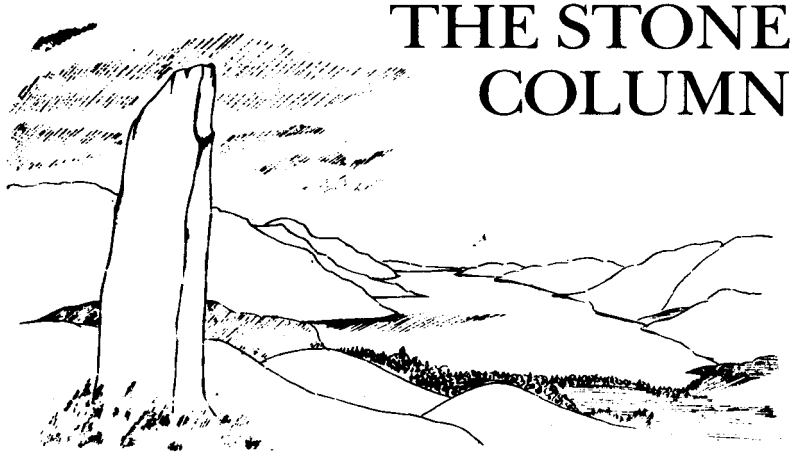

IF YOU LOVE THEM, SET THEM FREE

IT seems like yesterday, certainly not long ago, that I last faced one of my few real deadlines and commitments with the old problem of what to put in and what to leave out. To complicate matters, this edition has to be completed fully eight weeks earlier than in previous years to comply with the Editor's schedule this Spring. March it may be, but even up here by Loch Ness, for inspiration one has only to wander around the garden. Individual blooms may not be as pristine as those grown with protection and presented on the showbench, but any garden picture is much more satisfying than the sum of its parts. Currently, although winter's late offensive is in full swing and the rhododendron flowers are limp and brown, there's still plenty of colour to be found braving the equinoctial snow: *Iris winogradowii*, various scillas and their relatives, and those stalwarts of the Amaryllidaceae, snowdrops, snowflakes and some of the tougher dwarf narcissi. Snowdrops may have their devoted followers, but in the garden I am always drawn to the spring snowflake, *Leucojum vernum* for its larger, weather resistant flowers of a brighter, less silvery white. Equally tough are the many corydalis which can make a welcome counterpoint to the dominant melody of monocotyledons at this time of year. *C. caucasica* with its large, slightly creamy-white flowers is one of the earliest to appear outside in the border in front of our bedroom window, together with an expanding clump of *C. 'transsilvanica'* which has bloomed each March without fail since it was planted back in 1979. This is now considered to be a rich, clear pink form of the variable *C. solida*, as is the brick-red 'George Baker'. The

'ordinary' pale magenta form of this easy species multiplies even more freely and should not be despised for naturalising, along with Cyclamen, in those difficult summer-dry places under trees. The related but slightly larger *Corydalis bulbosa* is equally valuable in the garden, especially in a good colour form such as the dark reddish-purple one we have under PJC 297. The rich yellow *C. bracteata* is another to provide a bonus of self-sown seedlings, one of which appeared and flowered during an unusually mild spell in December. A subsequent hard frost caused the stem to kink and bend over horizontally, but the plant righted itself and is setting seed as I write. Of the more recently introduced species, *C. paczoskyi* has grown well outside, the lilac-pink flowers enhanced by their dark purple-black mouths; whereas the similarly coloured but slightly more bizarre *C. schanginii* remains in Poll's frame until offsets are available to try in the choice bulb border. These are both natives of the old USSR, the former from the Caucasus, the latter found in the Tien-Shan and Altai mountains in Central Asia. Neither is ever dried off here, they receive all the rain that falls throughout the Summer. The rhizomatous *C. flexuosa* is very easily divided and is rapidly getting around. Unfortunately, it has not been a success out in the garden, the leaves appear too early and are not at all frost resistant here, hardly surprising in view of its origin near the Panda reserve in SW China, not one of the World's colder spots! For a blue-flowered species, Askival shall have to be content with an old favourite: *Corydalis ambigua*. Another Siberian species which we should perhaps finally mention as a warning is *C. nobilis*. The spikes of yellow, black-tipped flowers are welcome early in the year, but the clump can rapidly encompass a full cubic metre, and it's a little too free with deep-rooted self-sown seedlings which are very difficult to extract from among choicer neighbours in the border.

FRITILLARIAS AND SLUGS

With the prevalence of north winds and periods of snow in March the fritillaria season is somewhat delayed this year; not that some, such as *Fritillaria caucasica* (Fig.54 p.233) are any strangers to snow at Askival. Not far away in the same narrow west-facing border a rice-grain was planted about ten years ago as *F. alburyana*. When it finally reached flowering size last year, it turned out to be a compatriot: *F. armena*. A small bulb of the correct plant with an impeccable Stirling pedigree joined it recently, but I foolishly forgot to scatter a little 'Draza' around the newcomer and an unspeakable gastropod mowed off half the developing leaf the

very first night. It is remarkable how they can detect a plant under stress, whose chemical defences are impaired. This Fritillaria had been sitting and acclimatising in its pot less than a metre away, untouched for a fortnight. There's probably a PhD thesis here, on the relation between slugs and their potential sources of food. Plants have two basic strategies to counter grazing. They can either expend energy in building defences, be they spines or toxins, or expend the equivalent energy on growing fast enough to make up for a higher level of damage. The balance of advantage can depend on the prevalence of herbivores in the particular environment. Plants can even warn each other; they may react to an infestation of say, caterpillars by releasing a chemical message to neighbours to step up poison concentrations in their foliage. When we remove an alpine, such as a choice campanula, to our gardens, it's away from its friends, and exposed to far more danger of being eaten by the higher density of pests, not to mention probably being 'stressed out', as they say these days. Some of the larger species of fritillaria can grow sufficiently rapidly once established to shrug off the odd chew by wandering slugs. Yesterday I noticed that *F. raddeana* was in full flower; when I had last checked a week or so before, it wasn't even showing. The odd leaf had been notched so it's back to the potting shed for the Draza shaker, a plastic container with a snap lid through which I drilled a 9mm hole. Related to the Crown Imperial, *F. raddeana* is a rather slighter plant, with broader, flatter bells of a pale greeny-yellow, the tepals stained with purple at the base; and one perhaps more in keeping with the alpine garden than the herbaceous border. *F. imperialis* itself can look very imposing in the right setting; we have a clump of the rich orange form which contrasts beautifully with, and towers over, a large patch of *Erythronium* 'White Beauty'.

CALOCHORTI

Turning to cultivation for a moment, all the above are naturally exposed in the open to our considerable rainfall throughout the year. I feel sure I have stressed this point before, but 'dry' is an adjective much better applied to wines than alpines. It was very interesting to read in Dr Sylvia Martinelli's comprehensive review of the genus Calochortus, in the latest AGS Bulletin (Vol.63, p.76), that they attribute lack of success with some species in the bulb frame to the seasonal drought conditions therein. During our own travels in North America we have not actively sought out calochorti, but have come across a number of species growing in environments which have led us to try them out in the garden.

C. apiculatus for example was growing on a high ridge in the Mission Mountains in N. Montana, with *Gentiana calycosa*, amongst a ground cover of *Vaccinium globulare*, an American bilberry; *C. elegans* in forest clearings in the 'Bitter-roots' on the Idaho-Montana line with *Linnaea borealis*, the white bog orchid *Habenaria dilatata* and various ferns, alongside a dirt road so muddy that our 4WD was unable to progress any further (it wouldn't have stopped Grisewald, but that's another story); and *C. nudus* was in a Darlintonia bog in Northern California, along with *Aster alpigenus* var. *andersonii* and Dodecatheons. Other species we have previously recorded seeing in alpine habitats (see ***Rock Garden*** 90, p.68) are *Cc. subalpinus* (=*lobbii*), *gunnisonii*, and *nuttallii*. We have since seen the last in a sub-alpine meadow in the Uinta range of N. Utah, during our 1993 trip, once again hardly the Mohave Desert. All the species mentioned have flowered outside at Askival. For one to assume that every Calochortus requires the same growing conditions is rather like lumping the classic of the alpine house, *Primula allionii* with the 'Glory of the Marsh', *P. helodoxa*!

OVERHEAD WATERING

At this point it is perhaps also worth noting a few other instances where our experience of moisture tolerance is at variance with conventional wisdom, take *Raoulia eximia* for example. According to the newly published AGS Encyclopaedia this is one of the most challenging and slow growing of alpine house cushion plants, requiring 15 years to reach a diameter of 10cm. We sowed fresh seed of this in May 1988, collected on Mt. Hutt by Ethel Doyle, more in hope than expectation of success here. Three seedlings were potted up into our standard acid scree compost the following August, of which two established. Having been rained on for six summers in our open frame, the larger has attained a diamater of 9cm and produced a scattering of flowers, followed by fluff, last year. Another classic alpine-house plant said to resent overhead watering is *Jankaea heldreichii*; an article in the winter NARGS Rock Garden Quarterly on Alpine Gesneriads repeats the old Farrer myth that no moisture should ever fall on it. It must rain in summer on Mt. Olympus, and in our experience plants are perfectly happy outside during the growing season. In our conditions, they tend to make many congested rosettes, and should be divided every few years, as only the larger rosettes flower. To those who still believe that alpines spend the winter dry under snow I commend the ski resort weather reports on Teletext/Ceefax. It is interesting how often, particularly before the turn of the year, it is raining up to and

even beyond 2,000m, with snow cover only at the highest levels, well above the habitats of most of the alpines we grow. I have a feeling that it is a combination of warmth and wet which encourages rotting off during dormancy; cold rain, say below 4°C, is rarely harmful. In managing our cold-frames, I am sure that, if anything, we do not water enough during the winter. Providing the compost is open and well-drained, it should be kept on the moist side. The plants can thus rehydrate during milder spells when their pots are not frozen and free water is available. The sand bed beneath, in capillary contact, helps iron out the fluctuations before and after irrigation.

WITHIN THE FRAMES

Within the frames, *Ranunculus semiverticillatus* is in flower again, so illustrating it a year ago did not prove fatal. Probably the finest plant at present is *Epigaea gaultherioides* (Fig.55, p.233). A native of the Black Sea coast of Turkey, its relatively large evergreen foliage requires protection from freezing winds here. The gorgeous flowers, although fragile looking, can fortunately withstand just a few degrees of frost. Of prostrate habit, it is not really suitable for pot cultivation and so is planted out in a frame of leafy compost, with other Ericaceae on the borderline here such as *Cassiope selaginoides*. A complete contrast in form, colour, and tone is provided by the rich indigo-blue spikes of *Synthyris laciniata*. A snow-patch plant from the Wasatch Plateau of Utah, cold springs encourage more compact growth and intensely coloured racemes and, as is usual with species from this habitat, once started, development is extremely rapid, flowers appearing in a matter of days. When we described this in our commentary on Western American Alpines (***The Rock Garden*** Vol.87 p.212) it was as *S. pinnatifida* var. *laciniata*, since when Intermountain Flora has reinstated its specific status. We also doubted at that time whether the related *S. canbyi* had anything distinct to offer. Despite our own preconceived notion, we made the long and difficult hike in the Mission Mts. Wilderness mentioned above, accompanied by the Botanist from Flathead National Forest, to obtain this narrow endemic (Fig.56 p.234). The two really are quite similar, the latter more compact, with deeper leaf divisions and, in our experience, a greater number of flower spikes per crown. The individual flowers of the northern species are larger, as is often the case with increase in latitude; the bracts, conspicuous in bud, richly stained with purple, and fringed with white hairs. In cultivation here it flowers later, in April, and is a worthy addition to the garden. In conclusion, we should admit

that not all the plants we raise and flower in our frames finally make it into the garden, and *Anemone caucasica* may be a case in point. A pot containing a score or so of seedlings makes a welcome and very pretty sight at this time; but, as a fragile miniature of *A. blanda*, they may be too delicate for other than a trough. Our form, sent as seed by Olga Duchacova from the Czech Republic, bears tiny nodding flowers of a beautiful clear medium blue.

COVER GIRLS, AND GILDED LILIES

As we mentioned in our last Column, *Meconopsis discigera* KEKE 543 flowered in September 1994. Thanks to a very mild Autumn, the seed capsules appeared to have had time to mature properly, and the seed was sown in January 1995. With the exception of *M. quintuplinervia*, which we find better sown fresh, this is our usual sowing date for Meconopsis . Since their seed can germinate at quite low temperatures, it may well do so prematurely if Autumn sown. We know from experience that the resulting tiny seedlings would suffer a very high mortality rate overwintering in our frames. None of our current sowings of Meconopsis had germinated at time of writing, so it is far too early to tell whether the *M. discigera* seed is viable. The photograph (Fig.53 p.232) shows one of our two flowering plants as it actually was, but the old saying that the camera cannot lie is certainly no longer true, if indeed it ever was. The air-brush and colour filter have been replaced by digital techniques of image manipulation, which can make a cover girl's eyes larger, or her legs longer. The same computer programmes could easily improve on the size and colour of petals, or indetectably multiply the total number of flowers. When Lawrence Greenwood painted the *Androsace helvetica* in one of our troughs, he added a few more flowers to make a more satisfactory composition. This is quite legitimate artistic licence, everyone knows that a painting is an image filtered through the artist's imagination. However, to enhance a photograph clandestinely is quite another matter, as the viewer may well be unaware that alterations have been made. Catalogues, particularly of gaudy annuals, have always exaggerated the colours of flowers, who knows what they will get up to now.

STELLERA CHAMAEJASME, POSTSCRIPT

While referring back to plants mentioned in the January Stone Column, this is perhaps the appropriate place for two additional pieces of information which have since come to hand. Firstly, an excellent and comprehensive overview of the monotypic genus *Stellera* by Dr C. Grey-Wilson was published in The New Plantsman

(vol.2 part 1). In this the yellow-flowered plants are raised to the varietal rank as *S. chamaejasme* var. *chrysantha*, on the grounds that they are geographically isolated from the white flowered populations, which become *S.c.* var. *chamaejasme*. When characters are mixed in a population, such as the white, yellow, and brown-anthered forms of *Erythronium grandiflorum* we found growing together in NW Montana, then these forms cannot be raised to the level of botanical variety. He also points out that the yellow Stellera variety is found in wetter regions of NW Yunnan and neighbouring Tibet whereas the white plants have a much wider distribution describing an arc in drier regions, from rain-shadowed N. Nepal right up to Mongolia. Thus the yellow-flowered plants should in theory be more suitable for West and Central Scotland. I have also received a letter from David Tattersfield at Branklyn, referring me to an article in an early SRGC Journal for 1952 (No.11, p.113). In this, Donald Lowndes describes how he sent plants collected in the Marsyandi valley in Central Nepal by air-mail to Sir George Taylor, who then distributed them to a small number of gardens. Two plants of *Stellera chamaejasme*, under Lowndes' number 913 are known to have survived: the famous Branklyn plant, and another at the RBG Edinburgh. Thus I was incorrect on two grounds in my assumption that they were a Ludlow and Sherriff introduction, and by seed. Another reader asked whether root-cuttings had been tried. When I asked David what he thought of the idea he replied that he would hesitate before making the sacrifice, as all Thymelaeaceae resent root damage. The Branklyn plant does set seed occasionally, but several sowings have stubbornly refused to germinate. Wild seed is often equally recalcitrant, so the jury is still out on the question of self-incompatibility. If our plants set again, I shall certainly follow David's injunction to inspect daily, and beware of Fort Augustus-sized raindrops.

DELEGATION, AND OUR FIVE-YEAR PLAN

As Poll reminds me from time to time, I can be my own worst enemy. Within the garden this trait manifests itself as a desire to do everything myself. The first time I was persuaded to delegate construction involved our covered compost storage bays, added in 1989. Since then the current alterations have included a five-year plan of outside assistance, starting with the Orchard windbreak in 1993, followed by the frame-light storeshelter in 1994. This year it was the turn of the potting-shed annex, putting a roof over the gap between the shed itself and the compost store to provide a dry mixing area. Still to come are a further storeshed for the mower,

concrete mixer, sprayers, fertiliser sacks etc to free space in Poll's potting shed, and finally a greenhouse or detached conservatory. The last does not indicate that we are finally going soft in our old age, but with the current trend for Winter to reach its climax in March, it would be nice to be able to enjoy a wider range of bulbs. As David Mowle pointed out at Dunblane, crocuses are opened by warmth not sunlight, even for example during periods of warm rain, or indeed in the low light levels on the showbench. This year a succession of occlusions, i.e. warm and cold fronts combined with no warm sector, once again battered most of our crocuses to the ground before they could open, delivering the coup de grace with 5mm hailstones. Only the very late flowering true alpines *C. vernus* ssp. *albiflorus* and *C. veluchensis* escaped. The former, from the Club exchange, includes both purple and white flowered seedlings.

For my own part, I completed the concrete blockwork for Orchard frame no.4 on those rare days when there was neither frost nor rain. At 15m this is the shortest of the four, and has two courses of blocks to raise it slightly. There are three reasons for going to this trouble: for convenience in tending small scree pot-plants, to improve drainage and air movement, and to blend with the triangular raised-bed-to-be next door. Raising a frame requires infill, so I was able to use this as an excuse to start a job that I had been keeping for retirement: repairing the fallen gap in the 2-2.5m retaining wall above the track which bisects our garden. Rather than replace the Nun's wall on the old line, we decided to make a cut-out and add a set of steps parallel with the wall up to the sitting area under the old larch (for those with ***The Rock Garden*** No.90, from the dotted semicircle on the plan, page 5, to key No.21). Digging out the subsoil to provide space for the steps, I put it through the coarse barrow sieve to remove the larger stones, and used the remaining gravel and sand in frame 4. More of the new drystone retaining wall than originally intended had to be built, for I had exposed a massive boulder, of at least a ton, in the glacial deposit, embedded about 1.5m up, and had to shore up the bank to prevent it falling onto the steps, or my head. As I did so, Poll kept looking out of the potting-shed window to check that the 'Damocles' boulder hadn't moved.

Happily, however, all went well; gravity nil, gardener one and he lives to plant and write another day.

THE PICOS DE EUROPA

Being a personal account of a first botanical tour to the Picos de Europa, in Northern Spain, organised by the AGS, in July 1994

by MIKE HOPKINS

IT was with some apprehension that myself and Bob Maxwell, a fellow Aberdeenshire SRGC member, had signed up for the AGS Tour of the Picos de Europa in July 1994. Although we had obviously seen many a slide show about such tours we were not really at all certain of what to expect. This tale is about our first experiences of a botanical tour, the surprises, the problems, the mistakes and the joys. We managed to check in on time at Heathrow after the inevitable problems of travelling from Aberdeen, and met up with our fellow travellers some 25 in all including our leader, Terry Underhill. The first surprise was to find amongst the party, two further SRGC members from Aberdeenshire, Wilf and Dora Holmes, bringing the total SRGC Aberdeenshire contingent to 16%.

The flight to Bilbao, in Northern Spain, was uneventful but what a disappointment on arriving in thick mist with a hint of rain. We faced a two hour bus ride to our first hotel at Covadonga and after that five o'clock start this was quite a daunting prospect. Had it been sunny and clear we would have had the benefit of the scenery but as it was we only saw the immediate roadside that admittedly was of some interest. We made one stop on the journey at a largish town, Cangis de Onis, just a few kilometres from Covadonga, to purchase food for the next two days' lunches as we would not be going anywhere near any shops during those days. The weather was still overcast but brightened a little whilst we were purchasing our provisions. However, this didn't last long and by the time we eventually reached the Hotel at Covadonga the scenery was well covered again.

Covadonga is a village in the north-west corner of the Picos de Europa, famous, at least in Spain, for a battle fought and won against the Moors and in dedication of which a Basilica was built and a shrine established. Covadonga exists solely to service the tourists visiting the Basilica, Shrine, Retreat and several heavily disguised trinket shops. Its other claim to fame is as the gateway to

the Parque Nacional de La Montana de Covadonga, the Covadonga Nature Park, which provides a haven for endangered species of bear, capercaillie, eagle and vulture.

THE PEAKS OF EUROPE

The Picos de Europa, the Peaks of Europe (Fig.66 p.288), forms the highest part of the Cantabrian Mountains that run approximately 250 kilometres east to west, parallel to the northern coast of Spain. The Picos themselves form the central, slightly to the east, part of the mountains, themselves bounded and divided into three by four rivers, the Rios Diva to the east, Cares and Duja in the middle and Sella to the west. The dominant rock is secondary limestone of various types, both hard and soft, although small areas of sandstone and shale were encountered. Because of the dominant limestone, underground water courses abound and surface water is scarce despite the relatively high rainfall due to the proximity of

Some misunderstandings with our Spanish guide, Armando

the Atlantic weather. At high levels magnificent steep-sided peaks and gorges carved by water leaving strange shaped outcrops, screes and individual boulders are the norm. Lower down, more smoothly shaped hills and plains lushly covered by woodland and cultivated meadow predominate.

FIRST STOP, TOURIST SPOTS

Day two marked the beginning of some misunderstandings with our Spanish guide, Armando, who joined us that day. Armando proceeded to take us off on the tourist route, first to the caves of Tito Bustillo to view some remarkable cave paintings of animals that are reputed to be superior to many of the similar but more famous cave paintings in southern France and other areas of Spain. Next, a visit to a typical fishing village, Lastres, where we were treated, if that is the right word, to a display of skill in pouring a rather inferior cider into a glass from a great height prior to drinking. Some of us by this time were becoming a little agitated but the weather did manage a short spell of sunshine.

From sea level we proceeded to a mirador (viewpoint), Mirador del Fito, at some 1000m in a remarkably short space of time, bypassing abundant roadside flowers through woodland of initially eucalyptus, *E. dalrympleana* and *E. globosa*, and later of ash, beech,

maple, various pines and several other trees which I failed to identify. Incidentally, the eucalyptus was introduced and farmed for structural timber for the mining industry.

AND NOW THE ALPINES

The Mirador, where we stopped for lunch, was just at the tree line and here was some evidence of interesting flora including the first real find, *Sedum album var. hispanica*. Although this sedum and indeed many other flowers, had already been seen no opportunity had yet arisen to study them closely but if we thought that we could start botanising, Armando had other ideas. A short walk, we were informed, would take us to view wild horses. Now, it so happened that there existed, along the short moorland/mountain path, a number of wild flowers. Needless to say, botanising began in earnest and progress became slower and slower as cameras, tripods and flora references appeared from rucksacks.

One of my first personal finds was a small blue polygala, I thought very similar to the one many of us have in our cold frames and alpine houses called *Polygala calcarea* 'Lillet' although the flower was smaller and the foliage somewhat different. Opinions differed as to its specific name but *vulgaris* and/or *serpifolium* were finally agreed. The major problem was that, although there were many flowers, they were widely spread and not concentrated enough to give a tight display sufficient for a good photograph. This pattern of lots of flowers but widely spaced was to be repeated

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For detail one has to be contented
with a close-up of only one flower

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in many instances later, notably with *Erinus alpinus, Leucanthemum vulgaris, Lithodora diffusum* and *Helianthemum nummularium*. Perhaps we, certainly myself, are more used to seeing these plants in artificial environments where concentration of bloom is the norm and, indeed, expected. So an early photographic lesson was learnt, that for detailed photographs in the wild one often has to be contented with a close up of maybe only one flower.

The terrain was moorland, almost devoid of trees except for a few *Pinus sylvestris*, with abundant boulders of all sizes and bits of scree. It was ideal for a number of plants of which I managed to see and identify several. These included *Potentilla tormentilla, Veronica serpyllifolia, Wahlenbergia hederacea* and surprisingly some ericaceous stuff, *Erica cinerea, E. mackiana, E. tetralix, Daboecia cantabrica* and

Vaccinium myrtillus. Just what these particular plants were doing in a limestone area was beyond me but then it was pointed out that the soil was predominantly peaty. So here existed an apparent contradiction; the co-existence of acid soil and limestone rock. Obviously in such situations both ericaceous and non-ericaceous plants can exist happily together depending, I suppose, on just where they put their roots.

Whilst many other members and I were busily botanising, others, perhaps more hardy, had walked on ahead to see the wild horses which they eventually did, albeit at a distance. I was more lucky, the slow pace had brought us to within photographic distance of a small herd of what must have been tame horses and some excellent photographs were taken despite their obvious nervousness.

Not a brilliant alpine area but wealth of other material makes up for this

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Perhaps the time has come to sum up the flower situation generally in this area. It has to be said that this is not a brilliant area for alpines but the wealth of other material more than makes up for this. We are of course open to a definition of what actually is an alpine and a lot of the time we were reasonably high and above or at least near the tree line which satisfies one of the usual definitions; plants that grow above the tree line. The flora generally is very rich and extensive, in fact the number of species recorded in the Iberian peninsula in total is second only to that of the Balkans within Europe and a high percentage are endemic. Polunin and Smythies in their book *Flowers of South West Europe* sum up the reasons for this, briefly, the lack of ice coverage during the last ice age allowed species to survive where elsewhere in Europe they were wiped out, the proximity to flora rich N. Africa and the relative isolation of the Iberian Peninsula from the rest of Europe.

THE LAKES

Day three dawned misty again but pleasantly warm after Aberdeenshire. The bus today was to take us to two lakes, Lago de la Ercina and Lago Enol just above Covadonga, in the Covadonga Nature Park. The road once again wound zig zag style up the steep mountain side initially through woodland passing many interesting looking roadside flowers. Eventually the woodland began to thin

giving way to a more rocky terrain, revealing through occasional breaks in the mist, the tantalising promise of magnificent views. Complete clearance of the mist was not to be and setting out from the bus along short sheep cropped turf, in visibility measured in a few metres, brought us to the shores of Lago Enol, within only a hundred metres or so. The lakeside fauna firstly proved interesting with newts, toads, frogs and damsel flies in abundance but the flowers were not forgotten with *Caltha palustris, Lychnis flos-cuculi* and my first orchid, *Dactylorhiza majalis*. Following the lakeside, further walking began to reveal large rocks and outcrops covered with all sorts of plants and progress became slower much to the concern of our guide. But this is what we had come to see.

With many individuals looking, a large number of species were being found and identified judging by the many cries and exclamations emanating from all around with the slightly eerie sound quality associated with the mist. All this together, with the constant sound of cow bells (not forgetting the sheep and goats) coupled with the visibility at time down to 10m, made for an altogether strange experience. This did not detract from the delights of finding plants often, hitherto, only seen in pictures or described in books. Notable finds were a single *Bulbocodium vernum, Sedum dasyphyllum, Teucrium pyrenaicum, Malva sylvestris, Geraniums,* mossy and pubescens (previously known as aizoon types, I believe) *Saxifragas, Eryngium bourgatii, Linum viscosum, Leucanthemum vulgaris* and *Helianthemum nummularium.* The last three plants were amongst plants which we were to find in all locations throughout the trip. All around were patches of *Genista hystrix* and *G. hispanica* but my personal favourite was a white form of *Dactylorhiza incarnata* sitting happily all by itself in a small boggy area right out in the open.

HIGHER AND HIGHER

We trudged on in the mist urged by Armando up higher and away from the lakes. Here we saw *Campanula rotundifolia, Petrocoptis glaucifolia,* predominantly white but some pink, and *Viola cornubia,* amongst rocky, grassy slopes, punctuated now and again as the mist momentarily lifted, by views of spectacular peaks, outcrops and boulders not to mention cows and goats. Further walking brought us to what was obviously a favourite picnic site in a lush green valley with trees and huts. Here we had a welcome lunch with not far away a family of cows consisting of dad, three mums and calves. This was such an unusual sight and not something that we are used to seeing in our own intensive agriculture environment. Speaking of agriculture, the agriculture practised in this area can

Fig. 53 *Meconopsis discigera* (p.224) Polly Stone

Fig. 54 *Fritillaria caucasica* (p.220) Polly Stone

Fig. 55 *Epigaea gaultherioides* (p.223) Polly Stone

Fig. 56 *Synthris canbyi* (p.223) Polly Stone

Fig. 57 *Dianthus* 'Inshriach Dazzler' (p.279) Alastair McKelvie

Fig. 58 *Himantoglossum hircinum* (p.245) Mike Hopkins

only be described as subsistence. Most 'farms' were of very small areas, one or two hectares being on the large size and many being not much larger than common domestic amenity gardens in the UK. Predominant crops grown were sweet corn, beans and potatoes. Other vegetables were rare and fruit even rarer although there was evidence of recent massive hard fruit plantings, no doubt with EC assistance.

Many 'farms' not much larger than common domestic amenity gardens in the UK

The mist, far from lifting, was beginning to thicken. We made for the next lake, urged on by our guide yet again, and a short walk in very poor visibility forcing us for the first time to keep together as a group, brought us to the shores of the second lake. We could now move freely once again following the shore line back to the road and the bus. This we proceeded to do in double quick time, all botanical thoughts rapidly dissipating in the now very wet cold, mist and with the beginnings of tired and aching legs.

Day four promised to be a little brighter, with the bus taking us high up to an area well off the map. To this day I failed to identify the exact area but the objective was another lake with iris. Armando, it would seem, was beginning to get the idea about flowers. From the drop off point we proceeded up a prepared track alongside meadows and rough grazing into light woodland and on to a steep moorland hillside. The day was clear enough, although hazy, to see high mountain peaks and steep cultivated and wooded valleys. The wooded meadows had revealed many of the plants already recorded and a new orchid, the bee orchid, *Ophrys apifera, Aquilegia* species and better specimens of *Eryngium bourgatii* with more and brighter blue colours. Moving along a well marked track an abundance of flora was evident, notably, a range of small ferns absolutely ideal for the rock garden, *Asplenium trichomanes, A. ruta-muraria* and *Polypodium vulgare*. Also noted were *Dianthus monspessulanus, Anagallis tenella, Rosa rubiginosa* and, great excitement, *Narcissus bulbocodium* thought to be var. *citrinus*. Despite an extensive search only two further traces were found of the narcissus, the rest clearly long departed.

The progress of the party began to evolve much as the previous two days, with some hardier perhaps more determined members racing on to the lake, whilst the majority were variously strung out

along the route exploring personal finds and sharing them with those following. A largish group congregated for lunch but by this time the mist was with us again. Post lunch, a group decision was made to turn back and what an interesting return it was. Despite virtually retracing our steps many more flowers were seen along with many butterflies pointed out by one member who happened to be a butterfly expert. A personal triumph occurred in that I found a perfect *Serapias cordigera* just at the side of the path which could easily have been stepped on on our outward trek. Two other orchids revealed themselves, *Ophrys insectiflora* and *O. tenthredinifera* along with another fern, the rusty backed fern. Most of us never

Personal triumph finding a perfect
Serapias cordigera *at the side of path*

managed to see the lake or the iris, which I believe was *Iris pseudacorus*, the yellow iris.

IT GETS WARMER

Back to the hotel via Cangis de Onis again to replenish food supplies. By now an evening conference had become the norm, where the day's findings were discussed and argued over. This particular night revealed the route for the next day. At first sight it didn't seem too bad but closer examination revealed some very close contours. The trip was to view the Pico Urriello, more commonly called Naranjo de Bulness, one of the most spectacular if not the most spectacular peak in the Picos. The peak some 2519m above sea level, 1,200m above the surrounding terrain, is only some 300m across at the base.

Day five promised to be our first real Spanish sun and indeed our first real views of the surrounding countryside and mountains. The usual bus trip would take us to Sortres, the starting point for a trek from one valley to another past the base of Naranjo de Bulnes.

Along the way, the bus stopped at an obviously popular place right in the middle of a village where the Naranjo de Bulnes could be seen from the road. After a polite but cursory look at the reason for stopping, the whole bus proceeded to spread out along the road looking and photographing the roadside flowers. The most spectacular *Verbascum pulverulentum* was photographed here in perfect condition growing right next to the road at the entrance to a hotel.

By chance the bus had stopped next to a field of potatoes and

one of our eagle-eyed party spotted something on the foliage. On closer examination the whole field of potatoes was covered in little black and yellow striped beetles. Yes Colorado Beetles. Hundreds of them. So much for EC controls.

Back to the bus, winding up through the steep gorge of the Rio Duje via Puente Poncebos and on to the road end just below Sortres where we started the walk. The first part was a fairly steep long climb about 400m in by now considerable temperatures – my guess around 90°F. The initial route was in fact a well made road, quite good enough for the bus but this road had been built exclusively for the local farmers and was theoretically banned to tourist traffic. Anyway, if we had used the bus we would have missed a feast of wayside flowers including more verbascums, *Antirrhinum braun-blanquetii, Linum viscosum, Lilium pyrenaica, Papaver rhoeas, Chaenorhinum origanifolia,* campanulas, many *geraniums*, mostly *G. sanguineum* and *G. cinerea*, a large mass of *Viola cornuta* and at last an iris, *Iris xiphioides*, the English iris, one single flower in the middle of a meadow.

If we had used the bus we would have missed a feast of wayside flowers

The next leg was a level contour along a moorland path with the imposing Naranjo de Bulnes and other no less splendid peaks to our left. This turned out to be a longish slog, botanically not too inspiring although there were many orchids, polygalas, helianthemums, linums which we had seen before. The long trudge eventually brought us back to pasture and woodland where the descent started to become steeper. The steep track became what can only be described as a cobbled pavement, evidently hand-built at least in part and designed for one purpose, a mule track. The trackside flora was abundant but not with newer species, however, I managed to bag the bastard balm, *Melittis melissophyllum*, a very handsome mint.

Eventually we reached the village of Bulnes where welcome refreshment was awaiting us fresh from a recently arrived mule train. However, we still faced a two hour trek with a 500m ascent to reach the bus and supper.

As it happened, it proved a walk of grand vistas with dramatic light and shade, since we were now well below the peaks and the sun was setting. It was initially quite level but steepening suddenly and purposefully with the river now raging, in parts, up to 100m

below us. Progress was now very focused on the end point with ankles and knees protesting. One hour and three quarters saw us at Puente Poncebos where the bus and another beer were awaiting. Needless to say we were very late for supper that night!

PATTERN RECOGNITION EFFECTS

Despite the deliberate slow pace, we more than retraced the ground of the other day, revisiting several plants and finding several more, notably *Globularia repens, Reseda glauca, Sempervivum cantabricum, Aconitum napellus* and *Pinguicula grandiflora*. The last plant was growing in running water on a vertical rock face amongst grass and moss. Once we had found the pinguicula, it popped up all over the place from then on. This phenomena was observed with several species; I am sure that this has nothing to do with the actual frequency and distribution of plants rather, I suppose, that once the eye and the mind are attuned to a particular pattern then it is bound to react accordingly.

This is of course part of the well known pattern recognition effect about which any expert in any field can demonstrate. Any expert will notice many more effects, events, details, within his own field, missed by non-experts. This is simply due to the fact that these particular patterns have been experienced previously, often repeatedly, and are at the forefront of the mind. Similarly, recent experiences are also at the forefront of the mind and are readily recoverable. Perhaps this reinforces the notion that research into the type of plants likely to be encountered before such trips would be of great benefit.

Botanically poor photographs showing overall effect rather than detail

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Having said all that there is no substitute for the real thing. Many published photographs are botanically very poor tending to show overall effect rather than detail. This is understandable, given that the main reason for most photographs is effect. Likewise, written descriptions are impossible. For botanical detail the botanical artist undoubtedly has the edge, a fact which has not escaped many botanists judging by the continuing and seemingly increasing use of such artists. There is no reason why photographs could not supply this detail, it is merely a question of emphasis and technique with lenses and lighting.

FOUR-WHEEL DRIVE NOW

Day seven would see us leave the northern side of the Picos for another hotel at Fuente de on the southern side. The mode of transport would be somewhat different from that of previous days; our route would be over the top using four-wheel drive vehicles. But first we would walk a gorge, the gorge of the Rio Cares. The jeeps took us firstly back to Puente Pancedos where we ended our marathon trek from Bulnes on day five. Taking a slightly different route from previously, we entered a different valley and the gorge of the Rio Cares. An initial steepish climb of about 300m brought us to a well made and reasonably level track with impressive views both up and down. The route was evidently a tourist attraction with many people passing dressed and shod with no concession to the mountains. At first I thought that this was why the track was so good, however, it soon became apparent that there was a more logical reason for the track to be so well built and maintained. More and more evidence appeared of man helping nature bring the water down hill, in the form of small dams, conduits and canals. This was a remarkable engineering achievement when one considers that all the materials for these works must have been brought up by mule and all the labour must have been by hand as it was very unlikely that any large machinery could have been used.

SOME NEW FLOWERS

Of the many flowers seen on route most had been seen before, such as malvas, campanulas, sedums, but new items for the list included an unnamed erodium, a convolvulus not officially named, *Hypericum nummularium, Sedum acre* was seen for the first time and a lovely sisyrinchium-like plant for which I failed to check the name but possibly *Aphyllanthes monspeliensis* although the books say dark blue flowers – this had light blue flowers. I haven't mentioned trees very much but today seemed to be a good day for them or perhaps I was just attuned to trees that day. The list included two oaks, *Quercus castanifolia*, and *Q. hispanica*, two limes, *Tilia cordata* and *T. platyphylla* and the strawberry tree *Arbutus unedo*. All these were happily growing in scree and rocky terrain.

ENGINEERING WORKS

The path continued on with evidence of further work to make the path easier including several small tunnels and towards the end some longer tunnels dripping with water and quite dark after the bright light outside. Here there was the distinct danger of banging one's head but happily I managed to avoid it. In addition to the excitement of the tunnels we found we had to cross and recross the

gorge by way of two bridges. Now when I say bridges I am exaggerating slightly, suffice it to say that as an engineer I was distinctly uneasy about crossing and this was not helped by the sign in three languages stating that no more than six people on the bridge at any one time. Anyway we all managed it and we were nearly at our immediate destination, the village of Cain.

As an engineer I was distinctly uneasy about crossing the gorge by way of two bridges

After a short rest and refreshments we set off in the jeeps which had driven the long way round from Puente Pancedos whilst we were taking the gorge walk. At first, the roads were tarmacadamed although largely single track but this slowly deteriorated once past Pasada de Valdeon, as we climbed higher and away from habitation. Unfortunately, not only was the road deteriorating, so was the weather. Although the day had been mostly overcast, the mist now descended with a vengeance. The hope was that we would climb out of it at the high point, the Alto de la Triguera at 1890m. This was not to be and whilst we stopped at the top there were no views but some flowers notably, *Erica arborea* in abundance, *Arnica montana* and *Veronica serpyllifolia*.

We pressed on down stopping again very soon at a place where our guides had obviously stopped before at a large boulder covered by some $3m^2$ of *Echinospartium horridum*. I have to admit it was an impressive sight even in the misty gloom; it would be easy to see why even non-botanists would have been impressed. All around there were also orchids amongst which we found my first burnt orchid, *Orchis ustulata*; pity we couldn't stay. A further short trip brought us to the Hotel Rebeco (translates to Chamois), in Fuente de at the base of the Teleferico, the cable car, which would later take us to the high plateau above us at 1,800m.

A ROSE BY ANY OTHER NAME

You may have noticed that from time to time I have used common names for plants. This is somewhat deliberate in that I wanted to discuss that very topic (in another digression!). I was surprised to find the professionals and experts around me on this trip frequently using and indeed preferentially, in some cases, common names instead of the Latin ones. Also, the various field guides which everyone had but were new to me, listed common names and in one case used those names as primary references.

These field guides were predominantly wild flower guides as opposed to alpine flower guides so I suppose this may be the reason. Now as a relative newcomer to this business, I had to start from the ground up, no pun intended, so I made the decision that as I had to learn the names anyway I might as well learn the Latin ones and this I did with varying degrees of success. Subsequently, I was very scornful of people who continued to use common names. However, being exposed to their use showed me that they had their place and I did in fact find them useful particularly, as I suddenly realised that the common names were in fact largely family groupings. Pretty obvious really. Anyway the point is common names have their place – but don't stop using the Latin ones.

AGS VANDALS

Our night at the Refugio de Aliva proceeded with our usual Brains Trust before supper and as I mentioned before culminated in the best meal we had. The next morning, day nine, was much brighter with clearing cloud; it promised a great day and it was. We set out to retrace our steps of the previous day and to progress from there slowly back to the Teleferico and hence Fuente de. On our way, the clearing skies revealed splendid vistas which we had missed yesterday. Suddenly vehicles started to appear behind us carrying mostly people, we guessed tourists getting up the easy way and shepherds checking their flocks. In all some dozen or so vehicles must have passed us in the hour it took us to return to our lunch spot of yesterday. Two landrovers in particular were of interest since they had stopped just ahead of us. We were at a point where yesterday we had seen many initials and slogans spelt out in rocks on a grassy slope ahead of us. Amongst those initials, would you believe, was AGS and the occupants of the two landrovers were busily occupied removing these initials. Yesterday, the light was not good enough for a photograph but this time I managed, just in time, to photograph AG! We could only suppose that some of the initials were politically sensitive and they did not know what AGS stood for. I hasten to add it was not us.

MAINLY GENTIANS

The weather was proving wonderful with full sun and a lovely breeze keeping us at a perfect temperature. Once back near to yesterday's turn-back point the gentians began to pop up everywhere fully open in the sun together with the other plants erysimums, iberis, silenes and linarias which we had failed to fully appreciate in the rain and cold of yesterday. The terrain at this spot

was bare rock and scree, on a south facing slope and consequently very dry. I was surprised to find the gentians in this situation, both *acaulis* types and *verna* by the way, as I was of the opinion that they needed slightly shady, moist conditions as did most of the plants which we had seen earlier in the day, yesterday. We had time to inspect the gentians more thoroughly, but as Bob Maxwell and myself were on our own with no experts or references to refer to we could not be sure of any specific names. Once home and I had received the official plant list, I see that we had previously recorded *Gentiana angustifolia, G. kochiana* and *G. occidentalis*. Now some of the books which I have suggest that *acaulis* and *kochiana* are one and the same and certainly the photographs, I feel, do fit the *acaulis* description. However, most references agree that the habitat for *G. acaulis* is acid rocks. Here we definitely had limestone rocks which leads us to *G. angustifolia*. As for *occidentalis* this is described as like *G. clusii* which is like *G. acaulis* without the internal green spotting, so I conclude that all these were *G. angustifolia*. Someone prove me wrong! About *G. verna* there is not so much doubt, however, detailed notes of the leaf details, calyx, sepals etc were not taken and the photographs are not good enough to be absolutely sure.

After the climb proved disappointing we turned back down into the bottom of the valley

This brings me to the next digression. The one thing above all else which I learnt here was that, if you want to be certain of identifying a plant then it is absolutely essential to record all the detail there and then and to have the references with you so that a reasonable attempt can be made to distinguish it. This will of course take some time which you often don't have. So what is the answer, you can't pick the plant to take back to study at leisure, so I am making a plea to photograph the detail. What this means of course is that one has to take uninteresting pictures of leaves, sepals and stamens.

GLACIATED VALLEYS

Having reached the turn-back point of yesterday we continued along a well defined path in a glaciated valley with magnificent peaks on both sides, to our right and above huge screes and boulder fields and to our left and immediately below similar boulder fields. The evidence of glaciation in this area was strong, belying the earlier statements suggesting glaciation hadn't reached this far. The whole area was stark with little vegetation of any sort suggesting fairly recent movements. At the head of the valley patches of

snow still lay around and two diverging paths were offered. We chose the route coming back on the other side of the valley and climbing higher hoping to find further flowers. Climbing higher proved very disappointing and after a spot of lunch we turned back and climbed down into the bottom of the valley where we had earlier seen two small lakes. Perhaps the valley floor with its soil and moister conditions would reveal something different. We continued to find the same plants, in particular, gentians.

Now as we walked away from the head of the valley, thin layers of soil began to appear and the density of grass and other vegetation increased. Here the gentians were existing in a totally different environment than to what we saw earlier in the scree. Here there was soil, possibly acidic, more moisture, not the sharp drainage of the scree – in fact in places it was quite boggy – and with more frequent shade. Whether or not these gentians are of the same species I cannot say. The photographs suggest that they are. As we had walked almost in a U we were in fact less than a couple of kilometres distant and only a couple of hundred metres in height away from the earlier gentian site. What we should have done was to take a sample of plants from this site, return to the original site and directly compare the two. I feel that the picking of a few plants in this case, as there were very very many, would have been justified in the interests of science. Well I will never know now, unless I return to carry out that experiment or if someone else does it for me.

The lakes were also disappointing in that there was, surprisingly, nothing new. As it was getting latish and the Teleferico was only a kilometre or so away we cut our losses and made for the hotel and some welcome liquid refreshment. Well we were supposed to be on holiday.

INCREASINGLY HOT

There was again no bus for day ten. The objective was to walk back up the track on which we had descended in the jeeps on day seven and to get as high as possible, perhaps to the high point which we should have seen on day seven. It was very hot and very pleasant initially walking up through a shady wooded lane of predominantly beech, oak and hazel, with copious flowers either side. One highlight for me was *Linaria triornithophora*, the budgerigar plant. Why so named I have no idea, the flowers looked nothing like a budgerigar, more like a snapdragon, and I always thought budgerigars were blue or green not yellow and purple. Never mind it is a very nice plant – would make a good border specimen. Other plants of note were *Tragopogon pratensis* with its lovely seed heads, many white, pink and white and pink roses and *Digitalis*

purpurea, a plant which I know as it grows extensively in the woods around my home (and consequently in my garden). It was interesting to note that the flowers in northern Spain and in the north-east of Scotland were very similar in size, colour and marking and what's more – in flower at exactly the same time. I can demonstrate this by having photographs of both plants taken within a week of each other.

Flowers in northern Spain and north-east Scotland similar in size, flower at same time

A side track diversion unveiled the bizarre and sinister looking lizard orchid, *Himantoglossum hircinum* (Fig.58, p.235), complete in funereal colours. Whoever found it must have been blessed with second sight or prior knowledge as it was well off the beaten track behind some buildings and well camouflaged amongst the surrounding meadow. Perhaps he or she had some other motive for disappearing behind a building in the middle of nowhere? Anyway, the lizard orchid was impressive but we were to see more later. We pressed on in increasingly hot conditions, passing *Campanula glomerata, Linum suffruticosum* and *Orobanche* unknown as the woodland began to thin. The *Orobanche* was a completely new plant for me, a very interesting plant with no chlorophyll but very colourful from violet through red, pink and brown and existing as a parasite on the roots of other plants. In fact the plants, on which they are parasitic, would appear to be a good guide to the individual species. The species seen this day were not identified to my knowledge which may indicate the particular difficulty of identifying them at all.

Some further side explorations gave us *Gentiana lutea*, a bit of a disappointment, a beautiful *Asphodelus albus* and some dark pink alpine rose, *Rosa alpina*. Further on a personal find of great satisfaction was two gentianellas, one white and one violet thought to be *Gentianella amarella* or *G. germanica*. Apparently it was unusual to find the white one in this area. Once again, it is difficult to make an exact identification at a later date with only superficial photographs to work with.

HUNT FOR IRISES

Day eleven was again a trek directly from the hotel. This time up the road to the Refugio de Aliva where we had stayed some nights ago. Some members had already walked this route from the top down; we elected to do the reverse. This involved firstly a three and a half kilometre walk on the main road which was fine in the cool of the morning and all downhill. It was a different story later coming

back, uphill and in the heat of the late afternoon. The roadside flora was plentiful including honeysuckle, teasel, *Clematis viticella*, not yet in flower but would be spectacular in a week or so, roses, convolvulus and several orchids. The road itself was relatively new sporting many retaining walls and worked rock faces. Little did we know that above these walls and faces were meadows full of irises which was ironic as one of the main reasons for the trek today was to view irises reported by others on the planned route.

Meadows full of irises, one of the reasons for the trek

The start of the climb up the valley of the Rio Nevandi was the village of Espinama and we once again found ourselves on a well maintained track for 4×4 vehicles. This was not surprising as this was the road servicing the Refugio from the opposite side from the Teleferico. The start of the road was mostly in woodland shade which was just as well for it was going to be another hot one. Interspersed with the woodland were many small wet meadows some of which were about to be cut. These contained a wealth of different flowering and non-flowering plants and should have been ideal for iris but despite several side jaunts we found nothing new except a mass of dianthus. We thought at first it was *Dianthus deltoides* but the flowers were too large. However, it was different from the *D. monspessulanus* which we had seen spasmodically, being darker in colour and not so fringed. Once again I failed miserably to positively identify a species but later research suggests *D. furcatus*.

While we were having lunch, Bob spotted the *Iris* which we had been searching for all day. There it was in the valley below us right in front of our noses all the time. Bob scrambled down and managed some good photographs whilst I strode on slowly. As I stopped to check on Bob's progress there beside the road was a small group of lizard orchids, *Himantoglossum hircinum*, in fine condition. It was a long, hot trudge back to the hotel.

Day twelve was the last chance for any botanising, since we would be moving to Comillas (by the sea) nearer to Bilbao and the plane home. On route we passed through the gorge of the River Deva, Desfiladero de la Hermida, and out into flood plain country much different in character from that of the last few days. Here the climate was obviously much milder with an increasing range and area of crops, including fruits like peaches, almonds and figs growing outside.

CONCLUSIONS

From a personal point of view the tour was a great success, although as I mentioned before I don't think this is a great area for alpines but for overall flowers and other plants notably trees, it was overwhelming. It was an invaluable learning experience for a first timer with so many new and interesting flowers seen in the wild for the first time. My recognition and photography has improved immeasurably and I will certainly be better prepared for my next trip. I made three major errors which I list below for anyone else contemplating such a tour for the first time.

Firstly, make sure you are fit enough. I was not, despite being reasonably walking fit, and this made my first couple of days difficult. If you are like me and sit behind a desk for 50 weeks of the year it will pay to get more than walking fit. This term walking fit, I think, was in the original tour brochure and what it really means is mountain walking fit! There is a world of difference between walking on tarmac roads and hauling oneself up several hundred metres, in unaccustomed heat, on rough ground with a pack on your back.

Make sure you are fit enough. I was not, making my first couple of days difficult

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My second mistake was not to take plenty of reference books. Almost everyone else had several of the many paperback field guides which went everywhere with them. Many of these field guides did not actually cover the area and weren't specifically Alpine references but still proved valuable; it was surprising just how many plants widespread in Europe, also appeared here.

For photographers, take a range of film speeds. I was expecting continuous high light conditions especially with the light rock, and so took only slow films, mostly 50 ASA. In fact conditions were more often dull than bright and at least a selection of faster films would have been useful. As for lenses, a close-up facility is essential and although I had a close-up lens (often called a close-up filter or a dioptre), a macro would have made things much easier. I took a tripod half expecting not to use it and I didn't. It was almost impossible to spend any length of time setting up for a shot as photographs had to be taken almost on the run in order to keep up with the schedule. I took in all some 700 pictures, of which about 10 are excellent, a further 25 good and a further 50 usable; the rest are only mediocre. Photographer colleagues of mine suggest this is quite a good average!

PLANT HUNTING INDOORS

Hunting for the correct names for *Geranium* and *Phagnalon* species

by CHARLES AITCHISON

PLANT hunting in mountains is exciting and leaves a wealth of memories and photos. Putting these memories to paper needs names for plants and the hunt goes on. This hunt can be longer than finding the plant and can lead through other languages to other countries. So it was with a *Geranium* species and two species of *Phagnalon* seen in the Atlas mountains of Morocco. (Ref. *The Rock Garden* Jan. 1994 Vol.XXIII Part 4.)

HERBARIUM VISITS

A fortuitous meeting with an alpine gardening enthusiast who had met and become fascinated by the life and travels of E. K. Balls led to visits to the herbaria of The Royal Botanic Gardens Edinburgh and of the University Mohammed V Rabat Morocco, which hold plant specimens collected by him in Morocco. With the permission and help of the staff of these Departments I was allowed to look through their herbarium specimens to identify the species of *Geranium* and *Phagnalon* seen in Morocco in 1993.

Have you visited a herbarium? Fascinating places, treasure troves of plants filling folder upon folder in tier upon tier of metal filing cabinets in meticulous alphabetical order of genera and species. Open a door and the scent of plants escapes, open a sheet in a folder and there is a plant, not just a leaf with a flower but a whole plant, some with seeds rattling around. Seeds of plants not yet in cultivation. Hundreds of uprooted plants in wodges and tuffets, dried and pressed with collectors' names, habitats, localities and dates. Some specimens are over a century old and have been examined by experts, who have corrected or amended names as plant taxonomy unravels the relationships of the plant names of earlier collectors with help from the modern sciences of genetics and electron microscopy.

GERANIUM SPECIES

At Edinburgh a notebook of E. K. Balls' collector's numbers

retraced his journey through Morocco in imagination. The collector's number "B3071 *Geranium cinereum* Cav. ssp. *nanum* (Coss) Maire" (Fig.59 p.268) did not have the indication that the specimen was in the herbarium. The cabinets held the *Geranium* species in geographic groups, Europe, North Africa, Turkey, etc. There in the North African folders was "E.K.B. 3071", resembling a smaller version of *Geranium cinereum* in the European folder and just like the *Geranium* species David Tattersfield and I had seen in the Azzaden valley of the High Atlas. E.K.B.'s plant label read "Tizi Ait Melal Djebel Ghat, 10,500ft., limestone rocks and scree slopes. North, partial shade. Collected 11-07-36." The sheet before E.K.B.'s plant was "Davis 55483. By Neltner hut 3,200m., screes. Perennial, tufted. Flower pinkish white, not blotched 22-07-73." This was identified as "*Geranium atlanticum*" by Davis and had been altered to "*Geranium cinereum*" by someone else. In three different years we had visited the Neltner hut area but had missed the geranium there.

Open a door and the scent of plants escapes, open a sheet in a folder and there is a whole plant, some with seeds rattling around

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Folder 90 contained "*Geranium atlanticum*" someone had written "all specimens have thickened roots and not bulbous roots as the specimens of *G. malviflorum* folder 69. Identified by P. & J. Davis". I wonder, is this a matter of degree?

In April 1994 I was given permission to look at some specimens in the Rabat Herbarium. Their specimens were in alphabetical order but not segregated, so the European and Moroccan could be compared more easily. They had a sheet B3071 collected by E.K.B. on 11-07-36 and ten other specimens of *G. cinereum* collected in Morocco, including one from the vicinity of the Neltner hut and one from the Azzaden valley.

The Rabat specimens of "*G. atlanticum*" with bulbous roots (some specimens had no roots) were to my eye indistinguishable from their specimens of "*G. malviflorum* Boiss et Reut".

I have no doubt that the Azzaden geranium, which we saw, is *Geranium cinereum* Cav. ssp. *nanum* (Coss) Maire.

PHAGNALON SPECIES

I had attributed the name *Phagnalon helichrysoides* Coss. et Maire to a spectacular phagnalon with leaves like miniature oak leaves,

one of two forms, which we saw lower in the valley of the geranium as that was the name given to an identical plant shown at an AGS show in 1985 and given a Preliminary Commendation (Ref. AGS Bulletin Vol.53). The Herbarium at Edinburgh however has a sheet with this plant named "E.K.B. 2976 *Phagnalon platyphyllum* (Maire) Qaiser & Lack". The other form, which has rosemary shaped leaves, is *Phagnalon helichrysoides* (Ball) Coss et Maire var *lanatum* (Fig.60 p.268).

In one of the folders at Edinburgh was an article "*Aliella*, a new genus of *Asteraceae* (*Inuleae*) from Morocco" by Mohammad Qaiser and H. Walter Lack, 1986. The authors describe how in the preparation of a monograph of the genus *Phagnalon* Coss. they came

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Attributed name Phagnalon helichrysoides *Coss. et Maire to spectacular phagnalon with leaves like miniature oak leaves*

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across three taxa from the Atlas mountains which were included in this genus, i.e. *Ph. embergeri* Maire & Humbert, *Ph. helichrysoides* (Ball) Cosson & Maire and *Ph. platyphyllum* (Maire) Maire, but looked quite different in detail and resembled the Helichrysum-Gnaphalium complex. However a study revealed that they did not belong to either. Therefore in order to accommodate these taxa, they described a new genus, *Aliella* Qaiser & Lack making the proposed names *Aliella embergeri* (Humbert & Maire) Qaiser & Lack. *A. helichrysoides* (Ball) Qaiser & Lack and *A. platyphylla* (Maire) Qaiser & Lack. If these studies are accepted by botanists the Atlas mountains have a new genus.

ERRATUM
Fig 33 in the January 1995 issue was by Polly Stone and not by Steve Newall.

MEMORIES OF THE WEST OF SCOTLAND GROUP OF THE SRGC

The trials and tribulations of the Group described by one of the early members

by A C SMALL

FOLLOWING the foundation of the Club in 1933, a meeting of representatives of Glasgow, Dunbartonshire, Lanarkshire and Renfrewshire was held in the Central Halls, Bath Street, Glasgow, including Edward Darling, Philip Crow, George Laurie and Professor G. Pontecorvo. They proceeded to organise Groups, each with a Group Convenor. Other early members included Mrs C. Jamieson, Messrs D. Wintersgill, W. C. Buchanan, W. Carvel, R. J. C. Biggart and David Livingstone, who organised joint meetings to be held in Glasgow.

PRE-WAR MEETINGS

They quickly got down to business and held their first show in 1934, the Show Secretary being Edward Darling. A Committee was formed and a Secretary and Treasurer appointed but it appears that no minutes were kept, so what follows is largely personal memories, supplemented by gleanings from Syllabuses of Group Meetings, which were first held in Miss Buick's Tearoom. Edward Darling also became Chairman of the Group Meetings and emphasised that this was a Club, by which he meant a group of friends with a common interest in rock, or alpine plants, not, as he said, a mere association. By his inspiring leadership the Group got off to a splendid start and in return he was regarded with great respect and affection, not only for his first class advice and encouragement but also for his example as shown in multi-pan classes in the Shows. Eventually he was succeeded by Alex Todd and then Loudon Morton until it was agreed that Group Convenors and other office-bearers should occupy the Chair in rotation.

POST-WAR ACCOMMODATION PROBLEMS

When war broke out in 1939 operations were suspended, but in

1946 when war ended, it was possible to get going quite quickly with Edward Darling once again chairing joint meetings. As an example of his enthusiasm he told me that, while serving the army in the trenches, during a lull in hostilities he created a small rock garden nearby.

The next Show was held in 1947 and then in each succeeding year. Suitable meeting places have always been a problem. When private cars were far from common, members used public transport and venues were near Glasgow Central railway station in tearooms where members could go from business and have a meal and sit until the meeting started. When I joined the Club in 1951, we met in Rosalind's Tearoom at 32A Gordon Street but when the lease of the tearoom expired, we had to move at short notice and were fortunate to get a room in the Grosvenor Restaurant. As it was not satisfactory, we moved the following year to Miss Cranston's at Waterloo Street until that building was demolished to make way

Venues were near Glasgow Central railway station in tearooms

for a modern office block, then we moved to the YMCA restaurant in Bothwell Street. Unfortunately it had pillars which obstructed the view of the slides, so we tried the Christian Institute next door, where the hall keeper kept us rigidly to our closing time by snapping off the lights. Our next venue was the new Renfield Church Centre in Bath Street, a pleasant hall near the Kings Theatre. By this time many members travelled by car and some found problems parking. When Renfield Church united with St Stephen's we moved back to our first home the Central Halls, by this time St George's Tron Church Hall, which for one year was good but the following year we had to use a different and unsuitable hall. Enquiries at Renfield St Stephen's showed that the Kirk Lounge would be available – here we are back in a very good room but again with a parking problem – 12 meeting places in 54 years.

MEMBERSHIP

Membership kept growing and changing with stalwarts like Margaret Thomson, Ron and Mary Wagstaff, Don and Joan Stead, Miss Simpson, Mrs Aird, Dr Lucy Dean, Daisy McFadyen, Margaret Nicholson, Chris Davidson, Dr Margaret Gibson and many others. Here it may be of interest to glance at the different backgrounds of our members: e.g. titled people 5, medical 10, university professors 2,

university and college lecturers 8, school teachers 12, lawyers 2, bankers 3, lady artist 1 and blacksmith 1.

MEETINGS AND SHOWS

In 1966 the Beeching Act closed railway lines and badly affected Renfrewshire members in the Kilmacolm, Bridge of Weir area, although the growth of car ownership relieved the problem to a degree but added to the parking difficulties in Glasgow. To counter this difficulty, it was decided in 1972 to hold a meeting in Kilmacolm and the following year in Bridge of Weir and Gourock – eventually these became annual joint meetings with the local Horticultural Societies, to our mutual benefit as these Societies provide a hall and we supply a speaker arranged by the Renfrewshire Group Convenor. A few desultory meetings were held by the Dunbartonshire and Glasgow Groups in Kessington Hall and in Knightwood Community Centre respectively but did not prove popular. In the early 1970s Bill and Bette Ivey, in an effort to revive the moribund Ayrshire Group, asked to join the West of Scotland Group. Fortunately they were successful and in 1975 they were able to stand on their own feet.

At the instigation of the Duchess of Montrose there was a joint venture with the Caledonian Horticultural Society

Shows were first held in the Central Halls in Bath Street, Glasgow but soon moved to the MacLellan Galleries in Sauchiehall Street, an ideal site with a choice of halls, the earlier shows being of two-day duration. On one occasion at the instigation of the then Duchess of Montrose, there was a joint venture with the Caledonian Horticultural Society, held to provide a show of cut flowers of large Rhododendrons. With the rise of inflation, the cost of renting the MacLellan Galleries became such that another venue had to be found. This was the Town Hall at Milngavie, which has proved successful.

SPEAKERS

Speakers at the winter monthly meetings were originally from our own members, e.g.: Alf Evans, Jim Sutherland, H. H. Davidian, J. R. Aitken, J. T. Aitken, Henry and Margaret Taylor, Don and Joan Stead, David Livingstone, W. and B. Ivey, R. and L. Bezzant, J. D. Crosland, Jack Drake, J. Lawson, John Main and others. With

the introduction of the Travelling Speaker programme, names of lecturers from farther afield began to appear on our syllabuses and then the bequest by Dr Dean, known as the Dean Memorial Fund, provided money for the same purpose. To obtain a good balance of subject a policy of alternating talks on cultivation with visits to habitats has been adopted as far as possible.

To provide funds for the running expenses, Mr Darling provided plants to be raffled and other members did likewise until the raffles began to take up too much time and a sales table presided over by Martin Bremner and later by David and Avril Walkinshaw has now taken over at Group Meetings and, at our Annual Shows, providing a substantial addition to the receipts.

TROPHIES

Trophies have been donated by members, to be competed for at the annual Glasgow Shows:

1	1937	Dr Buchanan Memorial Rose Bowl
2	1950	Henry Archibald Challenge Rose
3	1951	Crawford Silver Challenge Cup
4	1958	Rhododendron Challenge Trophy
5	1959	Urie Trophy
6	1959	James B. Wilson Cup
7	1964	William C. Buchanan Challenge Cup
8	1972	Edward Darling Memorial Trophy
9	1972	Ian Donald Memorial Trophy
10	1976	Charles Simpson Memorial Trophy

Prizes were donated from Group Funds for competition at Shows accompanying decennial international Conferences:

1951	London and Edinburgh: Festival of Britain: Silver Quaich (a two-handled cup)
1971	Harrogate: Crystal Goblet, engraved with Club logo
1981	Nottingham: Crystal Goblet, engraved with Club logo
1991	Norwich: Caithness Glass, engraved with Club logo

GARDEN VISITS

An important feature of our programme has been the organising of garden visits, by the appointment of an Outings Convenor. Coaches were booked and lunches arranged at suitable hotels. On one occasion at least, the inhabitants of Bearsden were astonished to see a double-decker bus trundling past their gardens.

A NEW COLCHICUM FROM THE SOUTHERN PELOPONNESE

by KIT TAN AND G IATROU

Abstract. *Colchicum sfikasianum* Kit Tan & Iatrou (Liliaceae) is described and illustrated from the Peloponnese in southern Greece. Some observations concerning the corm development of *C. boissieri* Orph. and *C. psaridis* Heldr. ex Hal. are given.

Colchicum sfikasianum Kit Tan & Iatrou, *species nova* (Fig. 62 p.269)

C. lingulato Boiss. & Spruner, speciei Anatoliae occidentalis et Graeciae meridionalis affine, cormo omnino minore collo breviore, foliis paucioribus, angustioribus ab eo diversum.

Corm ovoid to subglobose, 1.8-2.5(-3)×1.5-2cm. Outer tunics dark blackish-brown, inner dark reddish-brown, subcoriaceous to coriaceous; apex produced into persistent neck 3.5-5cm long. *Leaves* 3-4, hysteranthous, erect to erecto-patent, linear-lanceolate, 9-15cm×5-14mm, canaliculate, sometimes slightly twisted with margins undulate, glabrous, light to mid-green, whitish towards base, apex obtuse to subacute. *Flowers* 1-5, infundibular to campanulate. *Perianth segments* pink, pale pink to almost white, lightly to moderately tessellated or tessellations absent, narrowly oblanceolate to narrowly oblong-elliptic, 1.8-4.3cm×2-11mm, obtuse or subacute to acute, glabrous. *Filaments* (6-)10-15(-17)mm, glabrous; *anthers* yellow, 4-7×1mm; pollen yellow. *Styles* curved at apex; *stigmas* decurrent for 1.5-2.5mm. *Capsule* oblong-ovoid, c. 1.5×0.8cm, light brown, glabrous, rostrate. Flowering mid-October to November; leaves developing February to March (-April).

Type: Greece. Nomos Lakonias, Eparchia Epidavrou Limiras: Malea peninsula, 1km west of Monemvassia, 27 October 1986, flowering, *Iatrou* 3233 (holo. UPA, iso. C , E); *ibidem*, leaves and capsules, *Iatrou* s.n. (photo UPA).

Additional material seen:

Greece. Malea peninsula, 10km north-west of Monemvassia, on road to Molai, 13 October 1982, flowering, *Sfikas* 8490 & 8491;

material cultivated in Athens from corms collected in same locality, 10 April 1983, in leaf, *Sfikas* 6630; between Lahio and Aghios Nicolaos, September 1984, flowering, *Sfikas* 7461 (all material in herb. G. Sfikas, Athens).

LOCALITIES

Despite being known for over a decade, this colchicum has remained nameless. It was first collected by George Sfikas, in whose honour it has been named, north-west of Monemvassia where it is fairly common. *C. sfikasianum* is a Peloponnese endemic recorded so far from the northern and southernmost parts of the Malea peninsula and should be sought particularly in the region in between.

We visited the type locality 1km west of Monemvassia on 14 October 1994 where it grew in open phrygana, on terra cotta over rocky slopes of hard limestone at low altitudes of 10-20m. It is conspicuous at flowering time between October and November but otherwise difficult to spot. We also re-collected a new species of *Allium*, still undescribed, from the same locality.

C. sfikasianum is allied to *C. lingulatum* Boissier & Spruner from western Turkey and southern Greece; the latter has much larger corms with longer necks and also more numerous and broader leaves. The main differences between the two taxa are tabulated below:

C. sfikasianum	*C. lingulatum*
Corm 1.8-3×1.5-2cm	3-6×2-4cm
Neck 3.5-5cm	4-8cm
Leaves 3-4, 5-14mm wide	4-7, (10-)20-35mm wide
Capsule rostrate	obtuse

CULTIVATION

At present *C. sfikasianum* is not in cultivation except as part of a research collection. Seed is not yet available. Bulbs obtained in the wild can be grown in clay pots, using a well-drained, loam-based compost, mixed with one-third sharp grit. The size of the pot depends on the number of bulbs available, but sufficient room for root development is important so the minimum size for one bulb should not be less than 10cm.

The bulbs are positioned in the compost at least halfway down, the top 15mm consisting of sharp grit, and the pots plunged to their rims in damp sand. Watering should be from above and just sufficient to moisten both pots and plunge sand. The leaves develop in early spring and flowering in cultivation in a frame occurs as early as late September.

OTHER COLCHICUMS

Two other autumn-flowering colchicums from the Peloponnese have also attracted our attention.

Colchicum boissieri Orph. from Taigetos, the mountains of Sterea Ellas (Iti, Kallidromo), Evvia (Kandili), Chios (Pelineon) and western Turkey, is described in floras as without corm but with a vermiform rhizome. We have found that the absence of a corm is only during the flowering period in autumn since immediately after, and during the winter, the rhizome swells and enlarges to form a corm which reaches full development (c. 1.5×1cm) in late March to May. The leaves, 2-3 in number, also attain maximum size at this time. A horizontal rhizome c. 1.5-2cm long develops at the base of the corm. When the leaves wither (and they do so rather rapidly), the corm and rhizome remain dormant until next August. At the start of the winter rains (early to mid-September in the montane zone), the new shoot which would develop into the flower, forms at the tip of the rhizome and the flower is produced above ground at the end of September to November. The corm then dries up so that when the flowering plant is dug up, no traces remain except a few shrivelled roots.

The same phenomenon is noticed in *C. psaridis* Heldr. ex Hal. which has also been described as unusual among colchicums in having slender stolon-like horizontal corms instead of conventional upright bulb-like corms. *C. psaridis* (Fig.63 p.270) produces a typical corm and a worm-like rhizome at different stages in its life cycle; it however, differs from *C. boissieri* in being synanthous, i.e. the leaves appear at the same time as the flowers. It grows on open stony hillsides in a restricted area in the Mani at the foothills of Taigetos, and although it has been recorded from southern Turkey, the plants are not identical. *C. psaridis* is endemic to the Peloponnese and the taxon in Turkey belongs to *C. minutum* K. Persson (pers. comm. K. Persson, 1993).

ACKNOWLEDGEMENTS

We are grateful to Mr George Sfikas (Athens) who has placed his material at our disposal, to Dr Karin Persson (Göteborg) who has kindly provided the information concerning *C. minutum*, Mr Bent Johnsen (Copenhagen) for the illustration of *C. psaridis*, and Dr Tyge Christensen (Copenhagen) for latinising the diagnosis.

Addresses of the authors:

Dr Kit Tan, Botanical Institute, University of Copenhagen, Gothersgade 140, DK-1123 Copenhagen, Denmark.

Dr G Iatrou, Botanical Institute, University of Patras, GR-260 10 Patras, Greece.

GENTIANS ARE PINK, ROSES ARE BLUE

A perverse gardener goes looking for a pink gentian

by DAVID W H RANKIN

THE bus from Chengdu to Dujiangyan leaves when it is full. With exactly one person per seat, you get a good view forward along the road, which is straight and wide – wide enough for about five lanes of traffic, were lanes ever to be marked. At any one moment, there might be vehicles four abreast heading for Chengdhu, or four abreast heading for Dujiangyan – or if you are unlucky, both of these simultaneously. An hour and a half of this heart-stopping excitement brings you to Dujiangyan, site of some remarkable waterworks, where 2,300 years ago Li Bin and his son, aided by some millions of their subjects carrying baskets of earth, diverted the Min River to prevent the annual flooding of the great Chengdu Plain.

The bus from Dujiangyan to Sauwan is full when it leaves. Only one bus makes the journey each day, and it would be unkind to leave would-be passengers to wait for the next one. So on they get, until there is no more room, no room to move, no room to breathe. For four hours the bus climbs the winding, sometimes washed-out road to Sauwan, the administrative centre of the Wolong Nature Reserve. Perhaps it will become easier, as the local authorities, emulating Li Bin, have enlisted armies of workers, and are building a new road, by the tested method of moving millions of baskets of earth by hand, but this time topping it all with concrete. But it will still be a long drive, and Sauwan will still be a breath of fresh air, at over 2,000m above sea level. The village is just a few houses, providing basic accommodation and food, but the surroundings are immediately delightful to the plant hunter. There is a narrow, intensively cultivated strip beside the rushing Pitiao River, but within five minutes one can be away up the hillside, marvelling at the variety of trees and shrubs. There are deutzias and daphnes, hydrangeas and hypericums, clematis and cotoneasters, sorbus and spiraeas, pieris and photinia, roses and rhododendrons. A short walk at dusk on our first evening was enough to bring home

to us how much of what we take for granted in our gardens has its origins in the remote mountains of Western China.

UP THE STEEP VALLEY

Next morning we were keen to make an early start, to make the most of the two days available for exploration. We crossed the river and started to climb the steep valley side by a narrow track, which we would never have found without the aid of our guide, Qiu Xi (pronounced Chooshee). The really big trees had been cleared decades ago, but the range of trees and shrubs was matched by an equally diverse herb layer. In early August we were at least a couple of months too late for the peak flowering season, but nevertheless there was an endless sequence of exciting and beautiful plants to be seen. In Spring it must be magnificent, with huge numbers of rhododendrons (there are over 40 species in the reserve), particularly the blue *Rhododendron augustinii*, and hundreds of other flowering shrubs.

One of the most striking sights at the lower levels was the many flowering stems of *Lilium duchartrei*, with white turkscap flowers streaked with purple, and there were a few stems of the brilliant orange *Lilium davidii*. Other plants that caught our attention included a codonopsis and a crawfurdia, a climbing relative of the gentians, the latter growing right on the path. The track itself was also home to an extensive patch of *Primula moupinensis* – the first, but not the last, time we have had to commit the sacrilege of walking over petiolarid primulas. A vivid pink flower, growing on the edges of some steps, also drew itself to our attention but we didn't immediately recognise it, and after taking a photograph, we thought no more about it.

THE TRUTH DAWNS

Until the next day. We had hitched a lift on a lorry a few miles up the road beside the river and had walked up a side valley between steep cliffs, and all along the sides of the track, the pink-flowered plant had been prominent. Eventually we reached a point where the track had fallen into the river, and as we could go no further, I scrambled up a damp scree, looking for a few remaining year-old seeds of *Corydalis flexuosa*, and finding a tiny but exquisite parnassia, with fringed white flowers. Being on hands and knees on the unstable scree forced me to inspect one of the pink flowers more closely, and suddenly I realised what we had been looking at. Of course. It was a gentian! We had heard of *Gentiana rubicunda* (Fig.61 p.269) but knowing that it flowered in June, had not expected to

see it in bloom in August. Yet there it was, masses of it, with fresh flowers and ripe, open seed capsules at the same time. Clearly it has a long flowering season, and although this may preclude its claiming a Forrest Medal by covering itself with colour in glorious abandon, it would be an invaluable addition to our garden flora.

GENTIANA RUBICUNDA

Gentiana rubicunda (Fig.61, p.269) is a low, spreading plant with stems some 10cm long, occasionally branched, and opposite pairs of lanceolate leaves, giving the impression of an exotic mouse-ear (*Cerastium*). Each stem bears a terminal flower, and possibly one or more others arising from the leaf axils. Two dried specimens are quite different in some characteristics, one having five or six pairs of leaves about 20mm long by 6mm wide on each stem, while the other has about ten pairs of 10 by 3mm leaves, in both cases bright green and glabrous. The flowers are also different in the two specimens, those on the larger-leaved plant being flared open at the mouth, rather like those of most Autumn gentians, and borne on pedicels 15 to 20mm long, while the other has conical flowers, barely flared, like those of most forms of the willow gentian, *G. asclepiadea*, on pedicels of 5mm or less. The upright flowers themselves are an intense pink, a shade which would not invite comment in a primula such as *Primula polyneura* or a hundred others, but must be unique among the gentians. The flowers are smaller than those of most Autumn gentians, being typically 20 - 25mm long and 10 - 18mm across the mouth. The five petals are fused for practically their whole length and the sepals, which are almost as long as the petals, are fused to about half-way.

SEED

Many of the seed capsules, like the flowers, were held upright, and on ripening opened for a few millimetres at their tips, revealing the tiny, chestnut-brown seeds inside. But although we saw many such open capsules, we did not find any which had shed their seed. My suspicion is that these seeds do not dry out and fall to the ground, but are washed out by the rain, which is frequent, prolonged and heavy at that time of the year – although not during our visit. If that is correct, it may have important implications for attempts to bring this plant into cultivation. I have not heard of anyone who has germinated dried seed successfully, nor have I seen a cultivated plant, although I have heard of a single specimen exhibited at an Alpine Garden Society show. *The Flora of China* describes *Gentiana rubicunda* as an annual. Certainly herbarium

specimens have weak root structures, but several of them have basal rosettes of larger leaves from which running shoots emerge, rooting at intervals. This strongly suggests that even if the original plant lasts only for one season, it may survive as off-shoots.

WHERE IT GROWS

The pink gentian was widespread in moist but well-drained sites, such as the edges of built-up paths and fine screes. The sites were open to the sky, but usually would be shaded for part of the day, being in gorges, near trees, or in other, taller vegetation. A sample from one scree in which it was growing is composed almost entirely of soft mudstone (schist), with some particles up to 10mm in diameter but mostly very fine, and with almost no organic content. Although there were many limestone rocks in the area, this sample did not contain any. The altitude range within which we found plants was 2,300 to 2,700m, which implies that it should be hardy in most parts of Britain. Certainly most of its neighbours are reliably hardy here, including *Corydalis flexuosa*, which has made such an impact in recent years. There are a few less hardy plants at the lower end of its altitude range, but winter snow is the norm, so we should expect that seed sown in autumn or winter should germinate in the spring, and grow rapidly. At Wolong, summers and early autumn are wet, while spring is drier, but still not without rain. In cultivation it will probably require a moist, well-drained site with part shade – that ideal demanded by so many plants, but found naturally in so few gardens.

WHO WANTS A PINK GENTIAN?

Having said all that – who wants a pink gentian anyway? Well, I do, for one. We gardeners are a perverse race. Give us a magnificent pink *Glaucidium palmatum*, and we go into raptures about the white form: give us pure white *Trillium grandiflorum*, and we sell our souls for the pink variety *roseum*. We have toiled for generations to produce a red delphinium or a black tulip. Why? Because we like something which is different, something unusual, something which will catch the eye. So although gentians are famed for one reason – for the intensity, for the purity of their blue colour – it was a pink one which was the high point of our short visit. It is enough to tempt us back, to find out more. Is the variation in form which we have observed significant? Can we find more clues about how to cultivate it successfully? What really happens to those seeds?

Oh, by the way. Yes, we did find roses. And no, we didn't find a blue one.

ROCK GARDENING IN ARGYLL

THE authors of the next two articles about rock gardening in Argyll live a few miles south of Oban, Helen on the north shore of Loch Feochan, Hilary on Loch Melfort. Both gardens are raked by searing winds and the rainfall in both is heavy: the mean annual rainfall in Hilary's garden over a period of 14 years amounts to 1,982mm. As their situations and problems are so similar they have written these articles to complement each other and have tried to avoid repetition and duplication. The articles should be read as a pair.

'A Rock in Argyll' concentrates on the thrill of finding a real rock and then discovering its gardening potential. 'Growing Alpines in Argyll' describes how it is possible to grow rock plants in this wet environment so long as impeccable drainage is achieved by terracing, raised beds and a quick draining growing medium. Rock gardening has given the two great pleasure as well as being quite a challenge and they have enjoyed this chance to tell you how they have fared.

Campanula raineri Lionel Bacon

A ROCK IN ARGYLL

The gardening potential of a lucky find is fully exploited

by HILARY HILL

SOME of the best things in life happen by accident. This was certainly true when my husband Alan and I purchased 0.1 hectare of rough pasture on the north shore of Loch Melfort. We bought it for the surroundings – rocky crags reaching from the west through north to the east, gentler wooded hills lying in the south-east and to the south-west an uninterrupted view of Loch Melfort stretching towards the islands of Luing and Shuna, Scarba and Jura. But privately I was disappointed. I had fallen in love not only with Argyll but also with its rocks and had hoped to find a plot with a lump of rock sticking up out of the turf so that I could landscape a garden round it. But it seemed that was not to be. Our site was featureless apart from a heap of stones in one corner sprouting ground elder, blackthorn and nettles. The ground sloped gently up from the single track shore road to the base of a steep wooded cliff. The problem was to decide what sort of a garden I should create as apart from wanting a rock I really had no idea other than that it should be quite different from the typical English rose and herbaceous garden which I had made when we lived near London.

OUR ARCHAEOLOGIST GETS TO WORK

At the time dwarf conifers were all the rage. So I began my Scottish garden with a planting of these shrubs – surely *they* would survive in our scanty stony soil, withstand the wind that hurtled across our patch and might even appreciate a hefty rainfall. Scrabbling around one day, trying to glean enough soil to plant *Juniperus virginiana* 'Grey Owl', I came on a stone too big to move. Our archaeologist son was at home and came to my aid. He spurned my mattock preferring a bricklayer's trowel to define the problem. In less than 10 minutes my world was transformed, "Mum you've done it at last, you've found your bedrock." And so it was – a slab of stone tilting steeply downwards and backwards into the hill. I had been very lucky. I had hit rock in the only place where it was 20cm below the surface – elsewhere it lay much deeper. Digging it out, following the contours was a backbreaking

absorbing job (Fig.64 p.271) which took the best part of six years, ending when my energy gave out and when the remaining layers were more than 1.3m below ground level. But I now had an outcrop measuring 8×10m consisting of slabs of stone separated by layers of sand 1-10mm thick forming a series of mini cliffs and ledges which, thanks to the 45 degree slope, drained quickly after even the heaviest storms.

GEOLOGY OF THE ROCK AND ITS SURROUNDS

Geologically the rock is Craignish Phyllite, a laminate of silts, sands and limestone laid down in a tidal or subtidal environment 600 million years ago. These soft sediments were turned into stone by very long slow heating and folding which occurred under vast thicknesses of later deposits and were squashed, twisted and heaved up from below sea level to form part of the Caledonides mountain range. This range has long since been worn away by rain, frost, ice etc and the layers of rock in my garden are the remains of the roots of these mountains.

In those six years of delving I had not only found a splendid rock but had also learnt a great deal about the nature of our ground: at last the penny had dropped – my unpromising land was a raised beach structurally similar to the present shore. This explained the absence of subsoil, the rocky outcrop, the stones, gravel and quite big deposits of sand that my excavations had uncovered. The particles of soil, sand and debris which made up my topsoil had been washed down from the surrounding hills or blown across the site, finally settling behind the rocks and stones of the erstwhile beach, thus gradually building up the scanty covering that masquerades as soil.

PLANNING STAGES

At last I knew where I was going: my ancient relic rock outcrop must be the centre of a real rock garden – quite a challenge as the entire outcrop was 20-130cm below ground level and looked like a quarry. Alan had the best idea. He would build a dam and make a large pool, using the lowest ridges of rock as its floor so that the rest of the outcrop would rise from the water and appear to be above ground level. My task was to disguise the other sides of the 'quarry'. On the east a near vertical edge was hidden by fronting it with a wall built of stone salvaged from the garden and nearby beach. The line of the wall itself was broken by planting *Juniperus squamata* 'Meyeri' in a pocket of soil on a rock ledge just in front of the wall. In time *Erinus alpinus* seeded itself into the mortar, flowering

profusely in early summer. Less steep slopes were disguised by *Juniperus squamata* 'Blue Carpet' and *J. horizontalis* as ground cover and *J. virginiana* 'Grey Owl', *J.x media* 'Pfitzerana Aurea', *Chamaecyparis lawsoniana* 'Tamariscifolia' and *C. lawsoniana* 'Royal Gold' to hide the edge of the 'quarry'. *Primula vulgaris* seeded itself from the wood behind the house, its roots cool and moist beneath *Juniperus horizontalis*, the flowers revelling in the sun on the south facing bank. A terrace paved with stones from the garden and shore surrounds the house so it was natural to extend this paving up to and round the pool and to the flight of shallow steps curving round the west side of the rock to give access to the top of the garden.

Thus the erstwhile buried outcrop had finally become an eye-catching rugged reef and the exciting task of decorating it with plants could now begin. My enthusiasm knew no bounds. It was all too easy to create planting pockets on the ledges that I had so carefully cleaned and in next to no time the rock almost disappeared. I learnt the hard way that at all times of the year the rock is THE feature and must not be smothered in plants. So out came the plants and the soil and I started again, this time being much more circumspect. The final plan proved to be easier than expected as by now I had realised that the rock and pool (Fig.65 p.271) provided three different natural habitats, crevices, bog and water and I only had to limit my enthusiasm for creating screes. Let me describe each habitat in more detail:

Crevice plants: Perhaps the most welcome plants on the rock are those which have seeded themselves into cracks and into the sloping sandy strata that run between rock faces and adjoining ledges, an environment so hostile that only seeds can survive and thrive in it. What do we have? *Primula vulgaris*, two cotoneasters (neither of which grow elsewhere in the garden), *Calluna vulgaris*, *Sedum anglicum* – a scourge in my screes but a treasure on a rock face – tiny spleenworts, wild thyme, an unnamed hypericum and a variety of lichens testifying to our pollutant-free air.

The screes: I limited myself to two tiny screes on perfectly drained slanting ledges beside the steps. The mix is very lean – first 5cm gravel gleaned from the beach, then 5cm mixture of 50% soil 50% 5-10mm granite chips, finally topped with another 5cm beach gravel, planted with simple, easy plants *Sedum spathulifolium, S.s.* 'Cappa Blanca', *S. kamtschaticum* 'Variegatum', *S. middendorffianum, Plantago nivalis, Arenaria balearica* and *Potentilla eriocarpa*, the last being especially welcome for its cheerful yellow flowers in late

summer. Now after several years in the scree the arenaria and the potentilla have seeded into vertical crevices where they look better and are obviously happier than in the sites I chose.

The pool: Alan's pool with its sloping bottom and varying depth is home to a wide variety of plants. *Cyperus longus, Butomus umbellatus* and *Sagittaria sagittifolia* flourished exceedingly and soon outgrew their welcome. But *Nymphaea alba*, donated by a local laird, *Iris laevigata* 'Alba' and 'Albo-purpureum', the aroid *Orontium aquaticum* and *Aponogeton distachyus* give endless pleasure. These live year-long in the pool and the aponogeton flowers most prolifically from August to Christmas in spite of its South African origin and a hardiness rating of Z9. But *Zantedeschia aethiopica*, also from South Africa, rated Z8, prefers shallower water and does not survive our winters if left in the pool: I grow them in lattice baskets submerged in shallow water in summer and lift them into 'personal ponds' (tough polythene bags) in an unheated greenhouse for the winter.

The bog: When the pool filled, water seeped out along the rock ledges as they emerged from the water, so this was the natural place for a bog garden. A good depth of soil was piled onto these ledges and plants which tolerate perpetually wet and relatively stagnant soil soon settled down – those liking most moisture close to the pool, those preferring some drainage grow further away. The flowering season starts in March with *Primula denticulata*, succeeded by *P. macrophylla, P. chionantha, P. poissonii* and *P. alpicola* var. *luna*, a large drift of these pale cream beauties being a special favourite. Candelabra primulas and *P. florindae* extend the primula season to September. Calthas too produced another worthwhile floral succession: *C. palustris alba* in March, *C.p.* 'Flore Pleno' in April, *C.p.* in May and an unnamed Himalayan caltha in June. Another range of colour, form and foliage come from *Iris chrysographes*, the Tasmanian *Diplarrhena moraea*, hostas, astilbes and creeping *Lysimachia nummularia* 'Aurea'. From late July *Schizostylis coccinea* and a very late flowering pink form (?'November Cheer') make bold clumps of colour which regularly astonish our non-botanical Christmas visitors – "Hilary what *are* those gorgeous gladioli?"

So there is my rock, beautiful to my eyes throughout the year and a wonderful feature for the centre of a small west coast garden.

THE REST OF THE GARDEN

What about the rest of the garden? The heap of stones proved to be the tumbled remains of a bothy – the foundations have become a raised bed-cum-scree. The original planting of conifers – no longer dwarf – give year-long pleasure in their muted colours and varied foliage and form. Debris from the rock excavation was piled near the western extremity and is now part peat bank, part terraced scree. The terrace sports upwards of 30 hypertufa troughs and at its foot a large south-facing scree still has room for a few more plants. This scree is topped with 10cm 5-10mm granite chips which have virtually eliminated weeding. There are corners for small herbaceous plants, lilies and meconopses and in the spring there is a plethora of bulbs. Visits from SRGC members are high days – come and see if you like this garden too.

Chickweed Wintergreen (*Trientalis europaea*) Lionel Bacon

Fig. 59 *Geranium cinereum* ssp. *nanum* (p.249) Charles Aitchison

Fig. 60 *Phagnalon helichrysoides* (p.250) Charles Aitchison

Fig. 61 *Gentiana rubicunda* (p.260) David Rankin

Fig. 62 *Colchicum sfikasianum* (p.255) Kit Tan

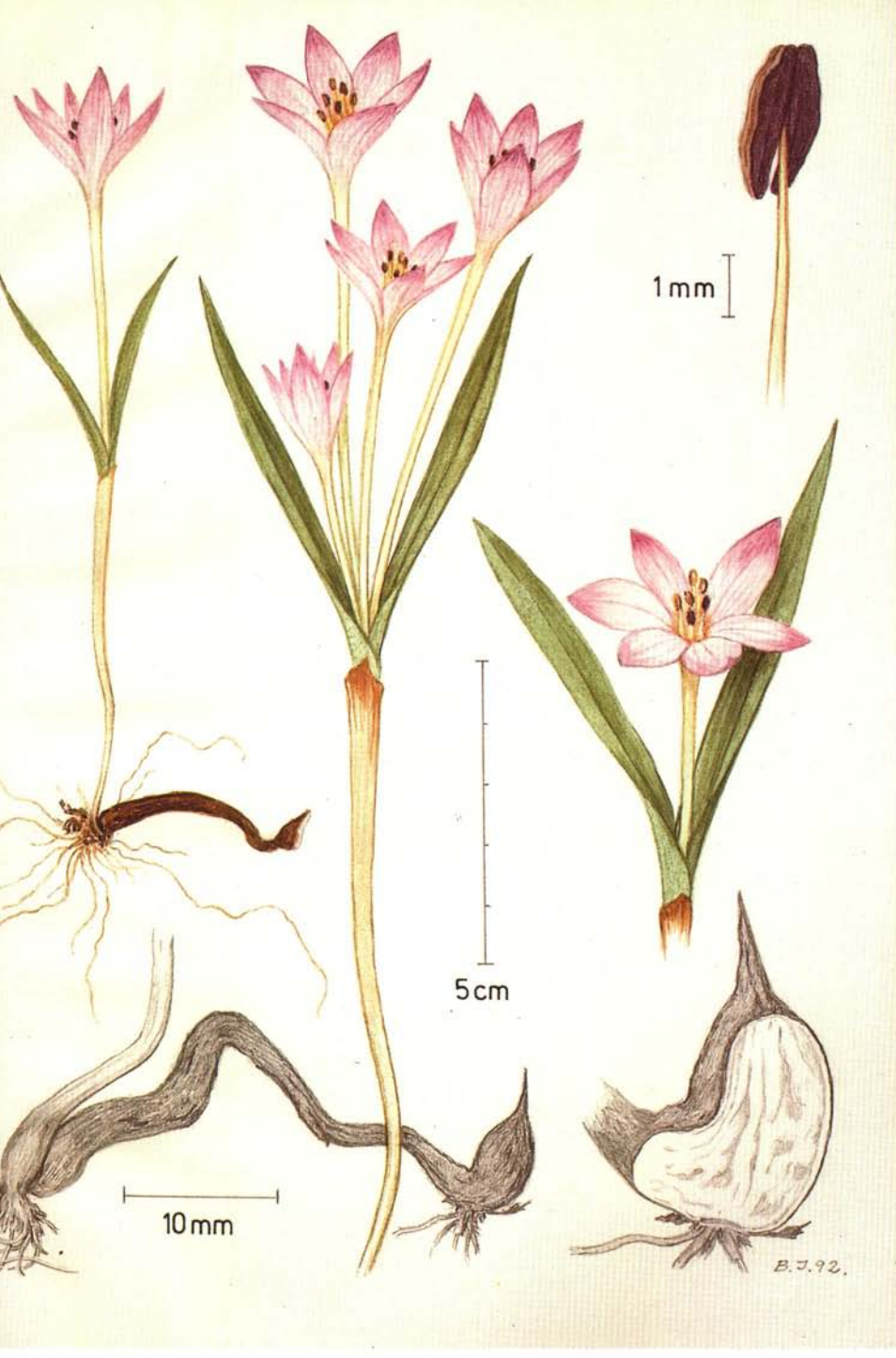


Fig. 63 *Colchicum psaridis* (p.257) Kit Tan

Fig. 64 Digging out the rock (p.264) Hilary Hill

Fig. 65 The rock and the pool (p.265) Hilary Hill

GROWING ALPINES IN ARGYLL

An amateur tries her hand at creating a rock garden in wettest Argyll

by HELEN BROTHERSTON

I WAS shot down in flames at the Garden Club when I let it be known, a few years ago now, that I intended to grow alpines in this part of the country (the West Coast of Scotland). It was plain to see that the assembled company thought I was off my trolley.

"There's too much humidity, as much as 90% sometimes, in the atmosphere" and, "you live by the lochside at sea level" were two of the arguments. They had a point. Was it not exactly that which made me give away my collection of cushion plants and lime-lovers when it was known that we were moving from East to West back in 1983? Having visited Jim Sutherland's Ardfearn Nursery outside Inverness and Jack Drake at Inshriach, and having sampled the brisk, dry air which they both enjoy I again wonder at this alpine madness which urged me to prove these well-meaning friends wrong. I managed to track down a copy of Alfred Evans' *The Peat Garden and Its Plants* and this book became compulsive bedtime reading. Excitement mounted as I thought of all the wonderful acid-loving plants which would thrive in my new garden. Big pools of meconopsis, *Glaucidium palmatum*, trilliums, *Kalmiopsis leachiana*: all plants hitherto admired on visits to other gardens.

WHEN WE ARRIVED

The cottage to which we came was surrounded by over a hectare of assorted terrain, mostly either stony or boggy. The site is protected by hills on all sides except the south and south-west and because of this it is a suntrap. It is also a frost pocket as the cottage is at the bottom end of a glacial valley. Little had been done to the garden by the previous occupants except the planting of a few mature shrubs of *Rhododendron lutea, Syringa, Deutzia, Berberis stenophylla* and *Philadelphus*. There were also a number of native trees: birches, rowans, ash and oak, brooms and gorse. To the back of the cottage is a slope of schist, gentle at the base then rising steeply to about 10 metres or more. This is dotted with the pre-

viously mentioned vegetation. At the base there were paths and broken down walls more or less the length of the back garden. These were built up and now form terrace beds. It was at this stage that realisation dawned that alpines could indeed be grown here: scant soil, a plethora of rock and very sharp drainage. The lowest terrace bed was also a raised bed a metre above the level of the grass (lawn is too fine a word for it). The central feature of this raised bed was a (be warned) 'dwarf' conifer, *Chamaecyparis lawsoniana* 'Ellwoodii' of over eight metres, with which I had a love-hate relationship. It blotted out my view of the garden from the kitchen

Central feature was a (be warned) 'dwarf' conifer of over eight metres

window but it gave very good shelter and shade to a part of the garden. However, it has now been taken down and the hollow in the centre of its several trunks has been filled with *Cytisus kewensis* in the hope that its foliage will cascade over the eyesore. This first raised bed was planted for quick colour and cover: several dwarf phloxes, helianthemums, *Iberis sempervirens*, *Hebe* 'Carl Teschner' and *H. pageii*, sedums etc. Other more choice items have since been added to this eight metre long by one metre wide bed: *Helichrysum* 'County Park Silver', saxifrages including *wendelboi* and 'Grace Farwell', *Erinacea anthyllis*, and several seed exchange successes like *Erigeron karvinskianus, Arabis androsacea, Sedum hidakanum* and *S. oregonense* and many more.

THE SOIL

A one metre high stone wall with a flat top formed part of the boundary to the front of the cottage (the other half being a hedge of *Rosa eglanteria* which smells deliciously of green apples when damp). Blackface sheep had been in the habit of running along the top of the wall in order to gain entrance to the garden and it became a priority to stop their little game. They ate everything except the grass. To foil their efforts, the largest stones to be found were placed on top of the wall, the craggier the better. Gritty soil was dropped into the crevices between the rocks and easy plants such as aubretia and campanulas planted into them. Expediency pays off. The planting of the wall was never planned but is a pleasant spin-off – a nuisance turned to advantage.

It didn't take long, back in 1983, to discover there is no such thing as good deep soil in this garden. Readers will understand the

nature of the environment when I tell them that I was presented with a mattock for my birthday. It was impossible to place more than the tip of the trowel into the earth without meeting resistance. It would take the best part of a morning to plant a rooted cutting. Rocks of all shapes and sizes were removed and a mountain of small stone grew steadily. Perplexing too was where to find enough soil to fill in the holes left by the excavations.

Didn't take long back in 1983 to discover there is no such thing as good deep soil in this garden

All the stone was barrowed round to the front garden in which there is a large gravelled area. Three raised beds were constructed in time, using the larger rocks to form the outline, and infilling with different mixtures of the smaller stone and compost. (By the time the beds came into being, compost heaps had been established.)

THE BEDS

The first bed was constructed of rock only, with an infill of small stones. The top 20cm or so was made up of gravel left over from some roadworks which had been dug out of a nearby ditch by the Council JCB. The small amount of soil which surrounded the gravel was the only soil used, apart from that which came with the potted-up alpine. *Campanula finitima* (syn. *C. betulifolia*), grown from SRGC seed was the first plant to be ceremoniously installed. It did so well it had to be removed at a later date as it grew too large for its allotted space. *Scleranthus biflorus, Geranium polyanthes, Anemone polyanthes, Gypsophila cerastioides, Sedum hidakanum* and *S. middendorfianum* and *Allium cernum* were all grown from SRGC seed and established well. There are also several kabschia saxifrages, *Hebe ramossissima*, drabas and *Hesperantha buhrii* (syn. *H. cucullata* 'Rubra').

The second bed was half-filled with small stone and topped up with a gritty compost containing lime. This is appreciated by *Dianthus erinaceus* and *D. myrtinervus, Veronica selleri, Allium beesianum, Androsace hirtella, Aethionema* 'Warley Rose', *Gentiana verna* and others.

The third and most recent bed contains a richer soil and gravel mix above the same infill of rock (still being removed from the back garden), *Juniperus communis compressa* and *Chamaecyparis lawsoniana* 'Gnome' hobnob with *Celmisia densiflora, Clematis marmoraria, Abrotanella, Rhodohypoxis* flowering through *Saxifraga baldensis*, and *Chaenorrhinum*. A rescue job had to performed on *Celsioverbascum* x

'Golden Wings' (now reclassified as *Verbascum* x 'Golden Wings'). It almost flowered itself out of existence in its first year of planting. This year it has been struggling – a lovely little woody-stemmed golden flowered shrublet well worth saving. Two clumps of *Rhodohypoxis* were left outside by accident last winter: both survived the wet winter with no ill effect. *Lobelia lindblomii* is careering happily – too happily – over the surface of this third bed. It's such a pretty plant with its small bright blue flowers and tiny bright green round leaves the size of a toddler's fingernail. It's easy enough to remove it where not requred. In any case, much of it will die back in winter, leaving enough to start its wanderings all over again next season. I think I must mention too a plant I was given last year – *Chaenorrhinum*. I can find little reference to it, but it has flowered all summer, even having a second flush of its bright purple flowers after having its hair cut earlier in the season.

For the last two years agricultural fleece has been placed over the beds from October to March. It has to be weighted down with stones to combat the south-westerly winter gales. My neighbours tease me and call it my shanty town. The fleece was removed too

For last two years agricultural fleece has been placed over the beds from October to March

early first time round to the detriment of the plants. Last year patience was rewarded with a magnificent show of early saxifrages at the end of the month. A slight dilemma occurs because the saxifrages ('Jenkinsii', *burseriana* 'Gloria' and *apiculata*) come into flower mid-March and the temptation to show off their floral splendour is great. However, it could be to the cost of the other plants in the bed should the fleece be removed too soon. It was interesting to note that where the fleece covered only half of the *Saxifraga apiculata* there was a marked difference. The covered half was noticeably more floriferous.

Planted round the base of each island bed is a selection of mossy saxifrages, sempervivums and sedums, also the tiny white starry flowers of *Arenaria balearica*. This last leads a nomadic existence creeping harmlessly over the ground and sides of the beds, and also the south-facing natural rock formation which runs from east to west further up the garden.

In the early years here, these rocks were submerged in bracken and moss which was stripped off to reveal a miniature mountain range. Removal of the bracken changed the chemical nature of the

soil at its base, rendering it far less acidic and enabling the planting of a wider range of alpines. *Lewisia columbiana* has established itself in a cranny and has increased. *Lewisia cotyledon* was planted in a vertical crack in a slatey rock and besides increasing its rosettes has seeded in various other rock crevices. Another 'summit' sports a topknot of *Dianthus erinaceus* and *Leucogynes grandiceps*. In spite of bearing the full brunt of the south-westerlies they have survived happily for several years now. Use has been made of *Juniperus squamata* 'Blue Carpet' between some of the rocks. The bright pink flowers of *Sedum hidakanum* peep through the blue foliage late in summer.

In spite of bearing the full brunt of south-westerlies they have survived happily for several years

BULBS

No mention has been made of bulbs. I find that some miniature bulbs, especially species tulips, *Iris reticulata* and crocus, are best planted in lattice pots and placed for effect when in full flower. Far from increasing, they disappear when planted into the soil. Mice love them. Other bulbs: miniature daffodils, narcissi, snowdrops and scillas do well planted into the ground directly.

GENTIANS AND OTHERS

Swathes of meconopsis blue and beautiful haven't yet happened but I'm working on it. Deep rich soil is at a premium. There are two peat beds with *Phyllodoce* species, *Kalmiopsis leachiana*, hummocks of *Cassiope, Daboecia* and *Vaccinium*. X *Phylliopsis hillieri* 'Pinocchio' flourished for three years before succumbing to I don't know what. *Nomocharis mairei* also disappeared after two years which was a great disappointment. There are gentians, mostly of the autumn-flowering variety, in several different parts of the garden as they don't 'do' in some places. *Gentiana* 'Devon Hall' has increased steadily here and *G. sino-ornata* also pays its way. Another gentian which is easily grown in this climate is *Gentiana asclepiadia* and its alba form. This is grown so that it can hang its 40cm stems over a wall in late summer.

It goes without saying that primulas of many kinds grow well here, though it was difficult to find a place where *Primula whiteii* would not curl up its toes. Many candelabra primulas dazzle with their kaleidoscope of colour in early summer – *sikkimensis, beesianum, japonicum, pulverulenta*, 'Inshriach hybrids' and *helodoxa*

are just some of them. They fill a moist bed with astilbes, hostas and *Caltha palustris alba* and 'Flore Pleno' as bedfellows, chaperoned by a rapidly growing *Rhododendron* 'Cunningham's White', rescued from a certain death in Woolies in 1984. *Caltha palustris*, the wild form, grows naturally all round.

FEEDING AND PREDATORS

I haven't touched on the topics of feeding and predators. The latter are many and various and it was only after two years of battles with them that plants started to take off. It's such a big subject that it will have to do for another time. Watch this space.

Predators are many and it is only after two years of battles with them that plants started to take off

Feeding is very necessary because of the heavy rainfall which leaches out so many of the minerals. The raised beds are given slow release fertiliser twice a year, in spring and autumn. Living in a country area has its advantages for the gardener as there are a host of natural products for the gleaning: pine and larch needles, bracken litter, leaf mould, sphagnum moss and for coastal dwellers, seaweed. All these are used for mulching (except sphagnum moss). The seaweed is applied directly round shrubs and azaleas with no harm and rots down rapidly unless there is a dry spell. Bracken litter is very acid, so is used for the peat-loving plants.

BETTER IN THE WEST

To conclude, apart from the high alpines which need an alpine house, most plants may be grown here given the right conditions: acute drainage and protection from excessive rain in winter. It's my view that I can grow a much wider range of alpines in the west than was possible in the east of Scotland. I'm a happy woman, but a learner still.

PLANT PORTRAITS

Lewisia rediviva

FRED AND MONIKA CARRIE

If you choose the plants you grow in pots exclusively for their show potential, then *Lewisia rediviva* is not for you. Its summer flowering (when the last SRGC spring show is but a memory) ensures that this species is no show-bench favourite and tends to be an enthusiast's plant. This is a great pity because few plants provide such a fine display of exceptionally beautiful flowers for so little care and attention. Indeed, we tend to think the late flowering is a benefit, providing interest when the main display in the alpine-house is over.

Lewisia rediviva (Fig.71 p.291) has a very wide distribution from British Columbia south into northern Arizona and as with all lewisias, good and not so good forms exist. The finest examples produce huge cactus-like flowers of soft satin-pink which are in our opinion the most beautiful of all lewisia blooms. They have a sophistication and clarity of colour that not even the best forms of *Lewisia tweedyi* come close to matching. The plant is summer deciduous, flowering as the old leaves start to die away.

It would be hard to imagine any plant that is easier to grow. Although used mainly as an alpine house plant, we find that it grows perfectly well outside in a trough or raised bed, containing an open compost, with no protection of any kind. Indeed the plants in our nursery sit in open frames all winter in their 7cm plastic pots and come to no harm at all. It must be said, however, that plants grown in the garden do not flower as well as those under glass, probably due to the lack of a good baking during the dormant period. For pot grown plants we observe the following routine. After flowering and seed set (usually late June with us) we place the pot on top of the plunge in the alpine house and let it become bone dry. It remains in this position until late August, no water being given during this period. The fleshy carrot-like roots are then repotted into clay pots filled with a slightly damp compost and plunged in the alpine house. No special attention is paid to watering after this; they simply get their moisture from the damp plunge although extra water is given during warm spells in spring. We also grow groups of plants in large plastic pots which are watered if and when the compost looks as if it needs it. Growth is well underway by late September and continues during any mild

spells through until next summer. The plants then flower, and the cycle starts again. The plants do not seem to be too fussy about compost. We use 1 part J.I., 1 part peat, 1 part 5mm granite grit and a little Osmocote. We have used several different composts including a completely soil-less mix with no noticeable difference. The plants are top-dressed with the same grit. As with all deciduous lewisias a watch should be kept for aphids, but apart from that it is a no fuss – no problem plant.

Seed set can be variable and it may be wise to hand pollinate the flowers if seed is required. Normally we sow the large seeds in November and over winter the seed pans in an open frame. Germination is usually good and the seedlings are pricked out directly into 7cm plastic pots as soon as they are large enough to handle, placed outside in an open frame and left to get on with it. Growth during the first season is normally quite rapid. The young plants may or may not die down in the first year depending on the weather conditions.

The plant in the photograph was grown from SRGC seed; wild collected in 1989.

Dianthus 'Inshriach Dazzler'

ALASTAIR McKELVIE

Over the centuries there have been a great many cultivars of *Dianthus* yet they all seem to have been remarkably short-lived. Indeed almost all the cultivars currently in cultivation have been introduced since the Second World War.

One truly excellent dianthus cultivar that is now almost 30 years old and still going strong, however, is 'Inshriach Dazzler' (Fig.57 p.234). It arose in the late sixties at Jack Drake, the Inshriach Alpine Plant Nursery at Aviemore in Scotland and was released into commerce in 1975.

Seed of *D. neglectus* was sown at Jack Drake and the resulting seedlings flowered in the seed pan. One stood out from the rest, with the most striking buff-backed deep carmine-pink flowers over neat rosettes. It was suggested that the seed plant had hybridised with *D. deltoides*, although Richard Bird in his book 'Border Pinks' (B T Batsford Ltd 1994) suggests that because of the strong buff reverse there may be *D. pavonius* blood in it somewhere.

It flowers profusely in May-June with well-formed flat flowers, 2-3cm across, with attractively fringed petals. The plant is neat and tidy and can easily be trimmed to shape.

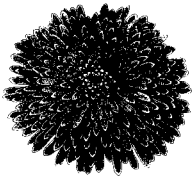
Cuttings root easily from non-flowering shoots.

I am grateful to John Lawson of Jack Drake for information about the origin of this plant.

LOOK FOR THE SILVER LINING

An in-depth look at encrusted Saxifrages, their nomenclature and cultivation

by BERYL BLAND



"THE encrusted or Silver Saxifrages make up a race so far ahead of every other in general value that a rock-garden can be glorious with nothing else and without them could not be really glorious at all."(1)

Why was it that in 1912 Farrer considered the Euaizoons first and foremost of the saxifrage genus? Maybe it was because at his period of time the Porphyrion section was not as multitudinous as it is today, although there were a large number of good hybrids about such as 'Faldonside' and many beautiful species. It is obvious from the early catalogues that many more silvers were offered pre-1940 than are available today. During the Second World War plants suffered from neglect. Some died, others lost their labels and since 1945 it is the Porphyrions that have come increasingly to dominate the scene. My enthusiasm for the genus began by collecting Porphyrions or Kabschias as they were then known. One sunny February day when visiting White Craggs nursery in Ambleside I was completely bowled over by a plant of *Saxifraga* 'Jenkinsiae'. The pink perfection of its flowers shining out of the frames so early in the year had me captivated and I returned home determined to grow these lovely plants. I persuaded my husband that we needed a rock garden. This was 1966. Little did he guess what lay ahead.

HOW IT ALL STARTED

A few years ago at a meeting of saxifrage enthusiasts in Ramsbottom, Lancashire, the question was asked "Does anyone grow the silver saxifrages?" A few hands were raised. At the next question "Would anyone be interested in making a study of these important plants?" my hand was the only one to go up. I had at that time only 15 encrusted saxifrages in my collection as like the majority of saxifrage growers my passion was for the beautiful jewelled Kabschias

(now Porophyllums) which I was avidly collecting and checking against the porophyllum saxifraga 'Bible' of Horny, Webr and Byam-Grounds. Encouraged by such comments as "I suspect you have taken on a life-time's work," and warned that specialisation can become an obsession I returned home and realised that I would have to set out increasing my stock as 15 plants hardly constituted a reference collection. We toured the nurseries and bought every silver saxifrage in sight. The garden began to look like a nursery sales area with pots everywhere. Is this the beginning of insanity I wondered? The pressing question now was what to do with all the plants.

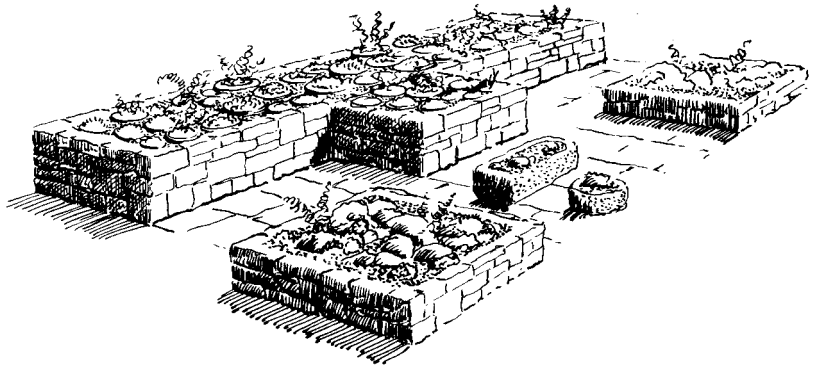
LIMESTONE, GRIT BEDS AND FRAMES

Initially I had frames at ground level with silvers at one end and porophyllums at the more shady end. This was not aesthetically very pleasing and as the number of plants increased it was obvious that more room was required. I already had a raised Shap grit bed and some grit stone walls but as I wanted to grow most of the silvers on limestone I needed a limestone mountain and scree. Four friends came for a summer's day out. Together with my husband

The scree shone virgin white but looked like the beginning of an extension to the M6

and myself, they tackled the task of turning a vegetable garden into an alpine scree using 8mm limestone chippings. At the end of the day the scree shone virgin white but looked like the beginnings of an extension to the M6 rather than the alpine environment I had in mind. Fortunately at this time I had two more helpful friends. One suggested scattering bigger pieces of limestone rubble randomly on the scree. The effect was instantly pleasing and much more natural. The other friend, who is a landscape gardener, was removing an unwanted Victorian limestone rockery and we recycled the stone including some impressive large pieces. I had decided that in order to study the plants thoroughly I would grow three specimens of each plant, one in a pot, one on the limestone and one on the grit beds. The limestone and grit beds were ready and it was now necessary to find somewhere to keep the main reference collection. The original frames looked unattractive and being at ground level were not easily accessible for study purposes and so my husband and I decided to make a feature of the reference area. He built a raised frame surrounded by stone retaining walls

45cm high and filled it with sharp sand into which all the pots are plunged. At the base of the retaining walls we constructed some ornamental raised beds using gravel and tufa and these are now home to many of the porphyrions and a few silvers including *Saxifraga valdensis* which seems to be growing happily in the tufa.



THE EFFECT OF SUN

At first I grew all the pot plants in plastic pots in a mixture of 50% J12 and 50% neutral horticultural grit. One plant is grown in the raised frame in full sun and one plant in a more shady flagged area behind the greenhouse. This is to try and ascertain whether aspect affects the silver colouration of the plants. I had noticed that plants brought back from Cambridge which were very blue and silvery on arrival became much greener in my garden. Our climate in the north-west is damp, our rainfall averaging 1270mm per annum and we have very few bright sunny days. I suspect the quality of light is very inferior to the light in the mountains. This theory was tested by the unusually hot, sunny weather of the summer of 1994. My silvers loved it! To cut down on excessive moisture I have reverted to clay pots and the plants look much healthier. I am also replacing some of the grit with a very limey sand to try to improve the silver appearance. This may not be necessary as according to Schmidt in 1930 the production of lime through the hydathodes (lime-secreting pores) "occurs only before the onset of flowering" and "is related to a combination of light, temperature and humidity."[2] It has been suggested that the lime encrustation on the leaves is to protect the plant against excess of transpiration in the Alps.[3] This ability is not called for in Lancashire, rather the opposite. Perhaps I should provide the plants with de-humidifiers.

I do cover the raised frame in winter as a protection against winter wet. The plants in the open have to cope and appear to be doing so.

NOMENCLATURE

The most difficult problem that has to be confronted in a reference collection of Ligulatae (Encrusted Saxifrages) is that of correct nomenclature. It has been a problem ever since the plants were introduced and there was a great deal of 'Foreign Correspondence' in the *Gardener's Chronicle* of 1910 between Henry Correvon and Reginald Farrer discussing the relevant claims to specific rank of recent introductions. Before I could begin to look at the hybrids I had to familiarise myself with the characteristics of the species. For this work I have found Webb and Gornall's monograph on Saxifrages[2] invaluable. I have been fortunate to have been given many plants of known wild origin. It is essential to look at the natural

My Ligulate accessions have now reached 480 plants from various sources

variability within the species. Many plants available today are no longer the true species but the result of random cross-pollination in gardens. My Ligulatae accessions have now reached 480 plants from varying sources. Some of these are obviously duplicates. Many are variants of the species to which they belong but are not distinctive enough to warrant an individual 'Name'. A few, however, are of special merit and should be available under a 'Name' so that gardeners seeking a particular form of a plant can be 'almost' sure of obtaining the correct one. The plants in my collection are measured and compared with others of the same species and records kept. I am slowly building up a collection of photographs and herbarium specimens and am researching the original descriptions of the plants particularly the hybrids but more of this later.

THE SPECIES

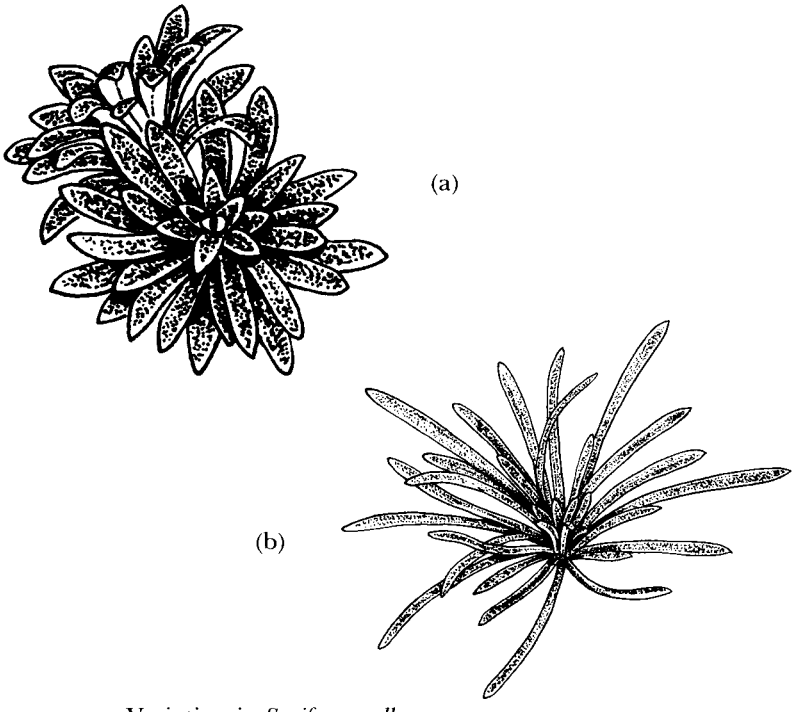
There are 10 species within the Ligulatae group of saxifrages. They spread right across Europe from Spain to the Balkans and on into Turkey and the Caucasus. Some are found in Scandinavia and *Saxifraga paniculata* even exists in America. What are the differences between the species and what do they offer the gardener? *Saxifraga longifolia* was known as the "Queen of the Saxifrages" even in the 19th century. It is the glory of the Pyrenees and many gardeners

aspire to grow this lovely plant with its 60cm flowering spikes. A good spike can have up to 800 flowers. It is worth growing this plant for the rosette alone with its perfectly symmetrical narrow, linear leaves. Over five years the single rosette slowly develops until it is about 15cm across. At this stage a flowering spike emerges and it is with mixed feelings that one waits for the flowering knowing that it presages the plant's demise, but what a glorious end. A plant belonging to Sir Everard Hambro KCVO of Hayes in Kent received the RHS award of cultural commendation in 1913. It was believed to be about 15 years old and had reached the great size of 35cm across with an inflorescence 60cm tall. It was duly named *Saxifraga longifolia magnifica*.[4] It is going to become more difficult to obtain wild collected seed of *S. longifolia* as conservation laws take effect. Seed from garden plants rarely comes true due to hybridisation. Perhaps this will become a plant of the past before very long which will be a great pity as it is beautiful in all stages of development and at all seasons of the year. Occasionally amongst wild populations of *S. longifolia* multi-rosetted forms are found. At first these were all considered to be hybrids but it is now thought that some plants react to adverse conditions and produce extra rosettes. Usually, however, they will all flower at once and the death of the whole plant will again be inevitable.

"S. callosa *could be called the most graceful and beautiful of all encrusted saxifrages*"

Moving eastwards to the Maritime Alps we come to the home of *Saxifraga callosa* (Fig.69 p.290). Winton Harding in his excellent book on saxifrages says, "A good case could be made for calling this species the most graceful and beautiful of all the encrusted saxifrages."[5] There are two forms of *S. callosa*, both equally lovely, bearing one-sided flower spikes which arch over in the most elegant way. *Saxifraga callosa* var. *callosa* has the long linear leaves of *S. longifolia* but the rosettes instead of being symmetrical are tousled and ragged. This long, narrow leaved form is the *S. callosa* 'Bellardii' of Farrer's time. There is considerable variation in length of leaf amongst the wild population. Plants have been found in the Tende area on the Italian borders with leaves up to 14cm long. Whereas in *S. longifolia* the flower stems are glandular, the stems of *S. callosa* are smooth and the inflorescence occupies 40%-60% of the stem instead of springing from the base. The second form of *S. callosa* is *callosa* var. *australis* and this includes *S. callosa lantoscana* a

plant collected by Farrer from St Martin de Vesubie. Here the rosette leaves are convex with an expanded diamond-shaped tip. The colour is much more yellowish-green and the lime-encrustation often links together to form a continuous white margin. The lime-secreting hydathodes are set in the margin as with *S. longifolia.*



Variation in *Saxifraga callosa*
(a) *Saxifraga callosa* var. *australis* subvar. *lantoscana*
(b) *Saxifraga callosa* (cv. 'Bellardii' of Engler)

Around Lantosque there is again considerable variability amongst the plants, even on the same rock face. The *S. callosa* var. *australis* from Southern Italy is essentially the same as the Maritime form but the rosettes are a darker colour. There is a very fine form that grows in the Abruzzi Mountains. Winton Harding says of this plant, "Its long leaves are expanded towards their extremities and, from these handsome rosettes, 30 - 40cm long wands of flower are thrown with considerable freedom. I have found this form to perform so well in my garden that I consider it the best choice of all providing that one can get the true southern form."[5] With *S. callosa* although the flowering rosette dies the plant continues to

live and produce more rosettes for another season. One of my plants had 23 flowering spikes this year. The plants are especially lovely when the buds are about to break, the pearly-white drops contrasting beautifully with the smooth red stems. There is a form of *S. callosa*, var. *catalaunica*, found only in Spain with shorter, more pointed leaves and a completely glandular inflorescence and stem. I am not sure that any of the plants I have obtained under this name are the true species.

Saxifraga cochlearis is a much smaller plant than *S. callosa* and is found in only two stations in the wild, the Maritimes near Tende and a small station near Grenoble. It is called *S. cochlearis* on account of its spoon-shaped leaves. The flowering stem is branched in the upper half, rarely below the middle and each branchlet has 2 - 3 flowers compared to 4 - 7 on *S. callosa*. The stem is glandular not smooth as in *S. callosa*. There are major and minor forms. Some of the latter are so small that they have been distributed under the name of *S. valdensis* but can be distinguished under a hand lens as they always have hydathodes in the margin and there are no lime pock marks on the leaf surface. *Saxifraga cochlearis* 'Probynii' was named by Henry Correvon who saw the plant growing in Sir Dighton Probyn's garden in Windsor. It has very small, tight rosettes with extremely rounded leaf tips. It is a fine selected form and distinct and from the gardener's point of view should be identified by a 'Name' but Farrer disagreed and was

All the forms of S. cochlearis *are excellent for troughs and chinks in the rock work*

moved to write to *The Gardener's Chronicle* in December 1910, "It is interesting by the way to hear the origin of *S.* 'Probynii' which had puzzled me. But I cannot help regretting that M. Correvon should have complicated complication still futher by launching upon us a new species which is really our old friend *cochlearis minor* under another name."[6] All the forms of *S. cochlearis* are excellent for troughs and chinks in the rock work and extend the saxifrage flowering season to the end of June. There is a natural hybrid found only once in the Maritimes and believed to be a cross with *S. paniculata*. This is known as *Saxifraga* x 'Burnatii'. It is an excellent plant and very well worth growing. It never fails to cover itself with bloom arching over troughs and walls. I have so far failed to find the *S. paniculata* influence in this cross. The flower spike is more reminiscent of *S. callosa* and in all my plants the flower stem is similar

to *S. callosa*, red and smooth, with a very few glands. However, there are only 2 - 3 flowers on each branch which suggests *cochlearis*. I believe this plant to be a cross between *S. callosa* and *S. cochlearis*. Farrer had a theory that *S. cochlearis* grew to be like *S. callosa* when it inhabited the same conditions in the shade and he even suggested that *callosa* var. *lantoscana* was the intermediate form.[7]

Saxifraga valdensis, another plant from the Maritimes, it took me a long time to track down. Farrer said "There is hardly a catalogue that does not offer it, or a nursery that possesses it."[8] Today it is rarely offered. I only found two sources of the true plant and several *S. cochlearis* masquerading as *valdensis*. The true *S. valdensis* differs from *S. cochlearis* in that the thick, reflexed leaves are flatter, pointed not spoon-shaped. As well as hydathodes in the margin there are lime eruptions on the upper surface of the leaves giving a pock-marked appearance. In flower it is quite different with the

(a) *Saxifraga valdensis*

(b) *Saxifraga cochlearis*

flowers clustered at the top of an extremely glandular stem. The pedicels and hypanthium are also very hairy. I am growing it so far successfully in the raised frame, open to all weathers in summer and covered by glass in winter. I also have a plant in tufa which has survived completely in the open for 12 months but time will be the judge. A plant kept in the alpine house died. I suspect that due to

Fig. 66 Picos de Europa (p.228) Mike Hopkins

Fig. 67 Kackar Mountains (p.297) Charles Aitchison

Fig. 68 *Saxifraga* 'Tumbling Waters' (p.295) Beryl Bland

Fig. 69 *Saxifraga callosa* (p.284) Beryl Bland

Fig. 70 *Saxifraga cotyledon* (p.293) Beryl Bland

Fig. 71 *Lewisia rediviva* (p.278) Fred Carrie

Fig. 72 *Geranium cinereum* ssp. subcaulescens var. *ponticum* (p.298) Charles Aitchison

summer shading it didn't receive enough light as it became very drawn. I am finding this plant difficult to propagate as it grows so slowly and the rosettes are so tight.

The other species from the Maritimes is *Saxifraga florulenta*, a plant very distinctive with its dense, perfectly symmetrical rosette. This is a plant, alas, that I have not been able to obtain for the reference collection. It does not take kindly to our dank, northern climate. Cultivation is difficult, almost impossible. In 1872 a plant exhibited by Maw obtained an FCC and in 1913 Farrer saw a plant blooming in England with 8 - 10 tufts of flower. Both these plants had probably been producing flowering spikes when collected in the wild. Farrer said the flowers were a disappointment due to the change of environment. This is a plant only to be admired from paintings or photographs unless you are very athletic and can visit the 'Ancient King' in his own home.

In the Dolomites and Yugoslavia, *Saxifraga crustata* takes over from *S. callosa*. At first *S. crustata* confused the botanists who gave it the name of *S. lingulata* var. *crustata* (*lingulata* being the old name for *S. callosa*). I, too, was confused at first. Out of flower the form *S. crustata* var. *vochinensis* found in the Julian Alps could well be confused with *S. callosa*. This form has particularly long leaves but the beading on the leaves is more pronounced than in *S. callosa*. Once the plant flowers there is no doubt as to its identity. The flower stem is hairy and the flowering panicle is much smaller than *S. callosa* and branches above the middle of the stem. It is not a plant to grow for the beauty of its flower but the heavily beaded effect on the leaves of some forms can be attractive. *S. crustata* can also be confused with *S. hostii* var. *rhaetica* but in the latter the hydathodes are on the upper surface of the leaf, not in the margin, and the leaves are toothed. *S. crustata* does cross in the wild with both *S. hostii* and *S. paniculata*. The plant I have as *S.* x *carniolica*, supposed to be a *S. crustata/paniculata* cross, I believe to be a true form of the species found in Carniola. This plant is also identical to some plants I have received under the name of *S.* x *pectinata*. The difference between *S. pectinata* (which, according to Engler and Irmscher[9] is a hybrid between *S. paniculata brevifolia* and *S. crustata*), and *S. crustata* is that *pectinata* has grey leaves, not dark green, which are serrated on the edges.

Saxifraga hostii often grows alongside *S. crustata*. There are two forms of *S. hostii*. *S. hostii* ssp. *hostii* has blunt strap-shaped grey green leaves curving downwards. The hydathodes are now on the upper surface and the leaves have truncated teeth. The hairy flower stems are about 30cm tall and branch towards the top. The

plant is more floriferous than *S. paniculata* with creamy-white flowers some with red spotting. It is growing well for me both in the pots and on the open rock garden. It has spread and made large plants on the rock garden at Edinburgh Botanic Garden where it was flowering profusely in 1994. *S. hostii* ssp. *rhaetica*, found in the Italian Alps has leaves with an acute tip. It has wider leaves than *S. crustata* and hydathodes always on the upper surface.

Saxifraga cotyledon (Fig.70 p.290) was first described in 1541. It has a very widespread distribution stretching up into Scandinavia and from the Pyrenees across the Alps into Italy. The fine rosette can be 12cm wide and the broad, fleshy, regularly-toothed leaves are distinctive. The flower spike is always branched below the middle and sometimes from the base. In *S. cotyledon pyramidalis* the spike can be 70cm tall. Each flowering spike contains many more flowers than *S. hostii* or *S. paniculata* but there is usually only one spike to each plant. This then dies leaving small rosettes behind for the future. Apart from size there seems to be very little variation amongst this species. *S. cotyledon norvegica* has an acuminate leaf tip and colours well in the winter. I have a plant named 'Highdownensis' which

In Saxifraga cotyledon pyramidalis
the spike can be 70cm

appears to be a pure *S. cotyledon* but I can find no reference to it anywhere. Can anyone help? I also have a plant labelled *S. cotyledon platyphylla* which is on a smaller scale and produces flower stems only 30cm tall. The flowers appear to be pink due to the extremely glandular stem and calyces. Could this be the old *S. cotyledon montavonensis* which no longer has specific rank? There is some question about the parentage of 'Southside Seedling' and it may turn out to be a very fine form of the species. It is essential to get a good form of this plant as many plants offered have very inferior flowers, often being garden raised seedlings from an original plant. It is also important to remove the small rosettes and grow them on. This allows the big rosette to put all its energy into producing a large flower spike. If left to its own devices in the garden the flowering spikes get smaller every year and the plant can be disappointing.

The species which is causing me most problems with identification is *Saxifraga paniculata*. The nomenclature of this species has been in a state of chaos ever since Farrer's day. Far too many plants were given 'Names' without having any special distinction and over the years plants in gardens and nurseries have become muddled,

labels lost and self-sown seedlings confused with the original plants. Fortunately to help me through this maze I have a good collection of *S. paniculata* of known wild origin, from Spain to the Caucasus and these I have placed in the reference frame. There are differences in size, colour and leaf shape but all the plants come within the variability of the species. They all have incurved, hemispherical rosettes, saw-edged leaves and narrow panicles of flower.

With hybrids the problem with nomenclature becomes even more difficult

The flower stem branches in the upper half and each branchlet contains only 2 - 3 flowers. The only variant is *S. paniculata cartilaginea* from the Caucasus which has acuminate leaf tips. Many of the paniculatas, though fascinating to the enthusiast, lack garden merit. There are, however, some forms that should be in every collection such as 'Balcana', 'Rosea', 'Lutea', and 'Correvoniana'. *S. paniculata baldensis* I fear is no longer in cultivation. Farrer describing his original introduction in 1911 says the new shoots "are of a bright and glossy blood-crimson, and blood-crimson, too, are the reverses of their leaves and young tufts".[10] Most of the plants I have seen are probably *S. paniculata minutifolia*. I shall have to spend a great deal more time studying this species.

The final ligulatae species is *Saxifraga mutata*. This plant is very different and has a single dark-green rosette with no silvering at all. It produces attractive orange-yellow flowers and seems to prefer shadier and damper conditions. Usually it is monocarpic and so seed must be saved. It is only known to cross with *S. aizoides* so much of its seed will come true. Out of my seed sown last year only one plant was a cross.

HYBRIDS

Moving on to the hybrids the problems with nomenclature become even more difficult and research into the early descriptions does not always clarify the situation. I shall quote just one example to illustrate my dilemma, that of 'Dr Ramsey', a popular hybrid from *S. longifolia*. The descriptions all agree that the plant has large spoon-shaped leaves but then the trouble begins. In 1914 Walter Irving stated "The flowers are white the petals of which are sprinkled with pink dots".[11] In 1928 *The New Flora and Silva* described the plant thus: "'Dr Ramsay' comes from *lantoscana* and bears fine arching sprays of large white flowers dotted towards the

base with bright red spots."[12] By 1935 Clarence Elliott is describing a plant with large round petals richly spotted with red.[13] In 1938 Ingwersen was selling a form with "fine sprays of pure white flowers" and remarked that "inferior seedlings frequently masquerade under its name some of these with heavily red-spotted flowers which would suggest aizoon influence".[14] R. C. C. Clay in 1947 describes the flowers as "solid, rounded pure white with a ring of very thick red freckling on stout stems with robust spikes".[15] Finally Winton Harding states "The sprays of pure white flowers are about 9 inches in length and very decorative."[5] I feel the earliest descriptions must take precedence and I have some plants in the collection that may prove to be the real 'Dr Ramsey' but even these I have reservations about.

The hybrids in the collection will have to pass the following criteria: 1) Does it match the original description if it can be found? 2) Is it sufficiently distinct to be recognisable by an informed gardener or nurseryman?, and, 3) Does it have garden merit? Many plants will fail. Many will have disappeared into the mists of time. Two hybrids which have survived are *S.* 'Tumbling Waters' and *S.* 'Whitehill'. Both these are worthy of a place in any collection. *S.* 'Tumbling Waters' (Fig.68 p.289) is a beautiful cross between *S. callosa lantoscana* and *S. longifolia*. It does require special care in order to keep it. Young rosettes must be detached and propagated annually if they are not to flower prematurely with the main rosette. 'Whitehill' is a reliable hybrid between *S. paniculata* and *S. cochlearis*. The rosettes are a lovely blue with a reddish tinge to the base and are attractive all the year round.

When making these decisions I am working with Dr Steve Furness from Derbyshire who is growing a parallel collection to mine. I see the reference collection work in two parts, the comprehensive collection of Ligulatae and their hybrids available for study purposes and propagation and distribution of the most garden worthy plants.

ACKNOWLEDGMENTS

I have had a lot of help so far. I would like to thank Richard Gornall for permission to use material from his book. His recognition sections have been most helpful in clarifying differences between the species. I would also like to thank the Cambridge Botanic Garden for the use of their library, Winton Harding and Duncan Lowe for their encouragement and all the plantsmen who have provided me with plant material for the collection.

The silver saxifrages offer so much. They extend the saxifrage

season well into June and the contrast in form, colour and texture of the individual rosettes cannot be matched by any other section of the genus. I may have developed an obsession with these lovely plants but I have not regretted it yet.

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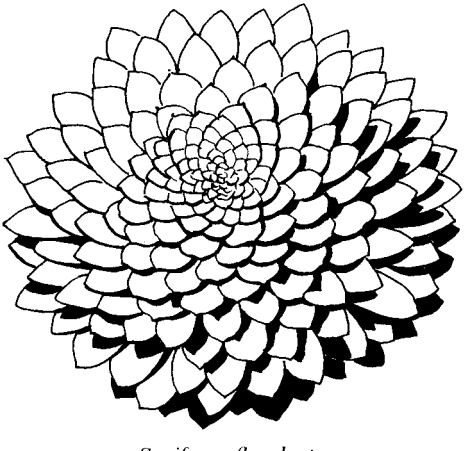
ILLUSTRATIONS by Duncan Lowe.



Saxifraga florulenta

GERANIUM CINEREUM IN THE KACKAR MOUNTAINS

by CHARLES AITCHISON

GERANIUM cinereum, well known to gardeners, grows in many mountains in Spain, France, Yugoslavia, Albania, Greece, Turkey, Syria, Lebanon and Morocco. Growing in so many different areas the species is polymorphic with a diversity of leaf shape and flower colour. This can be easily seen in Anatolian Turkey, ringed by high mountains along its Mediterranean and Black Sea coasts and land borders with Syria, Iraq and Iran. Inland the high Anatolian plateau is dotted with isolated snow-capped summits. Growing in isolation from each other over many years on these summits the plants have developed genetic diversity.

Davis and Roberts (Davis, P. H. & Roberts, J. [1955] 'Materials for a Flora of Turkey, 1.-Geraniaceae', Notes from the Royal Botanic Garden, Edinburgh, 22, 9-27) reviewed the species *Geranium cinereum* and adopted the subspecific name *subcaulescens* as the name for all the East Mediterranean varieties of *Geranium cinereum*. Davis remarked that "in Turkey, ssp. *subcaulescens* shows variation from mountain to mountain, but is often rather variable within each population, although flower colour is usually constant" and in "Flora of Turkey" he described six varieties, which are all characterised by long white hairs on the sepals. Two of these varieties grow in the Kackar Mountains of N.E. Turkey where the Alpine Garden Society organised a members' tour in 1994.

THE KACKAR MOUNTAINS, ITS PLANTS AND PEOPLE

These mountains, which are part of the Pontic Alps, extend along the Black Sea coast to the Turkish Georgian border (Fig.67 p. 288). They rise from the sea so steeply and are so high that the warm, wet, summer, sea air is forced up to condense as a monsoon of mist and rain on the north-facing slopes, nourishing dense forests of hazel, oak, sweet chestnut and eastern beech at the lower levels, changing to forests of fir, spruce and pine higher up. *Cyclamen coum* and species of snowdrop grow in the leaf litter of the forest floor and in places *Rhododendron luteum, Rh. ponticum* and *Rh.*

smirnovii, this last a tall species with a white indumentum on the undersides of the leaves and white flowers highlighted by lime-green spots. Sunny sites in wood-fringed alpine meadows suit species of golden lilies: *L. ciliatum, L. kesselringianum, L. monadelphum* var. *armenum*, and *L. carniolicum* var. *ponticum*. The first three of these have trumpet shaped flowers with graceful reflexed petal tips with *L. ciliatum* noted by its foetid smell. *L. carniolicum* var. *ponticum* has a characteristic Turk's cap shape and chocolate coloured centre. Nearing the tree line the more open forest revealed another ericaceous plant growing in broad sheets of creeping stems on the steep hillside in company with mosses and ferns, namely *Epigaea gaultherioides* but sadly the epigaea flowers were over. Above the treeline the slopes of the valleys draining to the Black Sea have a dense cover of waist high *Rhododendron caucasicum* with its sweet-scented, white flowers spotted with crimson. Mount Kackar's stony slopes and screes from 2,800m upwards display the distinctive short *Fritillaria latifolia* var. *nobilis* glowing a translucent crimson when its tubby squarish bells are seen against the light.

A multiplicity of peoples with different languages, customs and headgear live in the valleys, the Hemcin, the Laz, Armenians and Georgians. As spring advances and the snow retreats the people leave the lower villages taking their flocks and herds, some on foot but many now in decorated lorries chugging up the tortuous mountain roads while passengers wave gaily to those they pass. They are on their way to the yaylas – high summer pastures, kept green and lush by the abundant summer rain and melting snow.

The high mountains rob the passing air of its last moisture, which falls as snow to form glaciers in the north-facing corries. None remains for the southern side, which by contrast has sun-baked slopes with scattered pines and the typical flora of the high Anatolian plateau, plants which can withstand hot summer droughts as bulbs or spiny cushions such as acantholimons.

THE GERANIUMS

The Kackar mountains now have roads over several passes. On the tour we saw *Geranium cinereum* on three of these passes and on the north and south slopes of Mount Kackar and were able to compare the two varieties. The first, *G.c.* ssp. *subcaulescens* var. *ponticum* (Fig.72 p.291) (Davis and Roberts), grew on the Zigana, the Ovit Dag and the Soganli passes shrouded in wet mist each summer afternoon. These vivid flowered plants grew in heavily grazed turf with their flower stems creeping among the grasses, potentillas, thymes and other alpines. This variety had dark green orbiculate

leaves, sparsely hairy, 18-25mm diameter. Each leaf was divided into five to seven segments, each of which had three to six pointed lobes. The 16-30mm diameter, deep purplish red flowers had darker veined petals with black bases and black stigmas and stamens.

The second, very attractive variety, *G.c.* ssp. *subcaulescens* var. *lazicum* (Davis and Roberts) grew on the north and south slopes of Mount Kackar from 2,500m to 3,000m on dry gravel slopes and dry grassland with *Androsace villosa, Gentiana verna* ssp. *pontica*, arenarias and cerastiums. Where the grazing was light the plants formed clumps. The big difference from the first variety was the flower colour, which was more variable, but all plants had white centres to the paired flowers. The obtusely lobed leaves were a paler green with short adpressed hairs, giving the undersides a silver sheen. The sepals were obtuse, tipped by a sharp point. The ground colours of the flowers varied, from very pale pink to a darker purplish pink. The size of the white centres ranged from 5mm diameter to almost half the flower diameter. The emarginate petals of most plants were only lightly veined except for two plants, which had the smallest white centres and were heavily veined in a darker shade. The stigmas were pale, the anthers yellow when shedding pollen then darkening slightly as they aged. The picture was confused by finding high on the north slopes of Mount Kackar a very few pale centred plants, which had dark stigmas and stamens.

In cultivation *Geranium cinereum* ssp. *cinereum, Geranium cinereum* ssp. *subcaulescens* and their hybrids grow easily in well-drained soil in sun. They flower over a long period from early to late summer giving a succession of bright flowers held above the foliage. Propagation is easy by splitting clumps, by early summer cuttings of stems taken an inch or two below ground level and by root cuttings taken in autumn.

At the Perth Show in April 1994 the Forrest Medal was won by Jane Machin with a very well grown and presented pan of the Himalayan *Saxifraga stolitzkae.*

CITES AND CONSERVATION . . . THE NEED TO KNOW

A review of the current law and regulations any travelling member needs to know, for peace of mind, these days

by F E B FERNS

THE CUSTOMS OF THE COUNTRY

ONCE upon a time, if I remember correctly, if one wished to collect and import plants or plant material one had to apply to the Ministry of Agriculture and Fisheries[1] for a Plant Import Licence. This materialised within a few days of writing a letter of request; an impressive document printed on high grade azure wove paper, foolscap size (A4 had not then been invented) with the embossed seal of the Ministry at the bottom; all in all, a truly impressive document for which no charge was made.

On disembarking at the port of entry (aircraft had only recently been designed to carry passengers) one wandered along a dreary quay with seagulls screaming and wheeling in a grey sky overhead, found and collected one's luggage from the warehouse floor and, depending on the weight of cigarettes, spirit and so called contraband, humped it to a bench where a row of grey Customs men were handing out lists of dutiable goods. The best tactic was to scan the list, pause hesitantly before speaking and look the officer

[1] See end of article about the situation in Scotland and Northern Ireland (Ed.)

straight in the eye. He looked expectant and eager, so, forgetting about the contraband, one said "Oh, I've got this," slowly unfolding the foolscap and waiting, while he read the document, for the hunted desperate look to appear on his face. It was all a matter of timing; in nine cases out of ten he had never seen the thing before. So, being of a helpful disposition, the plants were shown, confirmation given that there were no carnations, Christmas trees or potatoes, he was shown where to sign and send the licence, he then merrily chalked the heavy cases and waved you through without further ado. Away you went with plants, roots and soil in their little box; remembering not to let the bottles of brandy and liqueur clank as you lifted the heavy case and continued on your way to the train. It was all so simple and easy.

After the war, in the early fifties, the car ferry was becoming the more popular form of transport. The car was hoisted sky high in a net to be lowered into or lifted out of the hold. The drill at Customs remained the same, except that they were more interested in your giving the correct answers to questions about how much money you were carrying. Their search of the car boots of the less informed sometimes disclosed quite a collection of brushwood and fir cones. Alpine plants were not thought to carry any pernicious plant diseases and the formal licence was replaced by a declaration form obtained and made at the port of entry. The Ministry could then follow it up if they saw fit.

Most amateur collectors continued to cosset their 'in vitro' material on hotel window ledges and verandahs during their travels, before consigning them to the sponge bag, to make the Channel crossing and the welcoming arms of H.M. Customs. Collecting plants or parts of plants had not then acquired any taboos.

THE PROBLEMS BEGIN

Then came the quantum leap . . . air travel. Aircraft enabled one to see more distant horizons than Daedalus ever dreamed about. Air travel, together with world-wide increases in the human population and prodigal exploitation of resources, began to threaten the very existence of too many animal and plant populations in the wild. The issue of conservation could no longer be ignored by the more responsible sovereign states. Plant import licensing therefore became bedevilled by conservation control problems. No one really knew what to do; some said one thing, others murmured about the need for Phyto-sanitary Certificates and clean bills of health, and in some cases an Export Licence from the country of origin seemed to be necessary. On ringing London one day and

pointing out that I did not know what I was going to collect until I did so, so how was I going to complete their form, I was asked, in effect . . . "How many hundreds of each species are you proposing to bring in?" The reply, "Well only one or two to help identify them and for scaling, if I draw them," left my interrogator silent for a moment. We settled for five or less of any of the species or genera I listed, rather unspecifically. I got the certificate I needed. In the course of subsequent correspondence I discovered that there were now two Ministries involved; the Ministry of Agriculture Fisheries and Food (MAFF) responsible for hygiene regulations to prevent the import of dangerous pathogens and the Department of the Environment (DOE) responsible for the list of protected plants and wild animals at risk from excessive collecting and problems arising from the action of commerce or industry. All very worthy needs to be addressed for very many interwoven reasons, some good, some bad and others downright laughable. But, problems of import and export of plants and animals world-wide are not a laughing matter.

"How many hundreds of each species are you proposing to bring in?"

THE PRESENT POSITION

This note has been written to help the travelling amateur to understand the ethos and reasons behind the existing law and rules. Admittedly, it is over simplified. The professional botanist and commercial entrepreneur will know where to ask, where to look and know what to do, by trawling through their computer data. I must say that even as a lawyer, I have found it quite hard to distil this note from some very indigestible and boring material. But, everyone who might be affected, needs to know or at least to have an inkling of the thinking and the enforcement procedures behind the written law contained in the statutes, regulations and directives of EC community law, if their travels or freelance gardening exploits are not to dissolve in tears. Ignorance of the basic law will be no excuse.

A brush with the forces of law and order involved, either here or overseas can mar a holiday for some; or worse, a verbal harangue by the self-appointed vigilante who so often over simplifies another quite involved problem; namely the interplay of freedom of the individual and reasonable control for the common good. So much for the history and outline; now for a little detail.

MINISTRY OF AGRICULTURE FISHERIES AND FOOD (MAFF)

Currently, animals (fauna), plants (flora) and the countryside (ecology) are subject to law administered by the two executive ministries responsible. MAFF copes with, among other things, hygiene regulations designed to control the import of dangerous pathogens: for example Colorado Beetle, though this now, like smallpox, seems a thing of the past, both still exist, as do Potato Wart Disease and Chrysanthemum White Rust. I had not realised until I began to write this article that as long ago as the year 1877 an Act was passed to provide for the examination of agricultural produce at ports with powers to prohibit imports. Peter Q. Rose writing in the R.H.S. journal in 1983 says . . . "This prompt reaction" . . . Concerning the discovery of the beetle in ships' cargoes in Britain and Europe . . . "May be accounted for by the fact that only 30 years previously potato blight . . . had ruined the Irish potato crop, caused 2½ million deaths from starvation and the massive exodus from Ireland to the USA . . . In May of 1914 representatives of the countries of the world gathered in Rome in an attempt to form a common policy. Later that year a shot was fired in Sarajevo . . . After the war various conferences were held and finally an international system was ratified." So it may be realised that MAFF have long experience in administering the law.

This ministry issues a helpful little pamphlet which makes clear what the amateur may do and should not, nay, must not do. That pamphlet expressly caters for the traveller. The latest edition may be obtained from the local office address to be found in the 'Yellow Pages' or Whitaker's Almanac; after all their wish is to protect from infection, not to create a new class of lawbreaker.

DEPARTMENT OF THE ENVIRONMENT (DOE)

The CITES regulations administered by the DOE are a different kettle of fish. The DOE is not to blame for that. Everyone concerned is trying to make the best of a bad job created, it is believed unwittingly, by the Convention held at Washington in 1973, no doubt with the best intentions. The regulations carry a basic flaw. They attempt to cover both animals and plants in the same single set of rules; whilst a biologist can probably clone greenfly, let him try taking cuttings of an elephant! A local Police Constable or a Customs Officer would probably be the first line of enforcement in the event of a suspected breach. Just imagine trying to explain to a poor bench Customs Officer the difference between a genus and a species, as I had to once when tired after a long journey; or

expect him to differentiate between a sempervivum and a Brussels sprout.

Over twenty years on, to correct this elemental error in understanding that fauna and flora are in essence different would need more conferences than say those necessary to change a left hand road system to a right hand one. Those interested have to live with the flaw and keep on the alert to avoid losing out, since Britain has a tradition for horticulture and exploration which has resulted in the introduction of new species and varieties (cultivars) by breeding programmes as well as chance discovery in the wild; so enriching our gardens and our lives as well as the pockets of the plant breeder.

The intention behind the law is to watch and control trade in endangered species in order to protect specified animals and plants from a very real danger of extinction. It is aimed in the main at trade or dealing in wildlife, dead or alive, which has a profitable market world-wide. Hence the acronym CITES . . . Convention on International Trade in Endangered and vulnerable Species. However, the word 'trade' in the sense employed, embraces those who bring back mementoes of holidays in sponge bags to grow in their gardens or to give to a friend as well as the importer or exporter of tons of bulbs and thousands of plants for a living. So, you and I need to be aware of our status.

'Trade' embraces those who bring back mementoes of holidays in sponge bags

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The Washington Convention has since been adopted by some 123 countries, including the United Kingdom. There is a complicated system of applications and permits which governs trade, meaning not only commerce but *any movement* of specimens (flora, fauna and derivatives) across international frontiers, and a number of schedules, annexes and appendices to be scanned and understood.

The first statute to my knowledge, specifically enacted to protect wild plants was the Conservation of Wild Creatures and Wild Plants Act 1975; a short Act carrying a schedule of 21 'protected plants'. Now the relevant Act is the Wildlife and Countryside Act 1981 with short amending acts in 1985 and 1991, together with European Commission Directives Nos. 3626/82 and 3418/83 which give the CITES provisions legal force and authority throughout the European Community (EC).

There is yet a third cauldron generating law. Since 1982, Standing Committees created by the Berne Convention on Conservation of European Wildlife and Natural Habitats meet to consider amendments to the Berne Convention. The current EC Habitats Directive 92/43 EEC gives legal force to that Convention within the European Union. It does, however, happen that animals and plants outside the EC get inserted into appendices and annexes for example tigers and cacti which do not live in the wild in EC countries. These threads of, so to speak, 'This or That' Convention material are so engineered that they get inserted into the legal and executive structure of member states; not only at EC Directive level, but also at State legislative level and even, as in the case of a country like Switzerland (not an EC member) at local Canton level, when dealing with its own plant species.

I have reached the conclusion that conservation of wildlife and the environment is definitely a growth industry. I am not, however, so clear who can or will pay the piper to give sanction to and police the laws.

Over the years when I

have needed to obtain MAFF authorities, or, licences issued by the DOE, both Ministries have always been helpful. In course of writing this article I have received the same help from both and very adequate and full replies to my queries of the DOE for a proposed visit to Portugal in late spring this year. Not being 'professional' in that context, but enquiring as an innocent abroad, has made no difference. In modern jargon, at present, the feedback is good.

DOE adds an interesting comment . . . "Should you wish to import any of the species listed in the CITES appendices may I advise you that following the establishment of the Single European Market there are no longer any routine customs checks at internal EC borders. It is possible, therefore, for CITES species to move freely within the EC without any CITES documentation."

My mentor goes on to say . . . "However, it is likely that spot checks on specimens will continue to be made either at the borders or within an EC state. Our advice to traders and the public, therefore, is that the movement of CITES species within the EC should be covered by an EC CITES certificate which should be obtained from the Management Authority for the country of export" . . . The letter goes on to give the full address of the Nature Conservancy in Portugal and the telephone number. I think that this time the word 'traders' means entrepreneurs only, i.e. market traders and the general 'public' means You and I.

WHAT CAN I DO?

First, if all you have read makes it sound too involved for you to bring in a bunch of flowers; then don't. Use your camera, but do be careful how you tread and where you put your tripod or throw your haversack.

If for good reasons you wish to collect; then, read and take the latest available advice and act on it. If you see or fear that you are likely to tread on dangerous ground, then only collect seed and if the season is wrong take cuttings; in so doing treat the wild plant as you would your own treasured garden plant.

Lastly if you need to collect, then I do not need to tell you what to do. Write to the Ministries concerned in plenty of time with your specific enquiries and arm yourself as you are advised with the necessary licences, whether from the authorities at home or abroad as you are able and see fit. There may be a fee; but where needs must, it must be paid.

ABSOLUTELY FORBIDDEN

Further, do remember that there are hidden in the shrubbery of

all this legislation a number of absolutely protected wild plants. Collection of these, in most cases or any parts thereof, called 'derivatives' which on my reading of the printed word includes seed, cuttings and flask material and trading in them is wholly taboo at present. This law is backed up by the sanction of dire penalties; ignorance cannot be pleaded as a defence. However, in the event of an inadvertent breach, take heart; in the first place the breach must be discovered, then the offence formulated, charged and proven, and finally the maximum penalty would only be imposed in the face of a blatant breach. Confiscation of the sponge bag at the point of entry, is about the worst that is likely to happen. There is also the thought that enforcement in countries throughout the world may be a little uneven, especially so far as plants are concerned.

Should cyclamen and orchids still appear in show schedules? What happens when a pinch of *Cyclamen balearicum* seed is sent to that friend in the USA?

Should cyclamen and orchids still appear in Show Schedules?

The above is a realistic assessment and in no way intended to detract from the importance of world-wide conservation efforts, and the work needed to produce a simple practical body of law and administration respected at all levels.

SOLUTIONS . . .

When problems have been highlighted, solutions should be offered. I submit just one; it neither costs money nor even the effort of lying in the road, chained to a sandwich board. When buying garden material or plants enquire and check if possible, the source of the material or the provenance of the plant, especially if it is a rare or unique one. If the source of the material is suspect then do not buy or use it. There is probably just as attractive or challenging stone obtainable from nearby quarries operating under properly drawn planning permissions. Likewise specialist growers exist who propagate the rarer species, if necessary under licence. The simplicity of such active inaction, lies in the fact that if the illicit product does not sell, the market will dry up.

As for peat products, if you feel strongly look for some other mix. In any event I shun peat; not for environmental reasons, but because I have found that plants grown in peat rich mixtures

boosted with slow release fertilisers settle in badly and need constant attention especially in a dry summer.

CONSERVATION OF LANDSCAPE

This review, brief as it must be, would not be complete if I did not include one other aspect of conservation; that of conserving the landscape and habitats. After all is said and done, it is the main one. I take for attention one example only, since it affects all rock gardeners.

It is now 14 years since the Wildlife and Countryside Act received the Royal Assent. It had suffered quite a rough passage through Parliament, having been attacked by the conservationists, the landowners, especially farmers, and the economic exploiters of land. The inevitable compromises emerged; the ornithologists did quite well for themselves, the botanical lobby not so well. The geologists, however, erected their own private and novel monument under sec. 34 of the Act which specifically provided protection for and defined limestone pavement as . . . "an area of limestone which lies wholly or partly exposed on the surface of the ground and has been fissured by natural erosion" . . .

The destruction of large areas of limestone pavement . . . is still going on

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Under the EC Habitats Directive 1992, already mentioned above, limestone pavements were listed as a priority habitat, both as a landscape feature and for the flora they support.

The 1981 Act had already provided that protection in Britain 11 years earlier. Some of the best examples south of the border in Cumbria and Yorkshire had been listed as Sites of Special Scientific Interest (SSSIs). It all seemed such a success story. However, reading an article in the Garden, the Journal of the Royal Horticultural Society, May 1994, I learn that even within the areas noted and elsewhere and I quote, the author, Dr Eric Robinson . . . "weathered blocks are still being stripped from the surface of the land and carried off by the lorry load to be used as part of a garden design or 'natural' effect around a development" . . .

Whilst it may not be so great a problem in Scotland, members must be worried about the use of naturally weathered limestone rock or for that matter any natural surface rock for the building of rock gardens, even as centrepieces to roundabouts. This has resulted in the destruction of large areas of limestone pavement in

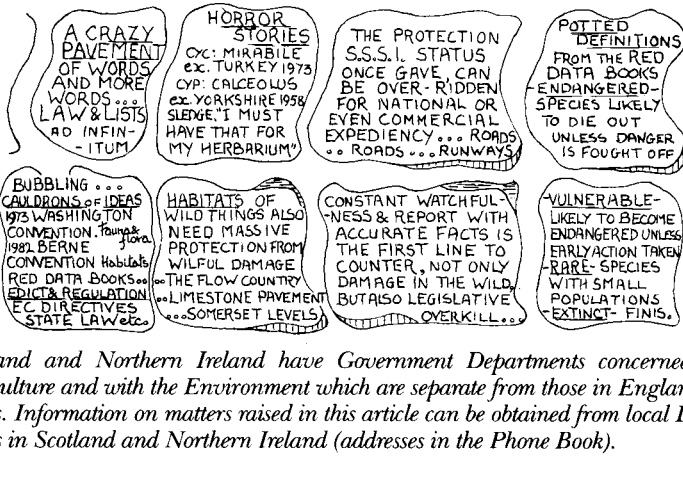
the past, and apparently it is still going on. A limestone rock garden received a major award at Chelsea last year; that made me frown, even though I knew if I asked that I would be told that it was re-used stone. The quantity of re-used stone is finite and such an award inevitably condones the use of wild weathered limestone. I am not saying 'Ban it' . . . I have indicated that too many taboos cause contempt for law, resulting in breaches leading to anarchy in the long run; but there are other rocks and techniques just as challenging to the imaginative garden designer.

The maximum fine on summary conviction for anyone who is proved to have removed or disturbed limestone without reasonable excuse on or in any land designated by a limestone pavement order was one thousand pounds; since I believe increased by about five times that sum.

So now you know; but like all these matters it is not quite so simple as the print appears.

It should always be remembered that the grass you walk upon and the mountains you admire can well belong to someone else, and so, that nicely coloured pebble for that trough, or the bucket of leaf-mould from the beechwood is not just there for the taking, unless you own the beechwood. Be circumspect at all times; the farmer, whom you meet with the barrowload of weathered stone, may be the owner of the land on which you are a mere trespasser; or that other gentleman with the bunch of Lady's Slipper orchid could even be a scientist with a special licence, unless like Rip Van Winkle he had just come down from the mountain, having been asleep for a hundred years.

Oh! The incongruity of it all.



Scotland and Northern Ireland have Government Departments concerned with Agriculture and with the Environment which are separate from those in England and Wales. Information on matters raised in this article can be obtained from local Departments in Scotland and Northern Ireland (addresses in the Phone Book).

GETTING ORGANISED WITH SEED STORAGE

A practical guide to fridge and freezer storage of seeds

by EVELYN STEVENS

EVERYONE knows that growing from seed is one of the most important ways of propagating plants, and that if we sow a packet of seed there is a good chance that young seedlings will appear in due course – but also that they may not. If the latter occurs, why, or what could we have done to have enabled them to germinate?

Fully developed healthy seeds should be capable of germinating in the right conditions. After all, that is their role in life. Ideally perhaps, seeds should be sown as soon as they have ripened, and so mimic what would happen in nature. But there are often good reasons why we as gardeners delay sowing until a later time. One reason is that they may not be available until much after harvest time if we buy them from seedsmen, or obtain them from the Seed Exchanges. Or we may choose not to risk seeds germinating in late summer with the possibility of the seedlings not surviving the rigours of winter.

SEED VIABILITY

Seeds may *appear* inert, but they are in reality living organisms, so it is important that they are stored carefully in conditions which will maintain their viability. Another aspect of seed storage is that many seeds become dormant after ripening. Seed ecology, considering such questions as dormancy and conditions required to induce germination, are discussed by Alastair McKelvie in ***The Rock Garden*** (Vol XXIV, 1994, p.58) and it is not my intention to discuss these complex matters further here. Rather I am going to describe a practical procedure which I have adopted for storing seeds which are not going to be sown immediately on harvesting.

Most seeds maintain viability best if first their water content is greatly reduced (exceptions include fleshy seeds like those of citrus fruits), and then secondly if they are stored at low temperatures (many readers, I guess, will wonder *how* low – cool room, fridge or freezer?).

One of the stages in the natural seed ripening process is a massive reduction in water content (compare the watery seeds of a soft young ear of wheat with the dry, hard seeds of a ripened ear). This low water content can be further reduced by placing the seeds in a closed container in the presence of silica gel. The seeds can then be transferred to a freezer, with the temperature thus reduced to well below freezing point. The reason for extra drying of seeds in the presence of silica gel is that if the seeds have too high a water content when they are frozen, there is a possibility that ice crystals will form in the cells of the embryonic plants contained within the seeds, the cells will burst and this will result in embryo death. One of the reasons for storing at very low temperatures is that living processes such as respiration, become slower the lower the temperature and so extend the period of viability of seeds. Another reason may be that the rate of occurrence of harmful genetic mutations during storage is reduced, although this is only likely to be a problem where there is prolonged storage.

The reasoning outlined above is the basis for the following procedure for seed storage. It is hoped that this method may be helpful for members wishing to collect and sow their own seed, and also for those who collect for the Seed Exchanges, when seed will be distributed up to a year after harvesting.

Materials

i). 2 plastic boxes (2 litre volume is convenient) with close-fitting lids named 'Fridge Box' and 'Freezer Box'.

ii). 500g Sorbsil (Silica gel), together with a piece of moisture detecting cobalt paper (obtainable in the UK from Boots the Chemist, price £5.10).

Method

i). Prepare the silica gel, if necessary, by heating it in an oven at 100°C in a shallow tray for 4 hours to ensure that it is completely dry (when tested with cobalt paper the latter will be bright blue).

ii). Place 250g of silica gel in each plastic box.

iii). Harvest and clean seeds and keep them in a cool room, if need be for temporary storage.

iv). As soon as possible, transfer cleaned seeds to paper packets and place these in the 'Fridge Box' which is kept in a refrigerator. Store here for 2-3 weeks at 5°C. During this period water will be gradually lost from the seeds, while at the same time a low temperature is maintained.

iii). Transfer the seed packets to the 'Freezer Box' and store here

until needed. An additional reason for using freezer storage is that it is often easier to find space in the domestic freezer than in the fridge.

iv). During the time the seeds are being stored, keep a regular check on the water content of the two boxes. When the cobalt paper becomes paler blue to mauve to pink, the water content of the box has risen and the silica gel needs to be restored as in i).

I find it useful to have a second 500g packet of fully dried silica gel, so that when the silica gel in either of the boxes in the refrigerator or freezer need restoring, I have some dry material on hand to exchange it with.

The procedure I have described is in essence that adopted at the Royal Botanic Garden Edinburgh for their Seed Bank, and I am grateful to Ron McBeath for information on this. Using this procedure, I understand that on occasion it has been found that seeds (e.g. even substantial seeds like *Paeonia*) may even germinate more readily after 10 years of freezer storage, than when recently harvested.

Ron McBeath tells me, however, that for 'run of the mill' seeds to be sown for the following year, the usual procedure adopted at the RBGE is merely to store the seeds dry in a cool room. Fridge and freezer storage and the use of silica gel is usually reserved for longer term storage. However, with time, and with fridge and freezer space available to me, in order to give seeds optimal storage conditions, I feel that it is worthwhile adopting the procedure I have outlined, as routine. Thus I have abandoned my heretofore rather haphazard seed storage procedures, which arose mainly because I was not too sure about the safety or efficacy of various steps, for example, whether freezer stoage was safe and/or desirable.

Now that I have been reassured, and now that I have got the whole thing organised, I also intend to carry out a few trials, using various storage regimes for a number of species. These will include sowing fresh seed, harvested immediately after ripening and with no storage, as this is frequently stated as being necessary for certain species, for example, *Dicentra peregrina, Clematis marmoraria* and species of *Helleborus* and *Ranunculus*. I hope to be able to report on my findings in due course.

DISCUSSION WEEKEND

1 - 3 September 1995

The Discussion Weekend will be held in the Kelvin Conference Centre, West of Scotland Science Park, Maryhill Road, Glasgow G20 0TH

Friday 1 September

Evening Lecture - Dr Michael Almond - on bulbs
followed by Dwarf Bulb Group meeting

Saturday 2 September

10 am Botanic Garden visit
12 noon Show opens
2.30 pm William Buchanan Memorial Lecture
Jim Jermyn - Cultivation
4.15 pm Fred Hunt - Plant Hunting in S E Tibet
7.30 pm Conference Dinner
After-dinner speaker - Alastair McKelvie

Sunday 3 September

9.45 am E. Charles Nelson
The shared flora of the Burren & Los Picos de Europa
11.30 am Henry & Margaret Taylor
Peat, grit and manure
2.30 pm Harold Esslemont Lecture
Tony Schilling - In the footsteps of Joseph Hooker

Costs

RESIDENT:	Friday dinner - Sunday afternoon tea including Conference Dinner	£112
	Saturday lunch - Sunday afternoon tea .	£83
	Sunday dinner - Monday breakfast	£29
NON-RESIDENT:	Saturday *or* Sunday day charge ..... (morning coffee, lunch, afternoon tea)	£22
	Saturday evening Conference Dinner ..	£18

Please add a late booking fee of £5 if making payment after 31 May 1995. The number of delegates is limited to 150.

Bookings should be made on the form which can be found with the January issue of ***The Rock Garden***. The booking, with the appropriate remittance made payable to the Scottish Rock Garden Club, should be sent to: **Mrs Anne Chambers, Suilven, Drumore Road, Killearn, Glasgow G63 9NX.**

Accommodation for partners *not* attending the conference is available. Anyone requiring further information about the weekend should contact Anne at the above address, enclosing an s.a.e.

ANNUAL GENERAL MEETING

The Annual General Meeting
will be held at the
Battleby Conference Centre
Redgorton, Perth
on Saturday 4 November 1995
at 2.00 pm

NOMINATIONS are required for the President, the Executive Office-Bearers and for four Ordinary Members of Council to serve for three years. All Executive Office-Bearers retire annually but are eligible for re-election.

Nominations in writing and seconded by another club member or members should be lodged with the Secretary not later than 15 May 1995. The nominator must ascertain that the nominee is willing to serve if elected.

The following having served for three years as Ordinary Members are not eligible for re-election to Council for one year: Mr I. J. Christie, Mr D. P. Howat, Mrs J. Machin and Mr J. Wotherspoon.

Secretary
Dr Jan Boyd
Greystonelea
Gartocharn
Alexandria
Dunbartonshire G84 8SD

1996
WESTERN WINTER STUDY WEEKEND
Hosted by
Vancouver Island Rock & Alpine Garden Society

Victoria, B.C., Canada
For Information Telephone
Claire Hughes, Registrar at:
604-388- 6594

Seed Exchange

LAST YEAR we had over 800 donors for the first time. We are very pleased because this means that our Seed Exchange is continuing to expand and satisfy the needs of our members. The down side is that the work load continues to grow and I am sure Donors and future Donors are willing to ease this. Most are very good at following the instructions in the Year Book but some either have not found them or not bothered to read them. They are on page 7. I realise they may be inadequate due to lack of space so I will expand them.

CLEAN SEED

Clean seed is very important but often difficult to obtain. Large seed is easy, small seed much less so. I have no quick answers. Seed from berries must be separated from the pulp because by the time we get them they have become a fermented mush or are as hard as stone – not much use to the recipient. Solution – Mash the berries gently – mix with water – seed should fall to the bottom – pulp will float – separate and dry. Particles of stems leaves and other rubbish can be removed by shaking, seed being heavier will stay at the bottom. Gentle blowing will remove lighter particles. A pen top rubbed on a synthetic fabric will generate static which will lift light detritus and non-viable seed when passed over seeds like Lilium and Fritillaria. Please only donate seed collected in the current year.

PACKETS AND NAMES

Packets are another area where problems arise. Plant name must be printed on top left hand corner of the packet and donor's name (not just initials) on lower portion or back of packet which must be made of paper. Please check that you are using the correct name. Do not accept that what you received from a previous seed exchange a few years ago as correctly named. Names of seed not previously listed could be because we use a different name (synonym) or it is new to our list; if the latter, information about the plant is helpful either on the packet or a separate note. A list of seed sent is not essential but is useful especially if we cannot read your writing on the packet. A list of Wild Collected Seed with a note of its location is essential so that we can process it for that section of our list. Make sure the seed cannot escape out of the packets, it is very sad if seed carefully collected is wasted. Finally before sending your seed please bundle the packets alphabetically.

SEND EARLY

I know that my next request may not be possible from everyone. Postal costs from overseas may make it too expensive but sending me your seed as early as possible in two or more lots will spread the load as two-thirds of the donations arrive in the last two weeks – often 50 postal packets on one day. I like to clear the decks each day so this means very late nights and early mornings. I will only acknowledge the first donation which brings me to the next item. A name and address label ready to send your card saves me time and makes sure it is correct – it does not need to be sticky – glue is usually available. A second label from Home Donors ensures that the list is also correctly addressed (All Overseas Members get a list and for this mailing I get address labels from the Club's computer list).

SEED LISTS

We are now sending the list out before the end of November. If you are a Home Donor, Home Member who is not a Donor but has sent for a list (see Page 7 in the Year Book) or an Overseas Member and your list has not arrived within a few days of a friend getting their list or by the middle of December please contact me quickly. This year I will not be able to send out lists after the end of December as I will be away from home.

Send your order to Mr Wilson as soon as possible especially if you are a donor he may not be able to make up your order fully if you delay. Please do not send subscription to Mr Wilson. Overseas Members who want Surplus Seed must pay for it in either Sterling or US Dollars, small Sterling notes are not easy to obtain but US Dollars are, please do not send any other currency. Coupon-Response International are expensive to buy and we only get a fraction of the cost at this end (less than half).

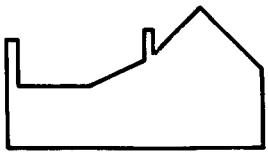
SURPLUS SEED

If you want Surplus Seed please send both orders together – make sure you read the form and fill it in correctly – information for surplus must be on the correct form – they are separated when they arrive and it is not easy to bring them together again.

We would like to take this opportunity to thank Members for their letters and greeting cards which bring a smile to faces of the workers during the long winter days.

A big thank you to Marisa and John Main and the Edinburgh Members who for the last six years have made up many thousands of packets. We welcome Margaret and Henry Taylor and the Angus Group who have taken on this task.

JEAN WYLLIE



WHITE COTTAGE ALPINES

Specialist growers of alpine and rockery plants

Eastgate, Rudston, East Yorkshire, YO25 0UX
Tel: 01262 420668

Props: N J and S E Cummins

We are a small nursery specializing in alpine/rockery plants, aiming to offer good forms of old favourites and some of the new and/or unusual species now becoming available. Don't take our word for it, see for yourself by sending 2 x 1st class stamps for our descriptive catalogue. **Mail order service available by Parcel Force or Carrier.**

TOWN FARM NURSERY

During 1995 visit our nursery and garden where we grow rare and unusual lime tolerant alpines, including many North American species.

Our descriptive mail order catalogue available for 3 x 25p stamps includes many beautiful alpines for alpine house, trough and scree.

We are open Friday to Monday 10 am to 6 pm, March to October, or by previous arrangement mid-week during the summer.

TOWN FARM NURSERY, WHITTON VILLAGE, STOCKTON ON TEES, TS21 1LQ Tel: Sedgefield (01740) 631079

THE ROCK GARDEN CLUB OF PRAGUE, CZECHOSLOVAKIA

After forty years behind the Iron Curtain we are now able to offer membership to our friends from foreign countries. Our club has more than 1200 local members many with professional contacts with Societies and botanic gardens abroad.

Our activities concentrate on the following:
(1) Seed Exchange (the seed list contains more than 1700 items); (2) Bulletin SKALNIČKY (4 issues per year); (3) shows; (4) monthly lectures; (5) garden visits and holidays; (6) membership directory; (7) library and slide collection. Membership US $15 DM25

Enquiries and subscriptions to Mrs Eva Hájková Mimŏnska 12/639, 190 00 Prague 9 Czechoslovakia. Cheques made payable to Komerčni banka - Prague Nonet.

Tough Alpine Nursery

Westhaybogs, Tough, Alford, Aberdeenshire, Scotland AB33 8DU Telephone 019755 62783

We offer the alpine gardener a wide range of plants for all uses and situations. Our nursery location at 900ft in North East Scotland, ensures in-character plants of undoubted quality and hardiness. We offer a UK and EU mail order service from October to March and publish a seed list each November. To receive a copy of our descriptive catalogue and reserve a seed-list, please send 3 x 2nd class stamps to the above address.

BOOK REVIEWS

Collins Photo Guide
Orchids of Britain & Europe
by Pierre Delforge
Published by Harper Collins
480 pages 812 colour photographs
Price £16.99

This A5 size book is neat enough to slip in to a rucksack for outings and will be extremely useful for identifying orchids in the field. But it also contains a wealth of detail which will repay leisurely study at home.

It covers every species and variety of orchid in Britain and Europe and also includes North Africa, Israel, Lebanon, Syria and Asian Turkey. In all, 375 species and their different varieties are described in detail. There are splendid fairly simple keys for identifying genera as well as species while every species has a colour photograph.

The wealth of information in the book is quite botanical at times but there is a good glossary for unfamiliar terms. An excellent feature is the 36 page Introductory section which describes the structure of orchids, in particular the flower and pollination mechanisms.

This is a wonderful book which can be thoroughly recommended for all who want to identify and find out more about orchids. AM

The RHS Plant Finder 1995/96 Edition
Edited by Tony Lord
Published by the Royal Horticultural Society
900 pages
Price £12.99

The 1995/96 Edition of the Plant Finder lists 65,000 plants and where you can buy them. As such it is an essential handbook for keen gardeners. In addition it is most valuable as a source of correct names for garden plants, an area which is often a minefield for gardeners. The Introductory Section on Nomenclature should be required reading for gardeners as it explains in simple language the rules behind names and name changes, defending the status quo for long-established names. The authority of the RHS is now fully behind this indispensible book. BT

Back Issues

Please note that queries about the NEW JOURNAL should be addressed to the Editor.

33 back numbers of the Journal are immediately available from stock. The Waiting List for the original Journals 1-8 is closed but reprints of these numbers are available.

Discount Offer:

15% discount on orders of 15 Journals or over.

There is NO discount on Journals bought or ordered from the Waiting List, nor on reprints 1–8.

CURRENT AVAILABILITY AND PRICES (PER COPY) TO MEMBERS

Journal	*Pence*	*US Dollars*
1-8 (Waiting List closed)	300	$5.10
1-8 (Reprint–no discount)	250 (post paid)	$4.25
9-38, 40-51, 53, 54, 57, 59, 65, 74	150 (waiting list only)	$2.55
39, 52, 55, 58, 60-64, 66	50	$0.85
67-73, 75	100	$1.70
76, 82	300 (waiting list only)	$5.10
87-90	225	$3.85
91-93	275	$4.70
94-96	325	$5.55
Index 1-19	45 (post paid)	$0.77
Cumulative Index 20-69	240 (post paid)	$4.10
Index & Cumulative Index 20-69	265 (post paid)	$4.50
Cumulative Index 70-93	150 (post paid)	$2.55

Postal contribution 35p per Journal up to a maximum of £8.40 for UK members only. For Overseas members the charges are 40p (70c) per Journal to a maximum of £9.60 ($16.30).

PAYMENT

Payment may be by Sterling or US $ remittances – Cheques, Money Orders, Bank Drafts, etc., made payable to SRGC Publications Account or through Giro No. 10 787 9808. Please note that this Giro Account number is **NOT** for subscriptions.

Early numbers of the Journal are now urgently required for the ever-growing Waiting List and will be gratefully received these as gifts to the Club, or bought at half the above prices. Postage for either arrangement will be refunded.

BINDERS

Stocks of binders to hold four numbers of the Journal are available at £3.00 each, post paid.

Journals and binders are available from Mr T. G. Sprunt, 17 Claremont Drive, Bridge of Allan, Stirlingshire FK9 4EE, Scotland, UK. Tel: 01786 833607 (evenings only)

Please note that all other books are now available from

Mr B. Hammond, Wakefield Cottage, Thornton, Laurencekirk AB30 1AY, Scotland, UK.

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