The JOURNAL of THE SCOTTISH ROCK GARDEN CLUB

VOLUME XVII Part 1
No. 66

APRIL 1980

Editor R. J. MITCHELL · University Botanic Garden · St. Andrews · KY16 8RT

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Contents

NOTICE

The ANNUAL GENERAL MEETING will be held at the British Medical Association House, 7 Drumsheugh Gardens, Edinburgh, on **Saturday 15th November 1980, at 2.15 p.m.**

Members are notified that nominations are required for President and other Office-bearers, and for three Vice-Presidents and five Ordinary Members to serve on the Council. Nominations, *in writing and seconded by another Club member or members*, must be sent to the Honorary Secretary not later than 31st May 1980, the nominator having ascertained that the nominee is willing to serve if elected.

All Executive Office-bearers retire annually, but are eligible for re-election.

The following, having served for three years as Ordinary Members, retire and are not eligible for re-election as Ordinary Members for one year:—

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Discussion Week-End 1980

NOTRE DAME COLLEGE OF EDUCATION
BEARSDEN
GLASGOW

SATURDAY and SUNDAY, 20th to 21st SEPTEMBER 1980

PROGRAMME

Saturday 20th:

1.00 p.m.	Lunch
2.15 p.m.	Address of Welcome
2.30 p.m.	The W. C. Buchanan Memorial Lecture "Facts and Fancies on Primulas and Their Allies" Ken Hulme
4.00 p.m.	Tea
4.30 p.m.	"The Genus Fritillaria" Brian Mathew
6.30 p.m.	Dinner
7.45 p.m.	"The Cultivation of Ericaceae by Loch Ness' Mike and Polly Stone

Sunday 21st:

8.30 a.m.	Breakfast
10.00 a.m.	The Esslemont Lecture "Europe's Choice Alpines" Henry and Margaret Taylor
11.15 a.m.	Coffee
11.45 a.m.	"Protected Cultivation of Alpines" Ron McBeath
1.00 p.m.	Lunch
2.30 p.m.	"Gardens of the National Trust for Scotland" Eric Robson
4.00 p.m.	Close of Proceedings
4.15 p.m.	Tea and Disperse

Accommodation will be single student type bed-sitters which may be arranged as twin-bedded rooms on request. The College, which is pleasantly situated on the outskirts of Bearsden, is at the junction of A809 and A810. It is easily approached from the Clydeside Expressway, which connects with main routes from North (M73, M8), East

(M8) and South (M74, M8). There is ample car parking space within the grounds. A full and interesting programme has been arranged.

The Autumn Show will be held in conjunction with the Conference. (For details see Show Schedule). A meeting of the R.H.S. Joint Rock Garden Plant Committee will be held at 12 noon on the Saturday of the Show.

Donations of plants, books, pottery, paintings, etc., will be much appreciated for the "Bring and Buy" Stall.

CHARGES, INCLUDING V.A.T. AT 15% AND CONFERENCE FEE:

Full board from Friday dinner till Monday breakfast ..	£39.50
Full board from Friday dinner till Sunday tea ..	34.50
Full board from Saturday lunch till Sunday tea ..	21.00

Day Charges:

Saturday: Lunch, tea, dinner	12.00
Sunday: Coffee, lunch, tea	9.00
Lectures only: per day	5.00

BOTH RESIDENTIAL AND DAY BOOKINGS MUST BE RECEIVED BY 30th AUGUST 1980.

As final numbers have to be confirmed with the College administrative staff some time before the Conference, it will not be possible to accept late bookings.

Applications for bookings, together with the appropriate remittance (payable to E. M. Bezzant) should be sent to the Registration Secretary, Mrs. E. M. Bezzant, 24 North Grange Road, Bearsden, Glasgow, G61 3AF.

In the event of a change in V.A.T. rates, charges may have to be adjusted.

Centaurea achtarovii

Dr. Karoslav Kazbal has asked me to print the following statement regarding his illustration in the last journal:—

"The drawing of *Centaurea achtarovii* in Journal No. 65 was reprinted from a private letter and published without the consent of the author, who, on the contrary, supplied the Journal with quality colour slides of the plant".

I apologise for this lack of foresight.

Editor.

Invitation to all Alpine Enthusiasts

You are invited to participate in the
5th International Rock Garden Plant Conference

ALPINES '81
to be held on the Campus of

NOTTINGHAM UNIVERSITY
Nottingham England UK

MONDAY 13 APRIL 1981
(Registration begins 2.00 p.m. Sunday 12 April 1981)
to
THURSDAY 16 APRIL 1981

Organised jointly by the
Alpine Garden Society and Scottish Rock Garden Club)

Mrs JILL SLEIGH
Secretary Alpines '81
Royal Botanic Garden
Edinburgh EH3 5LR
Scotland UK

Application Form and
Show Schedules inserted
with this publication

DO NOT DELAY—REPLY TODAY!

Five members of each of the sponsoring organisations were nominated in 1978 to form the ALPINES '81 COMMITTEE:

Mr Alfred Evans	*Chairman*
Mr J. A. Colmer	*Vice-Chairman*
Mrs Jill Sleigh	*Secretary*
Mr F. F. H. Charlton	*Treasurer*

Mrs K. N. Dryden, Dr J. G. Elliott Mrs E. Ivey, Mr J. H. A. Milne, Dr D. M. Stead and Mr E. M. Upward.

A stimulating programme of lectures, symposia and Plant Show has

been arranged for this International gathering of Rock Plant enthusiasts.

Delegates will be accommodated in the University Halls of Residence within a short walking distance of the Sports Centre, where the Lectures and Plant Show will be held. Trade Stands, Garden Exhibits and a Plant Sales area will be housed in an adjacent marquee.

Come to Nottingham and enjoy a relaxing journey round the world to view the exciting flora of Alaska, Canada, America, the Himalaya, Japan, Eastern Europe and many other countries; listen to discussions on propagation, conservation, miniature Narcissus, New World Fritillarias, plants from Australia, New Zealand and Tasmania; learn more about the plant family Ericaceae, Hellebores, Dwarf American Woodland species, and South American Alpines; listen to tales about Plant Collectors Through the Ages, and of Plants Established from Recent Expeditions—a wealth of beauty and interest brought to us through the introduction of plants from the world of alpines.

There is no need to exert oneself climbing mountains to see much of the flora illustrated and discussed throughout the programme—just stroll into the adjoining hall and admire the specimens to be seen on the show benches.

The Show Schedule caters for many different classes of Alpines. Please give this Show your generous support; a display worthy of an international event cannot be produced without help from exhibitors. NOW is the time to start nursing your plants so that they will be ready to sit proudly on the bench for all to discuss and admire in 1981.

Unfortunately places are limited (a maximum figure has had to be set) and the Organising Committee is convinced that there will be a large demand. The efficient organisation of a Conference of this sort can only be achieved with the co-operation of the delegates; it is therefore stressed that **EARLY APPLICATION** is essential. The University authorities require notification of final numbers attending the Conference by OCTOBER 1980, hence the urgency. Avoid disappointment and **BOOK NOW.**

The fellowship engendered by a gathering of those with a common interest is an important and desirable aspect of any Conference. At Nottingham new friends will be made, old acquaintances renewed, and the bond of International fellowship between our Clubs and Societies strengthened.

JILL SLEIGH
Secretary Alpines '81

Fig. 1—*Androsace lanuginosa* See page 12 Photo—A. Evans

Fig. 2—*Conandron ramondioides* See page 14 Photo—Royton Heath

Plants for Screes and Troughs

by ALF EVANS

The W. C. Buchanan Memorial Lecture given in Edinburgh 1979

THE GROWING of rock garden plants in anything but a rock garden is not unusual; in fact to use the jargon of the motor car salesman, rocks and outcrops are almost optional extras. Certainly many Forrest Medal plants which have graced a Club Show never saw a rock garden during their time in cultivation. However, a well designed and tastefully planted rock garden is an asset to any garden, a statement with which I hope all who read this will agree.

Nevertheless, having made that point, I think we must all admit that such a rock garden has its limitations. That is to say that although, aesthetically and practically, the apparent ideal home for rock garden plants exists, many of the species and forms which are found interesting and challenging by the enthusiast require just a little more attention that the conditions present in the general rock garden layout provide. I say this not because I think the rock garden environment can be improved to cater for their special needs, but more because I recognise than there are many plants which require very special care if they are to exist for any length of time in our gardens. Additionally, and in an attempt to place plants in a more realistic perspective, although on close inspection each miniature species could be termed a jewel when in flower, a great many of them could hardly be termed garden-worthy. They would never appeal to the beginner although the expertise required might move him to ask the grower, "How do you do it"? He is more likely to consider them toys for the connoisseurs. I am glad there are adult rock gardeners who want to play with these toys, for it is the display of their successes which adds so much to the flower shows and epitomises the wide interest held by Club members. Whether the fascination is in cultivation, possession or simply in understanding how plants differ one from the other, there is a unique place for this type of curiosity in our specialist society.

Obviously there are giants in this field and I do not intend embarrassing those I consider experts by listing their names, but I am sure none of us would have trouble in remembering a few. Willie Buchanan was one of them.

I digress from the title and so to return to the heading "Plants for

Screes and Troughs", although one could with more accuracy almost turn the title round to read "Screes and Troughs for Plants". After all, that is the true order of things, for the plants are already in existence. It is we who construct these features and their aesthetic appeal merely draws attention to our interpretation of what we think plants require.

How often have we to accept that although a plant may be described as growing under certain conditions in nature, in practice we must provide a setting which is quite different if we are to grow it successfully in the garden. In nature there are so many factors present which influence plant behaviour and are virtually impossible for us to copy in the open garden, that the alpine house, the cold frame, the long tom pots, the shallow pans, the myriad compost mixtures we hear are used, the raised bed, the trough, the scree and, if I may dare to say it, the peat garden have evolved. All go to make special niches in which we hope our much prized plants will grow.

Screes and troughs are specifically mentioned in the title but because the raised bed serves to provide similar conditions I will include it here. It could well be termed a hybrid between the two and in many ways is complementary to them.

What is it then that the scree, the raised bed and the trough provide? What particular effect have these features on plants and why do we go to all the trouble and effort we do simply to create a home for plants? Without doubt our reasons are plain. They are that we want to cultivate plants, we want to grow those kinds which will not tolerate the general conditions prevailing in a normal garden. Many are high altitude plants where winter may appear to be severe but often these species are protected beneath a sheltering blanket of dry snow. They are not subjected to the fluctuating wet/dry, cold/warm, see-saw weather conditions experienced by us mortals in lowland areas.

Incidentally, many high alpine and warm Mediterranean species are either hairy or meal covered, having a grape-like bloom which helps to regulate transpiration. Some are cliff hangers, i.e. they actually are to be found nestling in the crevices and fissures in sheer rock faces. Others can be found colonising screes and moraines, being the pioneers in an unstable environment.

Others again may be used to a more arid set of conditions like those found in the more barren mountains of Turkey and Iran. There the woolliness, which is frequently a feature of these plants, is unlikely to be transformed into a damp sponge round their necks as could quite easily happen at our latitude and altitude. Building a raised bed,

constructing a scree and arranging soil mixtures in troughs are simply attempts at providing suitable growing conditions. Few plants like a water charged soil and, in general, an open type compost suits most species.

Obviously some plants enjoy a rich fertile loam and will grow luxuriantly in it. Other plants, while starting off at a good pace, often grow either so soft and lush that frosts quickly take their toll or, at times, quickly show signs of distress by displaying yellowing leaves, a condition which frequently suggests over-watering.

Drainage, that is to say rapid drainage, is essential to the well being of many alpines. While they are growing it is not to their advantage to be denied enough moisture but later, as growing slows up and the process of shoot ripening takes over, a drier soil, one not too rich in nitrogen, will be more beneficial. It will encourage the plants to harden up and so become less vulnerable to the rigours of winter.

The three features all have something in common. They provide maximum drainage. This is brought about, in part, through the incorporation of sharp grit into the soil, but, in addition, the placing of coarser material at a lower level ensures that all excess water quickly drains away. It is a relatively simple matter to add water to a compost which is considered to be too dry, but it is infinitely more difficult to extract moisture where the soil mixture is reckoned to be on the wet side. One other point I think worth considering is the relative proportion of soil to root. [This is more critical in the case of troughs for the compost here is very much confined, as in a large pot, and much more liable to go sour through lack of root action, coupled with over-watering]. If the soil remains fresh then it is an ideal medium for healthy roots. Just like potting on, if one over-pots, i.e. places a plant in a pot size which is excessive to its root system, it will often sulk or even fail. By choosing the correct size of pot and consequently supplying just the right amount of compost this plant will flourish.

To counteract the tendency to over richness in raised bed, scree or trough a large amount of space is taken up with drainage material. Additionally, in the trough, where slow-growing plants are destined to be accommodated, iceberg type pieces of stone—more than half of their bulk buried in the compost—will cut down the volume of soil most effectively. Furthermore, as many of the cushion forming plants are at home among firm, immovable rocks over and against which to grow and spread, they are never happy trying to clothe with vegetation small pieces of rock placed insecurely on top of the compost for the

sake of appearance. They are less likely to fail when associated with firmly settled larger stones. This is equally true of plants cultivated in a scree. If one aims at providing the plants with a mixture initially similar to that of John Innes Compost No. 3, and to this adding sharp grit to the extent of twice as much by bulk, then many of our rarer plants may be encouraged to be more permanent. In an area of high rainfall the compost can even be thinner and contain extra grit, while in drier areas the shortage of moisture can be compensated for by irrigation.

As an additional aid to drainage, particularly round the necks of the plants, it is an advantage to spread a dressing of crushed gravel chips approximately ½ an inch deep over the whole surface. This helps to keep the undersides of the cushions and clumps dryish, and so aids in preventing the spread of mildew and other moulds which proliferate in damp-stagnant conditions. Limestone chips may be incorporated where lime tolerant plants are to be grown, while crushed flint or whinstone are to be recommended where the plants are calcifuges. Weeds are relatively less troublesome where a gravel top dressing is applied, and are easily removed, while self-sown seedlings from our rarer plants are more easily seen and less liable to be weeded out than where a high weed population becomes established.

Choosing the most suitable sites for our plants is fun. This involves using knowledge of how a plant grows, something which we gain from books and experience. Certainly no coarse growing, excessively robust plants will be considered, for there is no need to go to this amount of effort for such easily cultivated species. It is the association between plant and plant and rock and plant which makes the difference between the growing of a collection of rare and difficult species and the presentation of a perfectly balanced, closed, alpine plant community.

As an indication of the type of species and forms suitable for scree, raised bed and trough cultivation, a number of transparencies were shown, but in no way must it be assumed that these formed a complete set. Many others would be equally suitable, if not more so, depending upon the site of the garden.

The merits of the following plants were then discussed.

Androsace carnea x *pyrenaica*
Androsace (*Douglasia*) *laevigata*
Androsace lanuginosa (fig. 1)
Arenaria tetraquetra granatensis
Asperula suberosa
Bolax gummifera
Celmisia sessiliflora
Campanula aucheri
Draba dedeana
Draba bryoides

Dianthus alpinus
Dryas octopetala 'Minor'
Edraianthus serpyllifolius
Eritrichium rupestre v. *pectinatum*
Geranium napuligerum (*farreri*)
Helichrysum selago
Lewisia nevadensis
Leucogenes grandiceps
Leucogenes leontopodium
Morisia monanthos
Penstemon newberryi robinsoniana
Petrocallis pyrenaica leucantha
Petrophytum hendersonii
Primula x *steinii forsteri*
Phyteuma comosum
Salix cascadensis
Saxifraga cochlearis 'Minor'
Saxifraga grisebachii
Saxifraga media
Saxifraga 'Mother of Pearl'
Saxifraga paniculata 'Venetia'
Sedum spathulifolium
Sedum oregonum
Sempervivum x *hookeri*
Sempervivum tectorum calcareum 'Mrs Giuseppi'

Japanese Alpines

by SHEILA MAULE

The Clark Memorial Lecture given in Glasgow in 1979

JAPAN has a very rich flora in proportion to its size. It was not greatly affected by the Pleistocene glaciation, a factor which favoured the preservation of the older flora that otherwise might have vanished. The flora of Japan is related to that of China, especially the alpines.

Japan is approximately 850 miles in length, from the sub-tropical belt of the southern areas to the alpine regions of the north, and it has a complex mountain system that covers 70% of the total land mass. The winters on the Japan Sea side contrast sharply in climate with the areas on the Pacific side, with more snow on the mountains and along the coast. The mountain flora appears to be closely related to that of the more northern areas of Kamchatka and Alaska, where the snowfall is heavy and the climate moist. Recent volcanic action may be responsible for the occurrence of alpine flora at lower levels. Rebun Island, adjacent to Hokkaido, has a similar flora to Sakhalin; this is the result of lowered summer temperatures brought on by the cold current that flows southwards through the Mamiya Channel. The close proximity of the sea produces an insular climate over much of the country. The warm Japanese current, or Black Stream, flowing S.W. to N.W. along the Pacific side, influences all S. and S.E. areas, giving them relatively high precipitation and little or no frost.

I would like to mention some of the slides shown. Several interesting

primulas included *P. tosaensis*, a rare plant which grows on wet shady rocks in the mountains of Honshu and southwards; *P. jesoana* v. *pubescens*, a rare high mountain plant from Hokkaido, the most northern part of Japan, and where at Sapporo the winter Olympic Games were held in 1972. Also from the same area are *Pp. modesta* v. *matsumurae*, *hidakana* and *yuparensis*. Several slides of *Shortia* were shown including *S. soldanelloides* and the rare *S. illicifolia* var. *alba*, growing in woods and thickets in the alpine regions of Kyushu, Honshu and northwards. Another rare plant worthy of mention is *Bupleurum triradiatum*, with beautifully marked leaves, from high mountains in Hokkaido and north to E. Siberia. One plant I liked very much was *Viola mandschurica*, and found it was a very common plant growing in fields and grassy places as widespread as Japan, Manchuria, China and Formosa. *Pinguicula vulgaris* was also interesting in that it grows in wet rocky cliffs and rarely in wet mountain slopes. *Conandron ramondioides* (fig. 2), a common plant in Japan and Taiwan, is not hardy here. It is an interesting plant from the *Gesneriaceae* for the frost-free alpine house.

A good selection of Orchidaceae were shown, including the most unlikely looking alpine plant, *Cypripedium macranthum* v. *atsumori*, from alpine slopes in Hokkaido, and a very rare plant in Japan, *Calypso bulbosa* from coniferous woods in Honshu. Several rhodendrons were featured, including the popular *R. yakushimanum*, from the small island at the southern tip of Japan in which many tiny plants grow. Many Japanese alpine plants are circumboreal, and *Diapensia lapponica* and *Cassiope* are obvious choices. Two plants which grow well in British gardens are *Corydalis ambigua*, which in good colour rivals *C. cashmeriana*, and *Glaucidium palmatum* with pale mauve petals of a crystalline texture. A beautiful slide of *Paeonia japonica* was shown, white with a lovely boss of golden stamens; this is a widespread plant, growing in mountains from Honshu to Manchuria and Korea. Last but by no means least there was a sequence of that capricious beauty *Dicentra peregrina*, which to my surprise has a wide distribution, growing in gravelly and sandy slopes, mainly in volcanic areas, in Hokkaido, Honshu, Sakhalin, Kuriles, Kamchatka and Siberia.

This talk was made possible by the generosity of Dr Kochi Onoe, President of the Japan Alpine Rock Garden Society, and Mr Kazuo Mori, Editor of the Society's *Bulletin*, who very kindly sent me a good selection of slides, both of whom I wish to thank; and also Mr Royton Heath who lent me two slides.

Wengen 1979

by NORMAN WOODWARD

THE LAST snows of the 1978-79 winter were still lingering in the highest Pennine hollows, barely an hour from our native Cleveland, when, towards the end of June, we set off for the much more attractive snows of the Bernese Oberland in Switzerland. The previous year at La Grave in the Dauphiné Alps local transport had been virtually non-existent. By contrast, we found Wengen to be surrounded by a veritable cat's cradle of transport. Swiss independence has resulted in at least a dozen local transport systems—water, road, rail and cable (see map, fig. 3). Fortunately, whilst outwardly maintaining their own individuality, there is almost complete interchangeability, so that, for example, one ticket will suffice for a trip from Wengen to the Schilthorn and return, travelling variously on the Wengernalp rack railway, the Stechelberg Postbus, the Schilthorn cablecar, the Mürren tramway and the Grütschalp funicular. Furthermore, the holiday tickets available at half-price for local travel make the use of these facilities by no means unreasonable, as well as permitting journeys to be broken where one might wish.

Interlaken lies between Lakes Thun and Brienz. We visited it on a wet day, but found that even the brightly coloured flower beds of the hotels, Casino and main street offered no real counter-attraction to 'real' flowers. Three kilometres south, at Wilderswil, is the mouth of the Lauterbrunnen valley, narrow, with steep, high, wooded sides as far as Zweilütschinen, five kilometres south-east. Here the valley divides. One branch runs some ten kilometres east to Grindelwald along a similar valley. The other part continues four kilometres south to Lauterbrunnen, with Stechelberg another six kilometres beyond. Lauterbrunnen and Grindelwald are the termini for the Interlaken trains, but these two places are also connected by the Wengernalp rack railway through Kleine Scheidegg, as well as by cablecars through Wengen and Männlichen. The Lauterbrunnen valley is a classical example of glaciation, less than a kilometre wide, a level floor and very steep sides, often sheer cliffs three to four hundred metres high, with correspondingly impressive waterfalls. Opposite Lauterbrunnen on the east side the sheer cliffs give way to steep, wooded, grassy slopes, enabling the Wengernalp Railway to climb at an average gradient of

1 in 5½ to Wengen, and thence continuing via Wengernalp to Kleine Scheidegg.

Wengen lies at a height of around 1300 metres and is scattered round a shallow, half-basin-shaped plateau, rising increasingly eastwards to the very steep, rocky cliffs below Tschuggen and Männlichen, and dropping very sharply westwards into the Lauterbrunnen valley 500 metres below. As well as the railway, one or two footpaths manage to link Wengen and Lauterbrunnen. More surprisingly, large numbers of skiers manage, mostly, to hurtle down these same slopes during the winter ski racing. No road, however, connects the two places. Wengen, and Mürren on the opposite side of the valley, are two of the few well known holidays resorts to be still free of the private motor car. True, there are a few contractors' and public service vehicles, and hotels have electric buggies (milk floats without the milk) for transport to and from the station, and there are even one or two mopeds. Notwithstanding these, one can still stroll carefree down the middle of the attractive main street, or any other street for that matter.

The meadows surrounding Wengen are well served by the usual good, well signposted, Swiss footpaths, and, of course, the Information Bureau in the Main Street can supply good local maps and other information for walkers. To the north are the valley viewpoints of Hunnenfluh and the Leiterhorn, whilst there are similar vantage points to the south at Staubackbankli and Stalden. These local meadows and woods have a wide range of the commoner, but still attractive flowers. In addition to the many vetches, trefoils and composites, there was *Campanula scheuchzeri*, *Campanula rhomboidalis* and a few pale blue *Campanula barbata*, *Phyteuma betonicifolium*, tall and blue, and *Phyteuma spicatum*, tall and white, and the smaller, deeper blue *Phyteuma orbiculare*. The delicate stems and leaves and pinkish-green flower heads of *Astrantia minor* contrasted with the dull green clumps of *Veratrum album*. Martagon lilies, *Lilium martagon*, were to be seen along many inaccessible stretches of railway line, but were remarkably absent from the verges of local paths (if not from local gardens!). It was therefore nice to see the meadow that had been cut, except for one patch in the middle, containing one Martagon. Again, as a contrast, there were numerous creamy-white spikes of the Lesser Butterfly Orchid, *Platanthera bifolia*, in some meadows, with the many forms of Marsh, Spotted and Early Purple Orchids in both meadows and woods. The Small White Orchid, *Leucorchis albida* (also known as *Habenaria albida*, *Pseudorchis albida* and *Gymnadenia albida*!) was

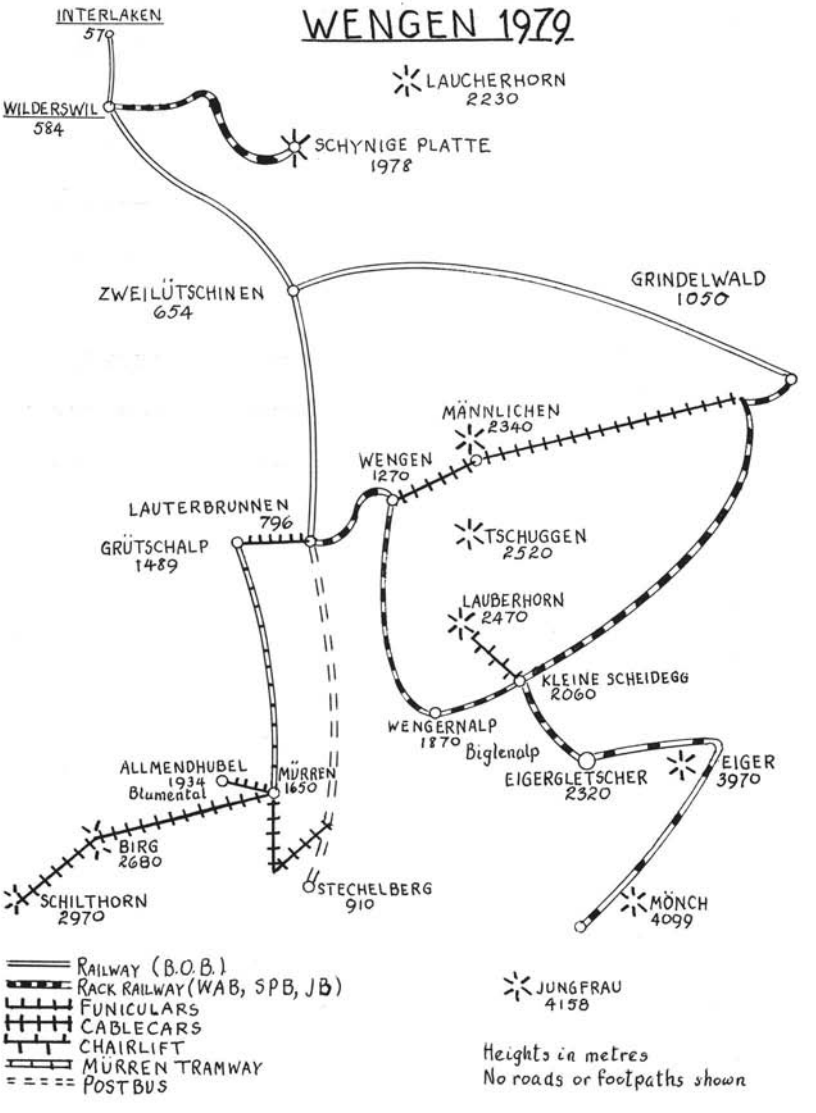

Fig. 3—Map of Wengen area See page 15 N. Woodward

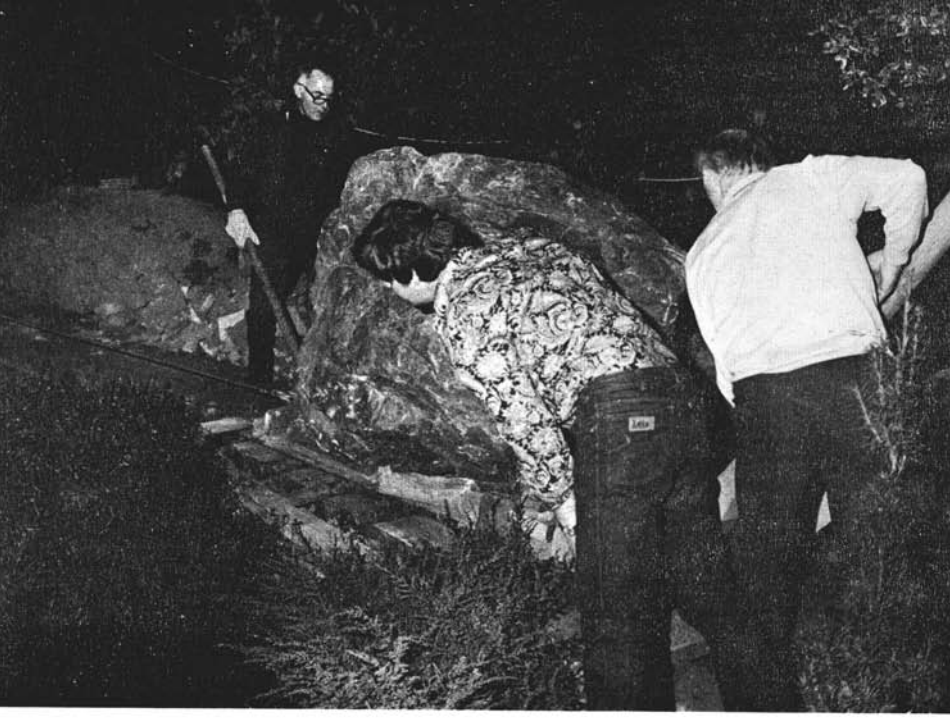

Fig. 4—Moving of the Three Ton Boulder See page 31
Photo—Zus Slenter

Fig. 5—Part of the Maastricht Rock Garden See page 35
Photo—J. Bronkers

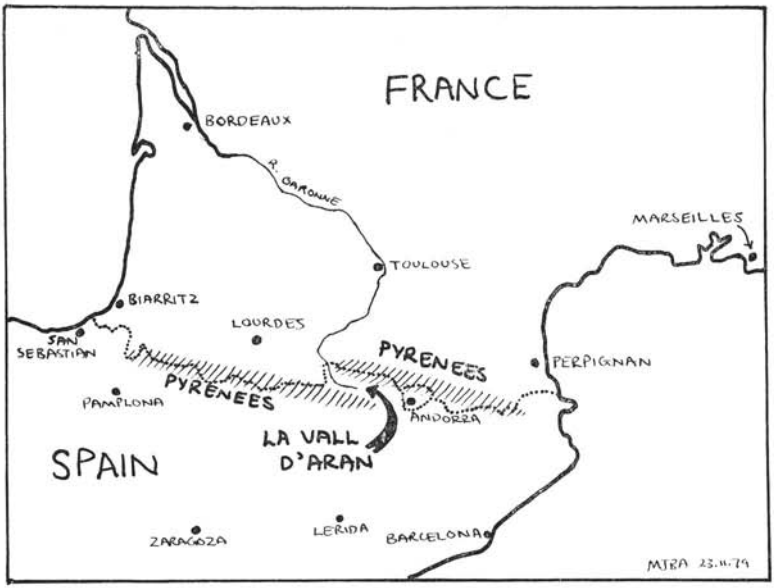

Fig. 7—Map of Pyrenees See page 39 M. Almond

Fig. 8—*Primula integrifolia* in the Vall de Baciver See page 43
Photo—Lynn Almond

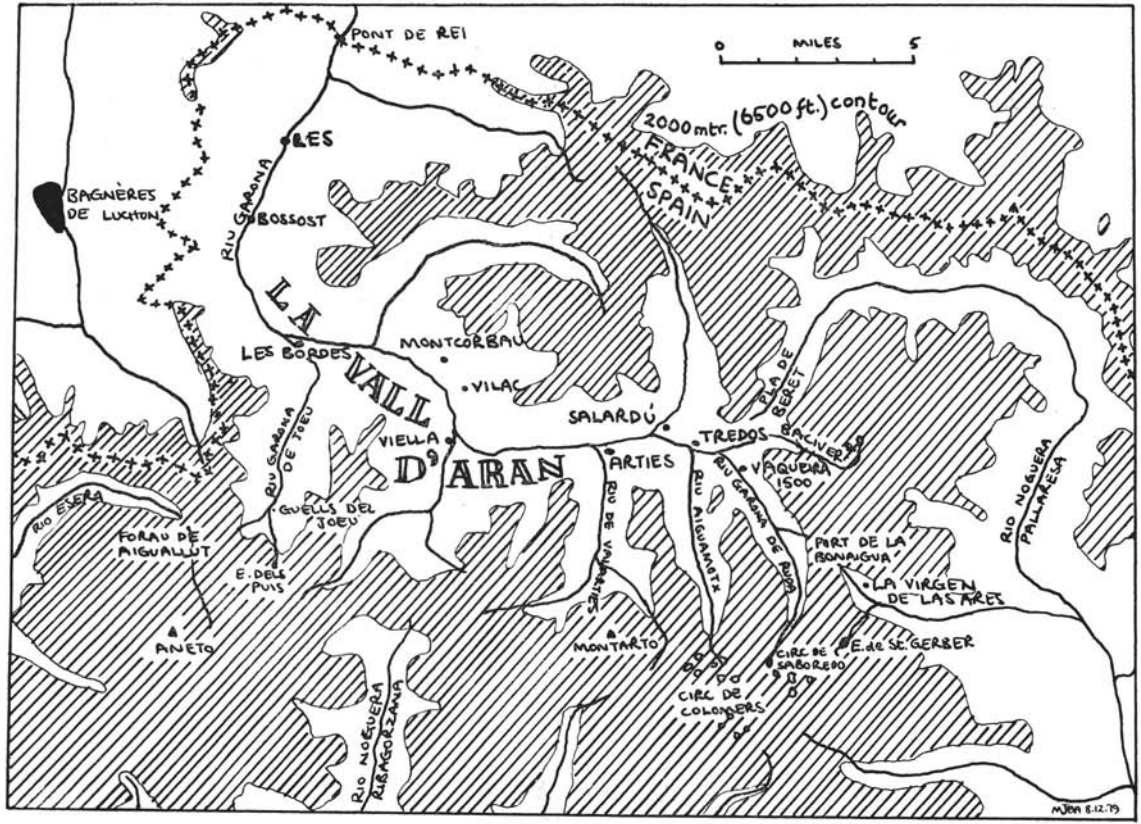

Fig. 9—Map of the Vall d'Aran See page 40 M. Almond

fairly widespread, whilst the more conspicuous Red Helleborine, *Cephalanthera rubra*, was common in places. More curious than colourful was the Bird's Nest Orchid, *Neottia nidus-avis*, and the Coral Root Orchid, *Corallorhiza trifida*. *Paris quadrifolia* in the woods was as unassuming as the large, yellow foxglove, *Digitalis grandiflora*, was striking. Nor were flowers the only surprises in the woods. We found ourselves one day, towards Stalden, being inspected with detached curiosity, from a distance, photographically speaking, well below infinity, by a large creature with immense horns, an ibex, no less. There is a Nature Reserve not so far away at the head of the Lauterbrunnen valley, with both ibex and chamois, and whilst the latter are usually found on the rock faces, ibex are more inclined to woodland, we were told.

On higher ground above the woods towards Wengernalp were large stretches of *Rhododendron ferrugineum*, but not a great deal of flower showing. Close-by, in a slight hollow where a stream came down from the slopes above, we saw our only *Crocus albiflorus*, and our first *Primula elatior*. The primula, scarce at Kandersteg two years ago, and unseen at La Grave last year, was to be first of many this year. In Wengen itself, we found three rock gardens, each with its own character. One was laid out round a broad, raised bed on three sides of a lawn, a second on a steep and hence much terraced site between a chalet and the path, whilst the third was almost hidden between two tall chalets, with the road, from which we obtained a bird's-eye view, high above on a third side. Planting was quite extensive, but largely native plants, although I do remember seeing a blue *Sisyrinchium*.

Four kilometres south of Wengen and 600 metres higher, the railway and its accompanying path reach Wengernalp station. Directly opposite towers the enormous bulk of the Jungfrau, made doubly impressive by dropping nearly 3000 metres in sheer, grey rock faces with gleaming white ice and snow fields between, down to the Trümmelbach, 500 metres below Wengernalp and beyond the lower meadows of Biglenalp. To the left of the Jungfrau stands the equally impressive dome of the Mönch, with similar scenery below. Nestling in the hollow between them may be discerned the tiny dome of the Jungfraujoch Observatory, indicating the summit terminus of the Jungfrau Railway. Further still to the left is the third of the giants, the Eiger, with its notorious north face seen from Wengernalp in profile. The predominant flower around Wengernalp was *Potentilla crantzii*. Although not a mat-forming species, it still covered all the banks and verges

behind and about the station with a brilliant yellow carpet. Just across a meadow in front of the station is a pleasant, low, rounded hill, the Gürmschbühl, or Plum Pudding Hill. From here, weather permitting, is a fine panorama of the surrounding country and more distant mountains. Underfoot there is that most alpine of flowers, the trumpet gentian, in profusion. Which one? Comparative terms such as 'longer than', 'bluer than', 'less spotted than' abound in the reference books, but, to the amateur flower seeker who has only one form to hand, and no herbarium for reference, these terms have little meaning. We were, on the whole, inclined to *Gentiana clusii*, but at the time flowers were more important than debatable points of nomenclature. Keeping the gentian company were large numbers of *Viola calcarata*, and many of the distinctive and colourful spikes of *Ajuga pyramidalis*, the Pyramid Bugle, its soft, hairy leaves changing from green at the base to a dark purple-violet at the top, with pale bluish flowers peeping from between the layers of leaves. The bright yellow cups of *Geum montanum* and *Ranunculus montanus* helped to set off the blues and purples of the other flowers. Despite the large number of violas, and the presence of other species not so far away, we saw only one hybrid form. On damper patches at the bottom of the hill grew *Ranunculus aconitifolius*, possibly the most common flower in the whole area at that time, *Trollius europaeus* and, in the wetter parts, less conspicuous, but with its own dainty charm, was the Bog Violet, *Viola palustris*.

A path from Wengernalp Station leads down to the Biglenalp meadows. The upper meadows, well grazed, held little of interest, although there were large stretches of Red Campion, *Silene dioica*, with one pink-flowered plant in the middle, but no sign of any white forms. On crossing the stream at the Wixie Hut, the lower terminus of a winter ski run and ski lift, we again found meadows white with *Ranunculus aconitifolius*, whilst in the higher, drier areas, *Ranunculus alpestris* took over. Hereabouts a large, vertical rock face held a number of *Primula auricula*, but all past flowering. A few *Pulsatilla alpina* were scattered around the base. Our path led steeply down through woods towards the Biglenalp meadows below. The woods themselves, largely coniferous, did not appear to have much in the way of flowers in them, but the path was fringed with a number of species, small patches of yellow and white *Polygala chamaebuxus*, the white bells of Cowberry, *Vaccinium vitis-idaea*, the smaller white heads of *Androsace chamaejasme*, the blues of *Globularia nudicaulis* and *Globularia cordifolia*, the tiny green foliage and flowers of *Sedum dasyphyllum* and a

few of the more familiar flowers of our native Wood Sorrel, *Oxalis acetosella*. Choicest of all were half a dozen flowers of Wintergreen, *Moneses uniflora*, growing right on the edge of the path itself.

The rough meadow below the wood was the home of large stretches of *Globularia cordifolia*, *Androsace chamaejasme* and a yellow legume, possibly *Hippocrepis comosa*, whilst the sides of the nearby stream were covered with the creamy-white flowers of *Dryas octopetala*. Over the stream, in a much more lush meadow, much survived the grazing cows. *Gentiana verna* was here, growing in turf, and so was a great deal of *Silene acaulis*, some in north facing grassy banks and some on grass covered boulders. Also on the boulders was more *Dryas octopetala*, with *Primula farinosa* growing round the bases. At the lower, damper end we saw *Trollius europaeus* and *Anemone narcissiflora*, whilst a climb up to the cliffs at the top end revealed a few more *Pulsatilla alpina* and at least a dozen bushes of *Daphne mezereum*, leaves well out, but still in flower. *Sempervivum montanum* was quite common here, growing in the turf, and as the flower heads were only just starting to develop, it was all too easy to find oneself walking on it. As the cows must also have walked on it daily, I do not think we would do it much harm. The path recrosses the stream a little lower down, and then continues to the meadows at Mettlenalp, before doubling back through the woods to Wengen, a route which, unfortunately, we did not have time to walk.

A pleasant path, more or less beside the railway, slightly uphill, leads on from Wengernalp to Kleine Scheidegg. On one side are rising meadows in which potentilla, gentians and orchids were prominent. We found no *Campanula barbata* along here, despite reports of it being abundant. Perhaps we were too early—or too late. On the other side rises the view of the mountain giants beyond Biglenalp. We found no *Campanula barbata* along here, despite reports of it and whilst this did not affect flowers or walking, the views did tend to disappear, so that scenic photography had to be done as soon as opportunity presented itself. A second way to reach Kleine Scheidegg is by using the Männlichen Cablecar, whose lower terminus is on the edge of Wengen. This takes but a few minutes to reach the top, over 1000 metres higher. The alternative footpath, very steep indeed, offers little in the way of flowers to warrant the time and effort its ascent entails. Männlichen is now linked almost to Grindelwald in the opposite direction by another cablecar, and as this is a noted skiing area, there are numerous skilifts for winter use. The first thing at

Männlichen is to admire the view. From the summit, at nearly 2500 metres, slightly to the north of the terminus, one looks across the Grindelwald valley to the heights beyond, on top of which is the Schynige Platte Alpine Garden. To the west is the Lauterbrunnen valley, with Wengen at one's feet and Lauterbrunnen immediately below it. Away to the left, perched apparently precariously on the far side of the gorge, may be seen the chalets and hotels of Mürren, with the Schilthorn, still snow-capped, behind. Away to the east, past the meadows and ski slopes, is Grindelwald, with the precipices and towering pinnacles of the Wetterhorn standing guard behind it. In between lies the jagged horizon of the high Oberland peaks, whilst in the immediate foreground stands the rocky, 2500 metre high peak of Tschuggen. Our path skirted this bare summit on the way to Kleine Scheidegg. However, the path was broad and busy, so we abandoned it at once and climbed slowly over the short turf towards Tschuggen. Our first reward came in the shape of white patches on the turf, *Chrysanthemum* (now, I believe, *Leucanthemopsis*) *alpinum*, a low-growing, compact daisy, probably ssp. *hutchinsiifolium*. This is quite an attractive plant, in its native habitat at least, with plenty of flowers and a carpet of small, deep green, pinnate leaves. It does not seem to appear much in cultivation, possibly being short-lived. Nevertheless, it should be worth trying in well-drained, loamy soil in similar conditions to those for *Gentiana verna* and, like the gentian, might possibly be maintained from seed. The gentian, in fact, was almost the next plant that we found. Almost, because short, broad leaves, long narrow calyx and lighter undersides to the petals indicated this to be *Gentiana brachyphylla* rather than *G. verna*. We found this gentian all the way along to Kleine Scheidegg and Eigergletscher at over 2000 metres.

There were large stretches hereabouts covered with dense carpets of tiny green leaves, but only in one or two places did small, pink bells reveal this as *Loiseleuria procumbens*, not, apparently, much more floriferous in the wild than it allegedly is in cultivation in our gardens. Conspicuous amongst the mats of *Loiseleuria* were the larger, pinkish flowers of *Primula hirsuta*. Further on, and a little higher, this *Primula* reverted to its saxatile habit and was growing equally happily in vertical rock fissures. Keeping it company in the rock was *Silene acaulis*, another plant with a range of habitat. The plants here were tighter and smaller and the flowers had much shorter stems than those in the Biglenalp meadows. Also inhabitating many of these cracks was *Lloydia serotina*, rather belying a recent television programme which

claimed that it did not grow in the company of other plants. Perhaps on Snowdon its local associates are more vigorous than its neighbours in the Alps. In the higher, drier conditions here, the local buttercup was *Ranunculus alpestris*. The higher and stonier the situation, the more compact and choice a plant it became.

A plant that one might not have expected to find here was *Pinguicula alpina*. Despite the general assumption that the Butterworts are bog plants, this species seems to flourish under much drier conditions. A lot grew on vertical rock faces on Tschuggen, admittedly smaller than usual, but still apparently perfectly healthy and flowering well. We also found it in screes and meadows, but not, so far as I recollect, in bogs (which is not to say that it did not grow in them somewhere). *Androsace helvetica*, however, is a plant that knows exactly where it wants to grow, and stays there. Below Tschuggen it grew on the sides of large well weathered boulders which had plenty of cracks and crevices. There were some very nice clumps, but none so large or so perfect as those show bench Forrest Medal exhibits. After a kilometre or so, we had a choice between mountaineering or descending to the path below. But before discretion won the day, a large yellow patch, thirty to forty metres across, just below the cliffs and at the top of some very rough screes drew us on a little further. This turned out to be an isolated colony of *Primula elatior*, the only place, I believe, that we saw it along this path. Again, apparently a drier and stonier site than might have been expected.

Before reaching Kleine Scheidegg the path crosses the foot of a short, wide valley between Tschuggen and the Lauberhorn. The valley floor cannot be seen from the path, which is probably why most travellers walked straight on. A short climb over gentian-studded grass took us quickly into this quiet valley. *Primula farinosa*, widespread around Wengen, was profuse here, and keeping it company was *Pulsatilla alpina* ssp. *apiifolia* (but we shall certainly continue to call it *Pulsatilla sulphurea* for convenience). Unlike those we were to see in the Blumental, these were a good, strong, no-nonsense-about-it yellow, although admittedly a little paler as the flowers 'went over'. A rough path led across and up the screes below the Lauberhorn, and eventually to a small area of well weathered limestone overlooking Kleine Scheidegg. Deep, narrow gullies had been worn into this rock, mostly some metres deep, but little more than a metre wide. Snow still lingered in some. Here was most of what we had already seen, but in a much smaller area. *Silene acaulis, Lloydia serotina, Primula*

hirsuta, Pinguicula alpina, Gentiana brachyphylla, Linaria alpina, Androsace helvetica and yellow *Pulsatilla* in abundance. Much film was expended in this region before we dropped down to the Clapham Junction of the Eiger, Kleine Scheidegg.

Here indeed is a choice of transport, in four directions, for the foot-weary traveller. Eastwards the two-coach trains of the Wengernalp Bahnen run down to Grindelwald, whilst westwards similar three-coach trains travel down the not-quite-so-steep line to Wengen and Lauterbrunnen. Northwards, parallel to the path on which we had come, a summer chairlift makes the ascent of the Lauberhorn a matter of a few moments, and southwards yet another railway, the Jungfraujoch Bahnen, crawls through the dark interior of the Eiger and the Mönch for those who wish to visit the permanently frozen region between the Mönch and the Jungfrau, described by a previous writer as, 'the icy equivalent of Blackpool Beach, and no place for plant hunters'! We followed her advice, but did use the train as far as the first station, Eigergletscher (Eiger Glacier) at 2300 metres, leaving the train before it plunged into its long climb through the mountains. On leaving the station we came face to face with some two dozen huskies—in a large cage. These are not, as might be guessed, for maintaining mountain rescue services, but were the off-duty shift of the squad that provides sleigh-rides at the other end of the railway. Just below these cages are the Eigergletscher screes which have quite a reputation for flowers. We did wonder whether the large amounts of bonemeal and other organic matter with which they are liberally supplied had any bearing on this! We found five plants of note in the scree. *Thlaspi rotundifolia* and *Hutchinsia alpina* formed reasonably large clumps, the former being a good, deep colour and fragrant. A few brighter splashes of colour were provided by *Draba aizoides*, and with them were the best plants of *Ranunculus alpestris* that we saw, low growing, tight cushions, with large, cup-shaped flowers having very short stems. The fifth find and 'pièce de résistance', growing in the roughest parts, was the frail foliage and small, purple faces of *Viola cenisia.* This is often described as a variable species, and here the petals were rather angular, and by no means all overlapping.

The views from Eigergletscher are also, like so many hereabouts, impressive. Beyond the violas, above the end of the scree and over the moraine below the scree, towers the immense ice-face at the base of the Eiger glacier, with more ice, snow and rock piled thousands of feet higher still above. In the other direction the ground falls away

steeply into the Biglenalp valley separating the Kleine Scheidegg-Wengen-Männlichen plateau, green and lush on one side from the gigantic, sheer grey rock faces and white snow fields of the north faces of the Mönch and Jungfrau. Away past the foot of the valley, Mürren hangs on the edge of the 800 metre vertical cliffs on the far side of the Lauterbrunnen valley, backed by the snow-capped peak of the Schilthorn. Between Mürren and the Schilthorn lies the Blumental. The name itself—Flower Valley—is sufficient enticement for a visit.

Mürren, a smaller version of Wengen, similarly has no road link with the world below. There are footpaths up from Lauterbrunnen, requiring the same penalty in energy and time as those ascending to Wengen. One of the alternative routes is to ride in the funicular from opposite the station at Lauterbrunnen to Grütschalp, a 700 metre rise with a gradient of 61% (i.e. nearly 1 in 1½). From Grütschalp to Mürren, about four kilometres, is fairly level, and there is a choice of footpaths through the meadows and woods, or another electric railway. *Campanula barbata* was seen by some members of the party around Grütschalp in much greater numbers than on the Wengen side. Mürren is a fine viewpoint for the Eiger-Mönch-Jungfrau peaks, but the day that we were there, not the finest of the tour, it merely appeared to be resting on the edge of a grey infinity of cloud and mist. So we strolled along the main street, such as it is, and admired the monument to Sir Arnold Lunn, who originated downhill and slalom ski racing here more than half a century ago, as well as starting the Tourist Agency bearing his name. One of the results of that initiative is to be found at the other end of the quiet, flower-decorated street—a huge steel and concrete structure that is the Mürren station of the huge Schilthorn Cablecar, allegedly the largest in Europe. This cablecar provides the other route to Mürren, by Postbus to Stechelberg from Lauterbrunnen, and then the first dogleg stage of the cablecar via Gimmelwald to Mürren. Here a change of car is required if one wishes to continue to the summit of the Schilthorn. This peak is now surmounted by what a senior member of our party described as a 'revolting' restaurant which, thanks to James Bond, now proclaims itself in huge capitals to the world around as 'Piz Gloria'. Those more interested in flowers than fictional fantasy might well travel only so far as the intermediate station at Birg. From here a ridge walk at around 2600 metres leads to the head of the Engetal, where it joins the mountain path from the Schilthorn, skirting the Muttlernhorn, to Allmendhubel, whence a short descent, or a short funicular ride for

the weary, completes the return to Mürren. Amongst other plants, the pink *Androsace alpina* is reported from the Birg area. Moreover, as the white *Androsace helvetica* is also about, the natural hybrid *Androsace* x *heeri* (*A. helvetica* x *A. alpina*) has also been found here. There have been reports of *Eritrichium nanum* 'high above Mürren', but I think this must be a quest for mountaineers rather than ordinary walkers. We had to content ourselves with the shorter walk up to the Blumental, starting on a footpath opposite the Mürren Cablecar Station.

One of the most striking plants in the lower hay meadows was *Viola lutea*, large plants and large flowers, keeping company with cranesbills, red campions and forget-me-nots. The blue *Viola calcarata* seemed to be absent from these parts and, as on the other side, we saw only one hybrid viola. A little higher came *Gentiana clusii*, and on rocks in the woods, quite a large number of, presumably, *Primula hirsuta*, past flowering. The higher meadows in the valley bottom were white with *Ranunculus aconitifolius*, a plant perhaps more striking by the hectare than as a solitary specimen. We were attracted to the one remaining patch of snow on the south side of the valley. White gave way to yellow as we neared it, the *Ranunculus* giving way to *Trollius europaeus* and some *Caltha palustris* as well. But there was still some white. *Pulsatilla alpina* was just coming into flower and the buds were of a particularly deep bluish hue (which, alas, did not photograph well). The yellows were further augmented by *Primula elatior*, whilst, in its usual place close to the edge of the melting snow was *Soldanella alpina*. A tour round the snow produced nothing new except for many clumps of tall, reed-like leaves of an unflowered *Allium*. There was no sign of crocus here, but we did see well-trodden crocus leaves around the Allmendhubel funicular station at the top of the ridge on the other side of the valley. Presumably they preferred the better drainage and sunnier aspect. The other flowers of interest that we saw were a number of pulsatillas which seemed uncertain whether to be white or yellow, and finished up as a rather pale, insipid cream. Nowhere did we see any of the strong, deep yellows that we had seen near Kleine Scheidegg. Modern botanical thought notwithstanding, it is interesting to read Clarence Elliott's comments in his book 'Rock Garden Plants', 1934. He says, 'Forms of what appear to be true *Anemone* (i.e. *Pulsatilla*) *alpina*, with the same gigantic flowers, but of a soft yellow colour, may sometimes be found growing among the typical white-flowered *Anemone alpina*. These forms seem to me to

be quite distinct from typical *Anemone sulphurea* of the limestone ranges'.

On the grassy slopes on the other side of the valley below Allmendhubel yellow was again the predominant colour with *Ranunculus montanus, Geum montanum, Potentilla crantzii, Alchemilla alpina* and *Polygala chamaebuxus.* A little searching about revealed a number of orchids in the grass, including *Orchis mascula. Androsace helvetica* and *Androsace carnea, Erinus alpinus, Silene acaulis, Dryas octopetala, Primula farinosa, Viola biflora* and *Pinguicula alpina* have all been reported from this valley as well as *Primula auricula, Primula hirsuta* and natural hybrids. No doubt they may have been there to be found further into and higher up the valley than we had time to explore, but, apart from some primula plants in the lower woods, they were not seen by any of our party this year.

An area which seems to have attracted very little attention is the head of the Lauterbrunnen valley beyond Stechelberg. Stechelberg may be reached from Lauterbrunnen by Postbus, with stops at the Trümmelbach Falls and at the lower terminus of the Mürren-Schilthorn Cablecar at Langwald. The Trümmelbach Falls are the outfall of the Trümmelbach into the Lauterbrunnen valley. This stream collects all the snowmelt waters from the west side of the Eiger and the north sides of the Mönch, Jungfrau, Silberhorn and Scharz Mönch. The tremendous torrents which pour down yearly in spring and early summer have cut deep gorges and caverns into the valley cliff. There are seven distinct falls inside the cliff, made accessible and visible by a system of galleries, ladders and floodlighting. As our hotel porter put it, 'It is a good place to visit on a wet day'. It was not wet, so we continued to Stechelberg, and set off up a path with the stream on our right. A little way up, we were diverted by an upward path leading to a steep rough meadow. *Aquilegia atrata,* seen nowhere else this year, grew in quantity here, large tall clumps with many deep purple flowers. The stout, bright blue spikes of Bugloss, *Echium vulgare,* made a strong contrast in colour. Another 'nowhere else' plant was a large Selfheal, *Prunella grandiflora,* quite attractive with its deep bluish-purple flower heads some 20cm or more high. *Astrantia minor* and campanulas were plentiful, whilst a few *Anthericum liliago* and *Thalictrum aquilegifolium* grew in the shadier parts. There were new orchids as well—very good specimens of the Burnt Orchid, *Orchis ustulata,* and large, well-flowered Twayblades, *Listera ovata.* Paths continue up this valley for another four kilometres or so, rising from 1000 metres at Stechleberg to over

2000 metres. I have seen no reports of this area, and we were not able to see it ourselves, but from the little that we saw, and remembering that there were streams, rocks, screes, woods, meadows and a Nature Reserve, there should be something worth looking at. But with one eye on the time of the departing Postbus, we returned on the other side of the stream, finding in the shade of the woods the only Martagon Lilies that were both in flower and accessible.

At the other end of the Lauterbrunnen valley, alpine growers are attracted to the Alpine Garden at Schynige Platte. This garden is only three kilometres direct from Wilderswil, just outside Interlaken, but is 1500 metres higher. No doubt some people do walk up, but the vast majority use yet another railway, the Schynige Platte Bahnen, a small rack railway linking Wilderswil with the Alpine Garden at an average gradient of 1 in 4. The line is now electrified, but on occasions one of the old steam locomotives comes out of retirement to chug steadily to the top again. Much of the older rolling stock is still in use, covered coaches, yes, but no windows! Rain is excluded by plastic curtains, but so also is any view. There is a brightly coloured guide, in German, to the Alpine Garden, which, though more attractive to look at, is less frank than a pre-war English edition, which candidly admits that July is the month with most rain and with most mist. We did not have the rain, but we did have the mist, and hence no views as we ascended, beyond shadowy glimpses of Interlaken and the foot of the Lauterbrunnen valley. Instead, the ascent was enlivened by 'flower-spotting' from the train. Above the lower meadows, marsh orchids became common and there were many Red Helleborines, *Cephalanthera rubra.* Higher up came *Primula elatior, Pulsatilla alpina, Globularia nudicaulis* and *Erinus alpinus.* At the summit we found ourselves enveloped in cold cloud with a chilling wind, not the best conditions for viewing any garden, so perhaps we were biased in not being over-enthusiastic at what we found. This garden appears to be run by a private society and the Department of Botany from the University of Berne. Its principal object is to display Swiss alpine plants in, so far as possible, their natural habitat, e.g. scree, bog, meadow and so on. There is, therefore, no vast display of colour, and whilst we may have happened on a 'slack' period between seasons, we certainly saw far more outside the garden than within. The garden is probably of greater interest to a botanist than an amateur gardener, but we did see in scree *Ranunculus glacialis, Ranunculus segueri, Hutchinsia alpina* and *Thlaspi rotundifolia.* Some *Saxifraga androsacea* was in flower

between the shelter of rocks, and a large patch of *Sieversia montaan* (*Geum montanum*) brightened the centre of the garden. Given a good clear day, of course, Schynige Platte would be much more rewarding, not only for the garden and the views of Interlaken and the lakes in one direction, and the vast chain of the Alps in the other, but also for the high level walk from the garden to the Laucherhorn, two kilometres away and 200 metres higher, offering even better views and a chance for flower hunting. One final point—visitors to hotels in the area are given a Visitor's Card. We discovered too late that amongst other concessions this offered reduced admission to the Alpine Garden. Obviously not our day!

A much better day found us crossing meadows, common but colourful, passing through woods with their own different range of interests, and eventually arriving at a long, wide, fairly flat, grassy scree. As the snow from the heights above cascaded down the mountain side, its spray drifted over us. This scree was well populated, there being quite a lot of grass and some small, low shrubs, probably willow, scattered here and there about the lower end. In and between grew *Ranunculus alpestris* and *Pinguicula alpina*, pink *Primula farinosa* and a few white ones, *Dryas octopetala* and *Globularia cordifolia*, a little *Linaria alpina* and *Hutchinsia alpina* as well. We found one or two *Primula auricula* with an odd flower or two remaining, whilst *Gentiana verna* had here taken over from *Gentiana brachyphylla*. Common also was the Small White Orchid, *Leucorchis albida*. Right at the top of the scree in the last stony patch of rubble just before the cliffs behind began, was another colony of *Viola cenisia*. These flowers were much rounder than those at Eigergletscher, with more overlapping petals. But the real cream was lower down, at the bottom end of the scree, for there grew *Cypripedium calceolus* by the hundred, right out in the open. These plants were appreciably smaller than those that we saw two years ago near the Oeschinensee and in the Gasterntal whilst staying at Kandersteg, and which were growing largely in woodland sites. Those on the scree would be around 30 cm high, and with up to a dozen flowers to a plant, the flowers being as large as ever. A point that puzzled us for some time was that most of the plants appeared to be growing up through patches of dead, white decaying wood. We brooded for some time over the fascinating botanical fancy of a vast store of dormant orchid tubers below in the scree, being activated into growth wherever some decaying wood somehow stimulated some peculiar mycorrhizal reaction! Reality, of course, as we

duly discovered, was much more prosaic—a conscientious warden who carefully marked newly emerging plants as they appeared, to try to prevent them being trampled by visitors. As a large herd of cows had completely free access to this area, this did seem to be a case of 'Love's Labour Lost'. However, as the grass was much greener in the meadows around the scree, perhaps little damage was done. We were told that as these plants tend to spread by rhizomes, breaking a few flowers off would not endanger them.

To say that Wengen 'has everything' for the enthusiastic flower seeker might be something of a cliché. Nevertheless, it probably offers as much, if not more, than most places—a pleasant, quiet, spotless village with a good range of small shops and excellent accommodation, a wide range of walks and flowers from low to high levels, magnificent scenery, and an excellent integrated network of reasonably priced communications throughout the area. On reflection, we think the walking at Wengen is easier than at Kandersteg. At the latter, walks were graded as 'Footpaths' or 'Mountain Paths', the latter rather arduous. It is doubtful if any of the walks around Wengen, with the possible exception of the path from Birg, would have come into the 'Mountain Path' category. Although we looked on this visit as a 'once only, and never again' tour, I feel we could be tempted there again, if the opportunity ever arose, without too much of a struggle. I hope others will be.

A Rock Garden 'by Trial and Error'

by BER SLANGEN

ACCORDING to a nationally well-known author on gardening in the Netherlands, a rock garden is not feasible in our country. On a small plot of about 200 square metres—this author states in one of his books —"a rock garden is impossible!" Luckily this author's book was not known to me in 1950, when I started my rock garden on a flat spot of merely a tenth of the size of the above mentioned 200 square metres. In fact not any book on gardening was known to me at that time except for a little book with colour photographs and a short but incomplete description of a few dozen alpine flowers.

Apart from this 'knowledge' of rock gardens and plants all I had

in mind was my wish to build a rock garden, and to put my imagination to the test of reality in colour, sound, smell, and shape by way of plants and flowers, soil, rocks and water. All I had in hand were just ten green fingers.

In this most southern part of the Netherlands the oceanic and the continental climate are at loggerheads unceasingly to gain supremacy. Maastricht, the town in which the rock garden is situated, is in the wide valley of the river Maas or Meuse. It gets 75 cm of rain per annum, has an average minimum temperature of 0°C in winter, an average maximum temperature of 23°C in summer, and is 44 metres above sea level.

From the very start this typical way of gardening has been amounting to 1% of inspiration and 99% of perspiration, patience and perseverance. The result is a rock garden which has grown from the original flat 20 square metres to one the size of less than 200 square metres ($\pm 20 \times 9$ m) with a maximum height of 5 metres. It includes a pond of roughly 20 square metres and 1 metre deep, two streamlets with waterfalls and locally found rocks, from pocket-size to a weight of 3000 kilos. The cream of the garden consists of a variety of about 250 different rock garden plants, shrubs and conifers. The pond abounds with fish (carp, chub, tench, roach, rudd and goldfish). Many birds come to have a drink or to take a bath. A year ago I counted as many as fourteen different visiting birds ranging from sparrows, black-birds, thrushes, tits, wrens, swallows to wild ducks and a tawny owl. Several birds nest in or quite near the rock garden. To my amazement a mallard duck had a clutch of sixteen eggs near the pond, of which fourteen were hatched last spring. What a sight and what a delight! This bird-life is all the more amazing considering the rock garden is situated near several busy traffic-ridden roads and amidst a well built-up area.

The overall picture of the rock garden would not be complete without mentioning the most important visitors: PEOPLE. As it is, I enjoy the rock garden every day in any season or weather. But the joy is more intense when others are visiting and sharing my joy. During the spring and the summer hardly a day passes without visitors. Children going to do errands, to school or coming back, pay a quick visit to see the tumbling waterfalls, the big carp in the pond, the birds taking a bath, the snowdrops, the cowslips, the violets, the ferns or other plants they have been taught about. Not only do the children bring their friends along to have a look, but also their parents.

Several of the visitors—children and adults—have started to build their own rock gardens after having seen the possibilities and charm of a rock garden on even a small plot. In addition to the more or less regular visitors, the rock garden attracts an average of a thousand people a year on a few Sundays in May and June when it is open to anyone who cares to visit. Visitors have found their way to the garden from every corner of the Netherlands, from most of the countries of Europe including Great Britain, but also from Indonesia, South Korea, Australia, New Zealand, Canada and the United States of America.

Why this small garden is a treat to so many people is difficult to explain. Perhaps this phenomenon is the result of the complete surprise of a totally different garden from the normal flat garden at the back of a normal house. Another reason is possibly the seclusion of this rock garden. In a busy quarter of the town, the rock garden is yet a world of its own. Not a single building can be seen from the terrace leading to the garden. Practically all the noises from outside are shut out by the enveloping higher parts of the garden. Thus the garden breathes peace caused by a leaping fish, humming insects, a singing bird or the rippling water. The attraction is all this and a lot more. Words, photos, slides, cine-films or drawings fail to grasp the many impressions the rock garden makes. Frequently twenty or more visitors at a time are packing the little terrace and the upward path, and yet it is the garden that makes the music, only whispers are heard from the people. This little paradise—as more than one romantic visiting soul called it—has to be seen and experienced in flesh and spirit to really understand its language.

All well and good, but how did this rock garden actually grow to what it is today? Where did the rocks, the earth, the rubble and the plants come from? Over the years the rocks had to be gathered together from all over the area. In gravel-pits in the neighbourhood suitable rocks could be found now and then. Also, when a new road was constructed near-by, rocks could be had, which were discarded by the contractor because of their size. The rocks—mostly rounded boulders of every shape, size and colour—were transported to the rock garden in different ways, all according to the time on hand, the opportunity and the distance. Wobbly or not, but more than once I brought home rocks on the back of my bicycle. Others were fetched by wheelbarrow. The heavier ones had to be brought in by car or in a trailer.

Needless to say, this gleaning of rocks was a tedious and challenging

job, which took years to have effect on the shape of the rock garden. But . . . easy does it!

Talking about a challenge: a couple of years ago a cement-works presented me with three huge boulders from the top layer of its marl-pit; total weight 6.4 tons, the heaviest 3 tons. These were dumped onto my drive by a big lorry, leaving me with the problem of moving them through a small gate, across the terrace and into the rock garden along a narrow path to a height of about two metres. Due to this lack of room to move freely, neither a bull-dozer nor any similar machine could be used; but by hook or by crook the boulders had to be transported.

As the "three big brothers" would not move into the rock garden of their own volition, and as I left them in the drive for more than two years, it was no wonder that a lot of visitors believed and hinted that the job could not be done. This made the challenge even more attractive to me. Of course I knew all along how the transport had to be done, but it needed time to procure the proper tools and the material. Besides, I had to make up my mind exactly where and in what position and angle the "big brothers" had to be put in order to harmonise with the other rocks. With the active help of four friends and using a jack and a few crowbars, each of the "big brothers" was wriggled onto an iron plate and secured by wedges. The grunting altered into humming when five lengths of one metre iron pipes (2 inches diameter) were manoeuvred sideways under the iron plate at regular intervals. The humming changed into a kind of Volga-boat song when we started to heave with crowbars at the back of the plate, and the boulders began rolling along steadily (fig. 4). With each iron pipe rolling free at the back and being replaced to the front. the singing became louder. Arriving at the up-grade of the rock garden, a cable was fastened to the iron plate and connected to a windlass at the far end of the garden. The hauling uphill was done by the windlass, while the crowbars were used to keep the correct direction. When the third and heaviest of the boulders arrived at the top after a journey of an hour and a half, and the "big brothers" were rubbing shoulders again, a truce was called. This lasted for over a year, thus giving visitors another opportunity to guess what would happen next. Eventually, last winter, my brother and I performed the most tricky job of hoisting the big rocks into their correct position. This was done using a jack, a home built tripod, a scaffold, steel slings and a pulley. It raised the rock garden to a height of five metres. And that was that. Was it really? Not by a long way.

The big rocks were just a spectacular interlude. Before and after the smaller rocks—all together about 35 tons—had to be moved into position as they became available.

In order to gain height in the rock garden a lot of earth and rubble was needed to give the rocks the necessary base. As luck would have it, a friendly lorry-driver offered to see what he could do in this matter. He was true to his promise. By and by he must have delivered about twenty lorries of rubble, loam and even good garden soil free of any charge. Combined with the rocks this material was shaped gradually into a semblance of a mountain scene: a wide valley with steep embracing walls to the left and right, a pond in the foreground from the far end of which the garden gains height by way of irregular terraces linked by rocks.

Half way up, the garden gives birth to a source from which the water dances down to a waterfall and into a turbulent streamlet, which empties itself into the pond. Another streamlet coming tumbling down from somewhere higher up can be seen and heard. Although the eye is led further up to the top of the garden, the source of this second streamlet is difficult to trace. The keen eye can detect a gap in the upper part of the garden though, inviting visitors to walk up the winding path to investigate. Rounding the first two bends, the subtle ear discerns a different kind of music made by the water from afar. Turning the next bend the mystery is solved, seeing the garden opening to the left into a kind of gorge. From the far end of this, water comes spurting forth, wallowing in fresh air again, taking a message of life along its ever changing course to all the living beings it meets along its borders before diving into the pond.

Apart from the steep walls of the gorge—about three metres on the side leading to the top—several more parts of the garden are almost perpendicular. In between and on top of these "crags" and at their feet, slopes are found with different angles of inclination. The only part of the garden which is as flat as a pancake is the surface of the pond.

This lay-out offers a multitude of environments of sun, semi-shade, shade and so on. The banks of the two streamlets offer additional planting situations, and so do the conifers and the shrubs.

As the axis of the garden is east to west and the up-grade as well, the left side of the valley is in the shade most of the time except in parts of mid-summer. The middle part of the garden receives sunshine for half the day or more, whereas the greater part of the right wall

and the top are baked by the sun—when it is shining!—from morning to night. Needless to say, these different situations and circumstances had to be heeded when planting. With my very limited knowledge of plants it is no wonder that I made a lot of mistakes, especially during the first years of rock gardening. Experience is the best teacher though.

One of the lessons experience taught me was that our local very fertile loess, which I used as top-soil while it was available, had to be mixed with peat in the dryer parts of the garden as a general rule. In other cases the loess had to be mixed with coarse sand, fine gravel or chippings to improve the drainage. It is of little interest to enlarge on these problems of soil and drainage here as every rock gardener has to master this problem in his own garden with the material and the circumstances there. It is more interesting to tell that some plants adorning my garden have been collected by friends or by myself during journeys in the Ardennes, the Eifel, the Black Forest, the Vosges, the Jura, the Appenines and, of course, the Alps.

Gradually I learned how to be sure of success. To dig or to try to dig out full-grown specimens is bound in most cases to end in failure, especially when one is on holiday in mid-summer and travelling for a few weeks. By digging out full-grown plants one severs the greater part of the root system. Replanting them in the garden after this maltreatment does not give the plants a chance to recuperate or adjust themselves to the totally different environment before the winter is upon them when they should be well established.

My rule is to dig out very young specimens or seedlings and then only when there are plenty available. The greatest care is taken to keep the earth-ball around the plants in one piece. An added precaution is to cut off any buds, flowers or seed-heads. Without any watering I put them in polythene bags and knot these tightly. In this way the plants keep fairly well en route. When cycling, hiking or walking for longer periods, and every ounce of weight to carry counts, I collect seed only. Protected plants are best left alone. I collect them in areas where they are not protected. Apart from the collected wild plants, lots of others—cultivars and hybrids—were presented to me by friends and visitors. Bad luck to the nurseries, but the plants I bought myself can easily be counted on the fingers of two hands. It is as it is, but I derive more pleasure from growing plants from seed, cuttings and so forth.

After this detour along the diverse ways of acquiring plants for the

rock garden, I would like to mention the rock garden as a whole, in which the plants, the rocks, and the water, unite to give a pleasing effect to the eye all the year round, even in mid-winter. Apart from pleasing the eye, the garden should make music to the ear, give a rest to the mind and peace to the heart. Alas, I must confess that I find it impossible to give a detailed but yet an all-embracing and satisfying picture of the rock garden as it is in a certain season, let alone of how the garden looks all the year round. I have to resort to certain aspects only.

Having very limited space—remember . . . less than 200 square metres—I had to choose from the small-growing plants. Tall-growing plants would dominate the smaller ones, though a few taller specimens were welcome to guard against monotony. It is amazing to see how well a group of *Bergenia cordifolia* gives counterweight to the tiny *Hutchinsia alpina, Potentilla aurea, Saxifraga aizoon, Campanula poscharskyana* and the creeping *Phlox subulata.* The same applies to the tall *Sedum telephium* among the surrounding *Hieracium aurantiacum, Antennaria dioica rosea* and *Achillea nana.*

While planting it was important to know when the plants would come into bloom and which colour their flowers would show. This knowledge was essential to achieve a harmonious result. To match the colours of two adjacent groups of plants is rather easy. It is extremely difficult, however, when twenty or more different shades have to be matched. The help of a colour-scheme is useful, of course. I found the best method to achieve satisfying results in the long run is to develop one's sense or feeling for colours and their best combinations. This can not be done by looking at colour television. One has to go into the open and feed one's eyes upon the living sceneries during the different seasons. Remembering G. K. Chesterton's "Many people have not yet discovered that grass is green", it is advisable to look at obvious things twice at least. After years of observing, practising and learning from mistakes I am now getting better results in matching the colours in my garden. Considerable thought had to be given to have a reasonable amount of flowering plants in every part of the garden to keep it attractive as a whole. The majority of alpines bloom in May and June in this country. During this period it is easy enough to have sufficient plants in flower all over the garden. It is more difficult to maintain some colour everywhere during the rest of the year. My growing knowledge of rock garden plants helped to overcome this difficulty gradually. In this I was helped by paying

attention to the colour of the foliage of the plants and their shape as well.

Visitors are carried away by the charming effect of a large group of the con-webbed rosettes of *Sempervivum arachnoideum* growing in crevices and on almost bare rock. Large clusters of other Sempervivums like *S. tectorum* and *S.* 'Commander Hay' and many others are a real contribution to the attractiveness of the garden at any time, blooming or not.

The grey felty *Cerastium tomentosum columnae*—not *C. biebersteinii* or *C. repens*—is a valuable plant in my garden in a very dry, rocky and almost perpendicular position, where it is attractive all the time. Especially in the autumn *Epimedium* and *Tiarella cordifolia* give extra colour when their foliage is turning into bronze. And do not forget (again) that green is a colour and a very welcome one at that. One of the most charming groups of plants in my garden is formed by a large green patch of *Asarum europaeum* combined with the peculiarly shaped ferns *Phyllitus scolopendrium* and *Polypodium vulgare*. This group of plants does not go unnoticed by any visitor. No wonder. It is attractive for its homeliness without any pretentions. Deep down everybody is looking for these qualities these days.

Recalling that practically all parts of the rock garden are sloping—from gentle to very steep—it is evident that precautions had to be taken to prevent the soil from being washed away. So, not wanting a beautiful plum pudding after heavy or continuous rain, every inch of soil had to be covered with plants (fig. 5).

What about bare patches caused by wilting groups of bulbous plants? No cause for alarm, because I combined all early blooming bulbous plants with later growing and blooming plants on the same spots. This procedure has the added advantages of giving the bulbs the opportunity to ripen undisturbed and of keeping the wilting leaves out of view.

Good results were achieved combining *Coreopsis verticillata* 'Goldfink' with *Ornithogalum umbellatum, Astilbe chinensis* 'Pumila' with *Galanthus, Sedum album* with *Galanthus* or *Scilla, Campanula garganica* or *C. poscharskyana* with *Crocus*, Mossy Saxifrage with *Chionodoxa* or with *Cyclamen*.

With shrubs and conifers I have to be very careful. Although indispensable to give depth to the garden, they could not be allowed to dominate. In the past twenty-five years I had to my regret to apply the axe to several conifers and shrubs, which had grown out of

proportion to the rest of the garden. Others, like *Chamaecyparis obtusa* 'Nana', *Juniperus communis* and several specimens of *Cotoneaster, Potentilla fruticosa, Lavendula, Santolina chamaecyparissus* and a variety of *Helianthemum*—pruned regularly—are still doing fine since I planted them during the early years of adventure along this path of gardening.

Several *Buxus sempervirens, Prunus laurocerasus, Euonymus argentea-variegata* and *Berberis* do very well to give extra height to the left and right on the top and at the back of the rock walls and keep adjacent buildings out of view.

A world without water is difficult to imagine. What would the Alps or any mountain-range or hilly country be without water in brooks, rivers, waterfalls and lakes? Is a rock garden without water in a pond, a rivulet, a real rock garden?

Whatever the answers may be, I believe that my rock garden would not be half as attractive without water. So water there is, and in abundance. I would like to go into some details, which will certainly be interesting for gardeners planning to have a pond in their garden. Here the pond could not be filled with water from the domestic supply. Tap water is very hard or calcareous in this corner of the world. It would turn green with algae within a few hours. Therefore the pond was filled with soft rain-water drained from the nearest roof. Alas, this did not solve the algae problem. Even soft but stagnant water becomes algae-infested when not stocked with plenty of water-plants. In summer during the long days with much sunshine, high tempertures and little oxygen in the water, the algae will thrive. As I wanted open and clear water for the greater part of the pond to watch the fish properly, the solution of a pond grown all over with water-plants to fend off the algae was out of the question. Circulating the water from the pond by pumping it up to and letting it run down two water courses, over a few waterfalls and back into the pond was the answer to my algae problem.

Then there was the problem of how to keep the pond continuously filled to the brim with rain-water. In the summer a lot of water evaporates. Besides, water is taken from the pond for watering groups of plants. Lastly, but very interesting . . . birds are very thirsty creatures, and have not yet been taught not to waste bath-water! Oblivious of such things as towels, off they go soaking wet after a bath in the pond or under or near a waterfall, tiptoeing from rock to rock, spilling precious water all along the way to their own beauty parlour, a rock or a branch of a bush in the sun. Their feathers dried

and plumed after much ado and the utmost care into perfect shape again, they take to the air finally 'in full and high feather' singing forth their thanks for the bath and reminding me to keep the pond filled.

But where is rain-water available when the sun is shining? The answer to this lack or shortage of rain-water in periods of drought was found in laying in a supply in an underground cistern during the rainy season. Pumping the water from the cistern to the watercourses instead of directly from the pond and re-collecting it by means of an overflow from the pond into the cistern again keeps the pond at level during any season. The level of the cistern, however, goes up and down according to the measure of rainfall and the evaporation of water. There are two added advantages. As the water in the cistern

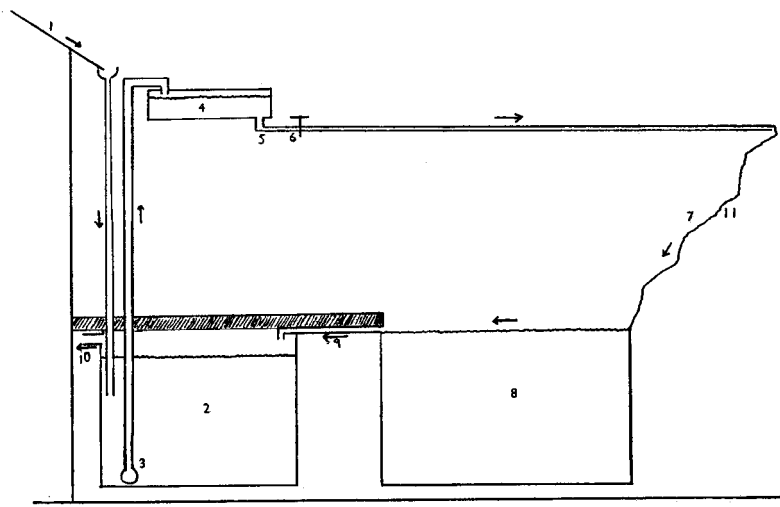

Fig. 6—The Water System

Legend:

1 House Roof
2 Cistern 7 m³
3 Pump
4 Water tank 1 m³
5 Pipe to water course
6 Stop-cock
7 Water course and falls
8 Pond 14m³
9 Overflow to cistern
10 Overflow to sewage
11 Rock Garden

receives neither daylight nor sunshine it is very cool all the time and it does not have any growth of algae whatsoever. When circulated this has no doubt its beneficial effect on the quality of the water in the pond.

To refine the water-circuit of the garden and to adapt it to the needs of the season, the hour of the day, or the occasion, the amount of circulating water had to be controlled. A fixed pump will always bring up the same quantity of water. Yet, one does not want 'a full-grown Niagara Falls' continually in one's garden. A murmuring trickle is preferable at times. The easy answer to these different needs was found by installing a water tank between the pump in the cistern and a point above the watercourses. By means of a stop-cock in the pipes between tank and watercourses the amount of water to be circulated can be regulated. Besides, the pump does not have to work all the time. Controlled by a float in the tank, it stops when the tank is full while it starts pumping again when the tank is empty. The pump can also be stopped by a main switch. This is quite handy when not at home or during the night. One can let the pump fill the tank, switch off the pump, and open the tap a little so as to let just a trickle of water through. One can then go to bed or away from home, but the water will be trickling for hours before the tank will be empty, thus maintaining some movement in the pond.

With the above I hope to have drawn a fair picture of my rock garden, although, as I said before, words fail to grasp the reality. A lot of details have not been mentioned at all. The solution of problems described—and of many others, which I have not described—were found for the greater part by trial and error, and some common sense. Hardly any literature on rock gardens, which was acquired by and by, gave satisfying answers to my specific problems. Some advice, especially on rocks and water, made me rock with laughter, and was far from correct. Perhaps I have not found the right books yet.

Trying things out without advice made the building of the rock garden far more interesting though, and the satisfaction afterwards the greater.

Come and have a look. You are welcome at any time.

La Vall d'Aran

by MICHAEL J. B. ALMOND

LA VALL D'ARAN is the name given to the upper valley of the river Garonne, which flows northwards from the central Pyrenees and then turns westwards to drain—with its many tributaries—most of Occitania and eventually to flow into the Atlantic Ocean north of Bordeaux as the Gironde. What sets the upper valley of the Garonne apart from those of the other rivers of the French Pyrenees is that it is in Spain! By some oversight, the boundary between France and Spain, fixed in 1659 by the Peace of the Pyrenees, deviates from the north-south watershed to include in Spain all of the Garonne valley and those of its tributaries above the Pont de Rei (Pont du Roi), which lies at a height of just under 2000 feet above sea level on the road between Montréjeau (65 miles south-west of Toulouse) and Viella, the capital of the Vall d'Aran. One reason for the deviation of the border from the watershed may be that the Pyrenees are composed of not one chain of mountains but two. In the central Pyrenees these two chains fail to meet and, in fact, overlap each other by some thirty miles; the depression between them is the Vall d'Aran (fig. 7).

The Vall d'Aran is, therefore, between France and Spain and yet not quite part of either. Politically it is part of Spain; geographically it is part of France—indeed, before the road tunnel was driven beneath the Port de Viella the valley was completely isolated from the rest of Spain during the winter snows. Linguistically it lies also between France and Spain; the Aranés dialect is half way between Catalan and Gascon. All the shops display their prices in both francs and pesetas and accept either impartially; and the locals will talk to you as readily —if not more so—in French as in Spanish. The Vall d'Aran is a world of its own and, in spite of its development for tourism, remains a delightful place; the scenery is magnificent, the countryside blessedly free from the crowds of tourists which plague the more popular areas in the French Pyrenees, the weather is generally better than that in the French Pyrenees and the flora generally richer than that on the southern slopes of the Spanish Pyrenees.

My wife and I have so far visited the Vall d'Aran on two occasions, in early July of 1978 and 1979. What follows is by way of a survey of the valley and what we found there, starting at the head of the valley (in the east) and working westwards. We have only explored a

small part of the valley so far, of course, and so the treatment is, of necessity, patchy. On both occasions we drove across France to the Pyrenees and camped in the mountains, either next to the car as high up the roads as it could take us, or else away from car and roads in the heads of valleys. (See Map—fig. 9).

The stream which has most claim to be the original Garonne is the Riu Garona de Ruda, which rises in the far south-east of the Vall d'Aran among the lakes of the Circ de Saboredo. We have not yet explored this farthest recess of the valley and so I shall start at the Port de la Bonaigua, over which the road which comes from Lérida via the valley of the Noguera Pallaresa passes at a height of 6735 feet. The top of the pass is graced with a rather incongruous stone edifice belonging to the Spanish electricity board, a few lakelets (most of which appeared to be rapidly drying up under the summer sun) and—usually—hundreds of cattle and horses.

Before setting off into the Vall d'Aran a slight diversion may be thought in order. The Estany de St. Gerber, although strictly not within the purview of this article, makes an excellent excursion from the Bonaigua Pass. In addition, a good (albeit sometimes windy and cow-infested) camping site is to be found next to the hermitage and refuge of La Virgen de las Ares. The hermitage lies at a height of about 5600 feet, some two and a half miles below the pass on its eastern side. We found the slopes above the hermitage covered in the leaves and seed pods of *Erythronium dens-canis* and there were patches of *Rhododendron ferrugineum*, *Daphne cneorum*, *Gentiana acaulis*, *G. verna* and *Lychnis alpina*. We also found *Globularia nudicaulis* and a small violet and, in the wetter areas, *Pinguicula*, *Primula farinosa* and *Saxifraga aquatica*. Alongside the road were clumps of *Carduus carlinoides*, the Pyrenean Thistle.

The path to Lake Gerber leaves the road about half a mile above the hermitage and climbs up the hillside to the south-west. It then turns and traverses the rhododendron-covered hillside in a southerly direction. Among the rocks we found *Arctostaphylos uva-ursi*, masses of *Sempervivum montanum* (with lots of flowers) and both the red and yellow forms of *Dactylorhiza sambucina*. Higher up, among the woods beside where the torrent from Lake Gerber cascades down the cliff to the valley below the hermitage, we were delighted to find a small number of *Erythronium dens-canis* still in flower. The path now climbs up the high valley towards the lake, passing over large slabs of bare rock; it is quite difficult to follow at this point and great care must be

taken to keep track of the small cairns marking the way. There is a smaller lake below the Estany de St. Gerber and even if you think that the view of the first is magnificent, the view of Lake Gerber itself is even better. You approach the lake up a steep, narrow section of the valley until suddenly it is revealed to you in all its glory, reflecting the towering, rocky peaks and the snowfields that surround it. On the cliffs, on the east side of the stream where it leaves the lake, we found *Androsace vandelii* and at their base *Lilium pyrenaicum* (though not in flower). On the slopes around the two lakes we found *Pinguicula grandiflora, Pulmonaria angustifolia, Pulsatilla alpina, Ranunculus pyrenaicus, Rhododendron ferrugineum, Soldanella montana* and (in the melting snow by the lakeside) *Soldanella alpina.*

The hillside to the north-east of the Bonaigua Pass, above the road, is a mass of *Vitaliana primuliflora,* but the ground at the top of the pass itself is well grazed and trampled by cattle and horses. We left it, therefore, and set off northwards to explore the next side valley along from the pass, that of the Raco de Vaqueira. We climbed right up to its summit, the Collada de Muntanya (7880 feet), which commands a fine view westwards down the Vall d'Aran, southwards towards the Estany de St. Gerber and northwards across to the valley of the Noguera Pallaresa. On our way up and our return to the Bonaigua Pass we noted the following flowers: *Androsace carnea, Arctostaphylos uva-ursi, Chaenorhinum origanifolium, Corydalis solida,* a *Draba, Dryas octopetala, Erysimum pumilum, Gagea fistulosa, Gentiana acaulis* and *verna, Geranium cinereum, Geum pyrenaicum, Globularia cordifolia nana, Hepatica triloba* (both the usual and a white form), *Iberis spathulata, Myosotis alpestris, Narcissus pallidiflorus* and *pallidiflorus* ssp. *bicolor, Plantago monosperma* (with its silvery down), *Polystichum lonchitis* (Holly Fern), *Primula elatior* and *integrifolia, Pulsatilla vernalis, Saxifraga media, S. moschata S. oppositifolia,* and *Soldanella alpina.*

The road from the Port de la Bonaigua down into the Vall d'Aran negotiates the precipitous valley side by means of a series of hairpin bends. The slopes alongside the road, the Costes de Ruda, are a mass of *Asphodelus albus* in some places and in others large numbers of *Fritillaria pyrenaica* are to be found. Without straying very far from the road we also saw *Aquilegia alpina, Aster alpinus, Erinus alpinus, Euphorbia cyparissias, Gentiana verna, Globularia cordifolia* and *nudicaulis, Helleborus viridis, Narcissus pallidiflorus, Potentilla rupestris, Primula veris, Pulmonaria angustifolia* and various saxifrages. The

first habitation one reaches on the way down into the valley is the new ski resort of Vaqueira 1500, sited (as the name implies) at about 1500 metres (4875 feet) above sea level. From here a new (but definitely not dust-free) road has been driven up the valley side to the Pla de Beret.

The word *Pla* is the same as the English *plain* and the Pla de Beret is an almost level expanse of rough pasture and marshland, about 1000 feet lower than the Bonaigua pass, where the same area of marsh feeds both the Noguera Pallaresa (which rises here and which flows northwards—at first—eventually to reach the Mediterranean) and the Garonne, by means of tributaries cascading southwards down the steep slopes to the Vall d'Aran below. So here, on the Pyrenean watershed, the Mediterranean waters flow north and the Atlantic waters flow south! There is plenty of room to camp on the Pla de Beret and, in spite of the large numbers of cattle and horses that are pastured there, there is still a great deal of interest in the way of flora, especially in the marshy areas and on the rocky outcrops. In marshes and by the side of streams we saw *Dactylorhiza alpestris, D. majalis* and *sambucina* (pink form), *Geum rivale, Nigtitella nigra, Pinguicula grandiflora* and *Primula farinosa.* In the turf and on various rocky outcrops around the Pla de Beret we saw *Androsace carnea, Daphne cneorum, D. laureola* var. *philippii* and *mezereum, Dryas octopetala, Fritillaria pyrenaica, Gagea fistulosa, Gentiana acaulis* (including a pure white form) and *verna, Globularia cordifolia, Iberis spathulata, Linum alpinum, Matthiola fruticulosa, Narcissus poeticus, Polygala calcarea, Polystichum lonchitis, Potentilla rupestris, Pulsatilla alpina* and *vernalis, Ranunculus alpestris and pyrenaeus, Saxifraga moschata pygmaea,* various *Sempervivum* including *arachnoideum, Trollius europaeus,* and *Tulipa australis.*

At the eastern end of the Pla de Beret, by the ski installations, is one of the sink holes quite common in this part of the Pyrenees. This one swallows up the torrent that flows down the Vall de Baciver and regurgitates it, a few hundred yards further on, to pour down the slope to the Vall d'Aran. The Baciver valley itself is well worth exploring. Like many of the side valleys of the Vall d'Aran, it is alternately narrowly precipitous and wide enough to contain some very picturesque lakes. The path up the valley is not very well used and goes nowhere in particular, so you are unlikely to meet anybody else on your way up or down. During the best part of a day exploring the Vall de Baciver we found *Anemone narcissiflora, Chaenorhinum origanifolium,*

Dryas octopetala, Erinus alpinus, Erythronium dens-canis (masses of them—and in flower too), *Fritillaria pyrenaica, Gentiana acaulis* and *verna, Globularia cordifolia, Linaria pyrenaica, Primula integrifolia* (masses of this too, including one enormous clump fully two feet across, growing on a rock beside the stream and making a beautiful picture) (fig. 8), *Pulmonaria angustifolia, Pulsatilla alpina, Ranunculus pyrenaeus, Rhododendron ferrugineum, Saxifraga pubescens,* and *Soldanella alpina.*

Almost exactly opposite the Pla de Beret, the Riu d'Aiguamotx flows due north into the main valley to join the Riu Garona de Ruda just above the village of Tredos. The lower part of the Vall d'Aiguamotx is narrow and V-shaped. Like most of the high valleys in this area, it rises in a series of steps (jasses) and in the meadows in the less precipitous parts of the valley between jasses we saw *Anthericum liliago, Aquilegia alpina, Arnica montana, Asphodelus albus, Astrantia major, Centaurea montana, Globularia nudicaulis, Gymnadenia conopsea, Lilium martagon* (not, unfortunately, in flower), *Reseda glauca, Rosa pendulina, Sanguisorba officinalis, Trollius europaeus, Veratrum album, Viola cornuta.* The road up the Vall d'Aiguamotx has a very good surface (once one has left the cobbles of Salardú) up past the hydro-electric reservoir at the mouth of the valley and well on towards the logging camps higher up. It then becomes rougher and loses its tarred surface. We persevered and left the car after a particularly difficult bit of driving where the road appeared to be undecided whether it was a road or a mountain stream. In fact, we were only about half a mile short of our target, which was where the forestry track (as it then was) doubled back northwards to start its climb over to the next valley, the Valarties. This is as far as wheeled vehicles can take you up the Vall d'Aiguamotx and from here we followed the marked path up to the Circ de Colomers, the huge rocky bowl littered with lakes that forms the head of the valley. We passed the mountain hut beside the Estany Major de Colomers and continued on up to the Estany Mort, which lies at a height of about 7200 feet at the northwestern edge of the Circ. Here we camped for two nights and spent the intervening day exploring the western half of the Circ as far as the top (about 8500 feet high) of the ridge that divides it into two parts. The weather was perfect, the scenery superlative with a mass of jagged rocks pock-marked by lakes of various sizes, some partially frozen over, linked by raging torrents and waterfalls—and we didn't see a soul all day. On the cliff just above our camp site we found about

half a dozen clumps of *Androsace vandelii*, three of them in flower, and in the marshy area below the cliff were masses of *Soldanella alpina*, including a pure white one. While we explored the Circ we saw, among other things, a dwarf species of *Arenaria*, *Gentiana acaulis* (both the usual form and a form with distinct white markings on the petals, which were a lighter blue than usual), *Loiseleuria procumbens*, *Nigritella nigra*, *Silene acaulis* (in large mounds with quite a lot of flowers), and *Viola biflora*.

Moving westwards down the Vall d'Aran from the Vall d'Aiguamotx, the next tributary valley on the southern side is the Valarties, at the bottom of which stands the village of Arties. The view of the steep-sided and wooded valley from the main road, with the twelfth-century church of Arties in the foreground and the conical 9200 foot high Montarto in the background, is very fine. Although we paid only a fleeting visit to the Valarties, we were rewarded with a mass of *Saponaria caespitosa* covering a wayside wall and a group of fine and weirdly shaped *Phyteuma* (probably *Phyteuma betonicifolium*) alongside the path. The meadows in the bottom of this valley, too, were a mass of different flowers.

In mid-summer the valley bottom, around Viella, capital of the Vall d'Aran, and lower down towards the French border, can get uncomfortably hot. We paused in Viella long enough only to replenish our supplies and admire the fine old church before moving on. Although we could have stayed longer to admire the magnificent views, picturesque surroundings and fascinating old buildings of the villages to the east and north of Viella also—Betrén, Vilac and Montcorbau in particular—we hurried on to our next destination, the valley of the Riu Garona de Joeu. The road up this valley (again, an excellent motor road) leaves the main road at the little village of Les Bordes and winds its way up through the pleasantly wooded lower reaches of the valley. As the valley climbs higher, the woods are interspersed with meadows containing such flowers as *Aquilegia alpina*, numerous types of *Campanula*, *Dianthus monspessulanus*, *Echium vulgare*, *Gentiana lutea*, *Geranium phaeum*, *Malva moschata*, *Saxifraga umbrosa*, *Scilla liliohyacinthus*, *Thalictrum aquilegifolium*, *Viola cornuta*. At a height of about 4700 feet lies one of the marvels of the Pyrenees and the phenomenon that justifies the river in this valley being called the Riu Garona de Joeu and contesting with the Riu Garona de Ruda the title of the true source of the Garonne. Cascading down the eastern side of the valley for about 300 feet or so comes a volume of water

considerably greater than that in the torrent occupying the bottom of the valley. But where does it come from? It rises from the earth, among the trees on the hillside; there is no great cavern or pool, the water just wells up. This is the magnificently named Guells del Joeu. There are no large swallow holes higher up the Vall de Joeu and it was always clear that the water emerging from the Guells must come from elsewhere. It was long surmised (and eventually proved by means of dyeing the water) that the water in fact comes from the Forau de Aiguallut (also known as the Trou du Toro), a swallow hole in the upper Esera valley, which drains the northern slopes of the Maladeta massif (which includes Aneto, at 11,170 feet the highest mountain in the Pyrenees). The large area of glacier and perennial snow drained by the upper Esera valley into the Forau de Aiguallut would easily account for the volume of water issuing from the Guells del Joeu. Although the Esera valley drains the northern slopes of the Maladeta in this way, however, it also drains the western and southern slopes of the massif and the Rio Esera flows south to the Mediterranean. So not only is the Garonne the only river flowing northwards through the Spanish Pyrenees to the French Atlantic coast but, as the Riu Garona de Joeu, it rises on the southern side of the watershed and then flows beneath it to make its way north.

Beside the water at the Guells itself we found *Pyrola media* and, on and around the edge of the flat valley bottom above it, we found *Aquilegia alpina, Asphodelus albus, Erinus alpinus, Gentiana lutea, Geranium phaeum, Geum rivale, Lilium martagon* (again, alas, not in flower), *Lilium pyrenaicum* (a mass of beautiful flowers with a quite disgusting smell—magnificent from a distance!), *Narcissus poeticus*, various fine marsh orchids and an interesting ragged-petalled *Silene*. We then left the car at the end of the road, above the Guells, and set off up the eastern of the two valleys into which the Vall de Joeu divides at this point. We passed through dense thickets to start with, mainly of silver birch, and then began to climb steeply. There is a path marked on the map up this valley and a path there indeed is, but it is one of the most abominable paths it has ever been my misfortune to walk; and having a full pack to carry made the whole exercise rather trying. The path climbs up the steep valley through slippery, grass-covered slopes, straight up a near vertical hillside. Not deigning to zigzag, it crosses very rough scree and traverses half-melted snow banks. On the way up the valley we passed *Aquilegia alpina, Gentiana lutea, Fritillaria pyrenaica, Lilium martagon* (again, not in flower), a *Phyteuma*,

Pulsatilla alpina, Rhododendron ferrugineum, wild roses, *Saxifraga umbrosa* and encrusted saxifrages. On a particularly tricky section of the path, just nearing the top of the last jasse before our destination for the day and on a rocky ledge above a precipitous snowfield, there was a magnificent display of *Dryas octopetala*—and a wonderful view down to where we had left the car some 2000 feet below.

Our destination for the day was the Estanyet dels Puis—"Chamois Tarn"—at a height of about 6800 feet. As we neared the lake we were surprised to see a party—man, wife and two children—heading back down the valley in the opposite direction. We exchanged greetings and the man told me that the chamois came down from the mountain tops to spend the night at the side of the lake. Unfortunately we neither saw nor heard any sign of them during the two nights we camped at the lakeside. As soon as we had got our breath back, the setting of the lake, surrounded as it was by precipitous screes (which we could hear moving most of the time) topped by jagged peaks over 9000 feet high, and the profusion and variety of the flora, amply compensated for our exertions in reaching it. Among other flowers, there was an abundance of *Anthericum liliago, Crepis pygmaea, Dryas octopetala, Gentiana acaulis, Globularia cordifolia, Hedysarum hedysaroides, Primula elatior, Pulsatilla alpina, Rhodiola rosea, Soldanella alpina.* During the day we spent at the Estanyet dels Puis we traversed the screes on the west side of the lake as far as the opposite (southern) end and attempted to climb up to the watershed with the upper Esera valley. The looseness and steepness of the scree proved too much for us, however, and we retreated to our camp to spend the rest of the day basking in the sun.

After ten days of virtually unbroken sunshine the mountains were ready to remind us that they should always be treated with the greatest respect. As the wind howled round the lake and rushed down the screes at us that night, we were glad that ours was a small tent designed to meet such conditions and not a larger tent with all "mod. cons." and too much wind resistance. As we packed up in the rain the next morning and made our way back over snowfield, rough scree and near vertical grassy slopes down the virtually non-existent path we were glad we had come well prepared into this mountain fastness. We were lucky, too, that we had had good weather until our last day in the mountains, for, as we headed north for the French border, the clouds were down and blotting out the bright open vistas that had helped to make our visits to the Vall d'Aran so memorable.

Mountain Flowers of Bulgaria

by LYN BEZZANT

IN 1978 we visited two contrasting regions in the mountains of Bulgaria. The first week was spent at Pamporovo (1620 m/5346 ft) in the Rhodope Mountains, south of Plovdiv, and the second week at Borovets (1300 m/4290 ft) in the Rila Mountains, south-east of Sofia.

We arrived at the mountain resort of Pamporovo, near the village of Rezen, on 30th June. Although reaching a height of nearly 7000 ft, the Rhodope Mountains are really gently rounded hills. Forests of spruce, mainly *Picea orientalis*, cover large areas. It was a mixture of meadow, woodland and marsh plants which we were to see during our first week.

We did not have far to go to look for interesting plants. The hotel was set in the midst of flower-filled meadows and nearby were the woods. An early walk through the fields revealed a number of plants new to us in the wild. Everywhere were the slender stems of *Campanula patula* with purple-blue flowers, a graceful plant. The shining golden yellow flowers of *Linum flavum* were growing with it. *Ornithogalum umbellatum*, *Viola tricolor* and *Hieracium alpinum* were more plentiful than the meadow grasses. *Crocus* leaves were everywhere in the short grass. An English-speaking Bulgarian from the Black Sea coast told us that the crocuses hereabouts are yellow-flowered. We collected a few seeds. A little crowd of intrigued visitors had gathered by now, and with the help of our Bulgarian friend and Huxley's "Mountain Flowers" we were able to tell them something about our interest in alpine plants and how we try to grow some of them in our garden.

Along the hot and dusty roadside among masses of umbellifers and clovers we came across *Verbascum pannosum*, a most imposing plant, about four feet tall with big silver-felted leaves and a single spike of yellow flowers. *Campanula moesiaca* with a clustered head of light blue flowers and more blooms in the leaf axils reached a height of about fifteen inches. *Cicerbita alpina*, the Mountain Sow-Thistle, was in large drifts where the ground had been disturbed to build ski-lifts. Ants of all sizes up to about an inch and a half long scurried about the paths. In the woods we saw huge ant heaps which had been fenced off with wire netting. Notices in Cyrillic script presumably warned visitors not to disturb the inhabitants.

In a small clearing we saw our first Birdsnest Orchid, *Neottia nidus-avis*, with its pale brown segmented flowers on a ten-inch stem. *Saxifraga rotundifolia* with dainty red-spotted white flowers was in damp places along the path. We were pleased to see a solitary plant of the yellow-flowered *Orchis pallens* growing in short grass, and later on our old friend *Moneses uniflora*, that delightful little woodlander, here in masses and in perfect condition, its solitary waxy-white flowers on two-inch stems nestling among the damp conifer needles carpeting the ground at the edge of the wood.

On a grassy bank we found *Goodyera repens*, Creeping Lady's Tresses, *Gymnadenia conopsea*, the Fragrant Orchid, in pink and white forms, *Primula elatior* in seed and *Gentiana verna* in flower and seed. Huge, glistening green grasshoppers made enormous leaps from plant to plant.

In a marshy meadow nearby we came across the very showy orange-flowered *Geum coccineum*, a native of Bulgaria. Carpets of forget-me-nots and drifts of the Broad-Leaved Marsh Orchid, *Dactylorhiza majalis*, made a charming picture. Big plants of well-flowered *Veratrum album* were dotted about. *Polygala major* in blue and pink attracted clouds of silver-studded blue butterflies. It was an unforgettable scene and a place to linger, except for the unwelcome attention of a number of brightly coloured horseflies; they came in iridescent orange and green.

Rocks at the top of the local peak of Mourgavetz gave us good views over the surrounding countryside, rolling tree-covered hills, the little town of Smolyan and its lakes far below in the valley haze, and the winding road leading into Greece, dry and dusty in the heat. Beads of resin oozed from the spruce trees and winked amber, green and blue in the bright sunshine. Hereabouts in cracks in the rocks and on stony banks we saw an interesting St. John's Wort with hairy leaves, and bright yellow flowers coming from the leaf axils, quite prostrate, possibly *Hypericum cerastoides*. Silvery leaved *Paronychia argentea* draped the rocks. Growing here too were *Minuartia verna*, *M. grandiflora clandestina*, *Arenaria purpurascens*, *Potentilla grandiflora*, a *Helianthemum*, and a single plant of *Cucubalus baccifer*, the curious Berry Catchfly. In a damp meadow further down, *Trollius europaeus* and *Geum rivale* bordered a small stream.

An excursion through meadows to the small village of Rezen showed us *Dianthus sylvestris* and *D. carthusianorum* growing in quantity with *Anchusa officinalis* and *Viola tricolor*, also just one flowering spike of

Muscari comosum, the Tassel Hyacinth. Purple *Calamintha alpina* carpeted the stony path sides as we toiled upwards in the heat. We were rewarded by the sight of *Orchis ustulosa*, the Burnt Orchid, growing in short turf at the top of the rise. Everywhere we saw the bright yellow of *Linum flavum* and the delicate spikes of *Campanula patula*. We ate our lunch beside a field full of tall yellow daisies where hundreds of Painted Ladies flitted from flower to flower. The sun was very hot in a cloudless blue sky. Our way back led alongside a noisy stream through a stony gorge. The rocky banks at the side of the path were draped with masses of a brilliant red-leaved *Sedum*, woolly grey thymes and a splendid plant of an unknown pink-bracted *Euphorbia*. Other plants were *Coronilla varia*, *Trifolium pratense frigidum*, *Carduus personata*, *Thalictrum alpinum* and *Lamium orvula*.

A moorland walk to the line of the old Turkish border gave us plants of *Saponaria bellidifolia*, a white-flowered form, and some good specimens of *Bruckenthalia spiculifolia* in various shades of pink, one very attractive deep rose colour and a white one. Plants of *Verbascum pannosum* stand about these upland pastures like sentinels. Geraniums are a feature of the woods lower down. We noted *Gg. macrorrhizum*, *phaeum*, and *pyrenaicum*. These woods yielded two wintergreens, *Pyrola minor* and *Orthilia secunda*. We watched a Middle Spotted Woodpecker returning with food for its young to its nest high in the trunk of a conifer.

On our last evening at Pamporovo we had dinner in another hotel and walked back the mile or so to our own. Hundreds of fireflies danced about all around us in the darkness. Four young Bulgarian girls were walking along the road ahead of us singing together some of the hauntingly lovely melodies of their country.

On the journey between Pamporovo and Borovets we visited the eleventh century monastery at Bachkovo, and the old town of Plovdiv or Philippopolos, with its narrow cobbled streets and interesting old buildings. The famous gold treasure of Panagyurishte is housed in the archaeological museum there. From the coach we were able to see how the fields in the hot plains of Bulgaria are irrigated by opening sluice gates and allowing water to flow along between the rows of growing crops.

The Rila Mountains are much more rugged than the Rhodopes. The highest peak, Mount Moussalla (2925 m/9662 ft) overlooks the village of Borovets. Our visit to Bulgaria had been encouraged by reading the article 'Moussalla' by Mr. Gilbert Barrett in the A.G.S.

Bulletin, Volume 40, p. 231. He had described fully and most interestingly the plants which he and his wife had seen. He had also provided an excellent sketch map which we found indispensable. The weather was a little cooler than it had been at Pamporovo. The mountains were still streaked with snow and the streams cascading down their sides were well filled. The lower slopes were covered in mixed woodland.

A walk through the woods and along the side of a steep cliff took us to the Black Rock or Cernata skala, a big outcrop overhanging the deep gorge below. *Dactylorhiza maculata*, the Spotted Orchid, was growing in rough grass and nearby a plant of the curious pea-grass, *Lathyrus nissolia*, a small crimson pea flower at the end of a long slender stalk, the leaves narrow and grass-like. Other plants were *Silene nutans*, with one-sided clusters of nodding white flowers, the deeply notched petals rolled back exposing the stamens, a yellow *Digitalis* with attractive brown veining on the petals, bright pink *Lychnis viscaria*, and a splendid clump of *Pyrola media*, the flower stalks tapering to buds of deep pink at the top of the spike. An unknown *Silene* with blue-grey leaves and sprays of bright pink flowers grew flat against a huge rock in vertical crevices; a white-flowered form was found nearby. *Antirrhinum sempervirens* and *Centaurea nervosa* made a colourful picture on the flat top of the rock. In a grassy glade among tall grasses we found the Purple Mullein, *Verbascum phoeniceum*, a most beautiful plant with an eighteen-inch wand-like stem. The blue-purple silky flowers were at well spaced intervals all round the stem, the unopened buds at the top like tiny five-sided satin pincushions. The yellow-flowered *Scabiosa ochroleuca* and lavender pink, beautifully scallop-petalled *Silene alpestris* were also noted. On the return journey we saw the best ever specimens of *Moneses uniflora*, dozens of perfect gems nearly hidden in the rough grass bordering the damp ditchside.

Now it was time to tackle the mountain. As we looked up at the uncompromising masses of tumbled grey granite on the heights we wondered if we would be able to reach the haunts of those rare and wonderful plants we had read about.

There was a chair lift which was a help in getting us part of the way up through the trees. It was a wonderful experience floating effortlessly above the woods in the clear morning sunlight. Soon we were toiling up the steep slope. Peaty banks at the side of the path were draped with delightful white pink-tinged flowers of *Vaccinium vitis-idaea*. Well-flowered plants of *Geranium sylvaticum* and *Antennaria dioica*

were growing mixed with *Genista sagittalis*. An interesting dwarf broom, bright yellow-flowered, with silver-edged leaves, may have been *Cytisis rhodopaeus*. Masses of *Bruckenthalia spiculifolia* in varying shades of pink grew in the rough grass.

We lingered for a few minutes at the gateway to the former Royal Hunting Lodge at Saragjol hoping to be allowed to look at the rock garden which was at one time in the care of Herr Wilhelm Schacht. Nothing was visible but a tangle of coarse grass. An unsmiling guard with a fierce-looking dog barred the entrance and so we continued on our way which led upwards towards the Saragjol Lakes. We noticed a fine clump of a pure white form of *Campanula patula* and nearby a very attractive white-flowered *Centaurea*, height about fifteen inches, the petals intricately spiked and feathered. Many fine plants of *Leucorchis albida*, the Small White Orchid, with spikes of half-drooping flowers, were growing in a damp grassy clearing.

An exciting find was a single plant of the rare *Aquilegia aurea*. The butter-yellow petals were lightly tinged with green. The plant, about eighteen inches in height, was growing up through the lower branches of *Pinus mugo*. Further on we saw dense mats of the evergreen, pink-flowered *Arctostaphylos uva-ursi* draping the rocky banks.

We stopped for lunch where the path crossed the stream which falls from the first of the Saragjol lakes. Almost immediately we noticed the big, round hairy leaves and strange yellow-green flowers of *Geum bulgaricum* which were unmistakable. There were a number of plants growing among tumbled rocks.

Onwards again and up along the stony track for our first sight of *Campanula alpina*, a compact four-inch plant covered with big purple-blue bells. Scattered plants of the tiny grey-green cushions of *Dianthus microlepis* began to appear. Soon we were to see hundreds of them studding the short grass, each one seeming more beautiful than the last, the colour of the almost stemless flowers ranging from pure white through to deep pink with many variations in petal markings.

Scattered plants and groups of *Gentiana punctata* were growing in rough grass. The leaves are ridged and resemble those of *G. lutea*. The unusual flowers are bell-shaped, yellow, spotted with purple, and are clustered together at the top of the eighteen-inch stem. Flowers also appear in the axils of the top leaves. Where the snow had recently melted we discovered a fine stand of a deep purple-flowered *Crocus*, with a white throat, possibly *C. veluchensis*, a native of Greece and Bulgaria.

The way back led through apparently endless *Pinus mugo* scrub. Some plants find homes in small clearings among it. The vivid orange flowers and deeply cut leaves of *Senecio abrotanifolius* contrasted well with the silver filigree leaves and clustered white flowers of *Achillea millefolium* and the furry blue heads of *Sesleria caerulea.* Down in the taller trees woodpeckers had been at work. One larch tree had nesting holes made in it at intervals right up the trunk.

Hurrying through the last of the trees we saw another Wintergreen, *Pyrola chlorantha*, a fine group of it in perfect condition, flowers of yellowish-green in rather loose spikes, about six inches in height.

Our next objective was to walk to the Jastrebets Hut, along the ridge to the Moussalla Hut, and back down the streamside path on the valley floor to Borovets. Even starting out early the sun was soon blazing down and we were glad of the shade afforded by the trees. A string of pack ponies from the Moussalla Hut cantered down the path on their way to the village for provisions.

Masses of *Geum coccineum* mingled with marsh forget-me-not filled a pleasant glade beside a small stream. Soon we were out of the tall trees and climbing steadily. After a long hot pull we reached the Jastrebets Hut and stopped for lunch on the topmost grassy ridge. *Gentiana pyrenaica* grew in hundreds in the short turf. I counted over twenty of the distinctive blue-purple flowers in one clump. *Dianthus microlepis* and *Campanula alpina* were growing intermingled with the gentian. The *Campanula* here was very dwarf and compact, a deep purple colour. *Crocus* leaves were everywhere in the grass.

The walk across the hillside towards the Moussalla Hut gave us good views of all the surrounding peaks and down into the distant hot plains. The flowers were wonderful. Where snow had recently departed whole hillsides were covered in *Primula minima*, *Ranunculus crenatus* and *Soldanella pusilla*, all growing together in great profusion on dripping wet peaty slopes. The flowers were at their best, with many fully open and plenty of buds still to come. In drier places further on were many more *Dianthus microlepsis* and a few light blue-flowered *Gentiana verna.*

We passed the Moussalla Hut and started on the long walk down the valley. Where the stream spreads out to form innumerable small rivulets there was a large area of very wet ground. Big flat rocks formed stepping stones, so we were able to walk quite easily into this enchanting place. It was the home of *Primula deorum*, the *Primula* of the gods. There it was growing in the shallow sparkling water, in quantity

and in great form, with shining, bright green narrow leaves and one-sided clusters of deep rosy red flowers, the stem and calyx dark red. It was growing in company with the candy-pink *Primula frondosa* and an unknown white-flowered marsh *Saxifraga.* It was an unforgettable picture. We spent a long time looking at the flowers and taking photographs, until reluctantly we had to return to the path and our downward journey.

A very tame bird, the Nutcracker, sat obligingly on a branch for his portrait to be taken as we were nearing the village. The heavily laden ponies were making their way up through the trees. I wondered how they managed to negotiate the frequent very rugged stretches of the path.

Our holiday was coming to an end and we were to try to climb to the top of Moussalla, spending the night en route in the Hut. We set out laden with food enough for two days and, bearing in mind the appalling weather that Mr. and Mrs. Barrett had encountered on their climb, all our warm and waterproof clothing. The chairlift quickly carried us up through the glorious morning sunshine and soon we were well on our way along the Saragjol ridge path.

On a dry plateau covered with finely broken granite lay a perfect scree garden. Plants of *Campanula alpina* in both blue and white, tiny *Jasione* and *Globularia* nestled among the stones, as well as unknown minuartias and cerastiums in tight cushions. The three Saragjol lakes glinted in the sun far below and the mountain shimmered in a haze of heat. There seemed to be no wind in these mountains. Occasionally a thin cool mist swirled over everything and then disappeared again quite quickly.

Growing out of rock crevices were fine clumps of the unusual *Saxifraga cymosa,* a velvety-leaved mossy with masses of pure white flowers with delicate green veining on the petals. Further on in drifts covering steep grassy gullies and in much drier conditions than previously we saw more *Primula deorum.* Bright pink *Pedicularis rostrato-capitata* was plentiful hereabouts. Lower down *Gentiana pyrenaica* was everywhere and in damp places a very attractive butterwort, *Pinguicula leptoceras,* a violet-blue flower with a white patch on the lower lobe. These were in masses nearly all the way to the Moussalla Hut and made an enchanting picture as they grew in their hundreds all round the edge of the first Moussalla lake which lies beside the Hut.

We were up very early in the morning after the novel experience of spending a night in a mountain hut, and were on our way by 6 a.m.

The sun was just coming up, the air was cool and sparkling. It was quite the best time to be afoot in the mountains. The route was well way-marked, but looking up at the steep slopes of fallen rocks, many of them as big as a house, we marvelled that a path could ever have been made. Up we went, however, making good progress in the cool of the morning. There are a number of small lakes in elevated basins on the way to the summit. Rushing streams of icy snow melt join the lakes one to another, and the stony path rises steeply alongside. On one stretch snow was still lying across the path, but we were able to kick steps across it.

We were at the top by half past seven. The sun was shining brightly by now and we had magnificent views of the Rila Mountains all around us. A solitary ibex was silhouetted momentarily against the skyline on a nearby ridge. The mountain top was made of huge boulders and shattered granite. The only plants to be seen were massed cushions of what appeared to be minuartias and cerastiums making a miniature rock garden on a completely inaccessible outcrop overhanging the sheer drop to the highest of the lakes immediately below us.

We were delighted that we had managed to reach the top of Moussalla, the highest mountain in the Balkans. We had been very lucky indeed with the weather. During the whole fortnight we had only had one heavy shower and that late in the evening.

Just for the experience we decided to descend the top rocky stretch with the help of the fixed wire ropes. This proved to be the most exhausting effort of the whole expedition.

Soon we were back on the grassy slopes above the second lake, and here we rested for an hour or two. It was a paradise garden: *Primula deorum* was standing in wet hollows and *Crocus veluchensis* was flowering, actually growing in running water. *Ranunculus crenatus* was in masses and on the drier slopes above were the best specimens we had seen of *Gentiana pyrenaica.*

It was very hard to pack up our rucksacks and put on our walking boots for the last time. Down the path we plodded, past the Moussalla Hut and its lake of the butterworts, past the marsh of *Primula deorum,* along the hillsides of soldanellas and *Primula minima,* through the *Pinus mugo* scrub, down through the tall trees and finally past the little bronze squirrel that guards the green square of Borovets. Tomorrow, an early start for Sofia, some last minute sight-seeing, then to the airport and home.

Success with Cape Bulbs

by JIM HOLMES

FEW PLACES in the world can rival the Cape when it comes to sheer numbers of species of interesting and beautiful bulbous plants, where plant hunting is still an exciting adventure and where new species are still being discovered each year.

The majority of them belong to three main plant families, i.e. *Liliaceae*, *Amaryllidaceae* and *Iridaceae*.

I intend to narrow this article down to some of the *Iridaceae* found in the southern Cape and which give so much difficulty in cultivation, but which are, I feel, worth trying.

Virtually hundreds of species, many grown only by a handful of collectors, are I believe suitable for cultivation in a good alpine house, where they can be protected from the severe frosts and particularly the winter wet, since many are unfortunately rather tender.

These species come to life with the first winter rains. They grow during the coldest period of the year, which in most mountain areas includes short periods of frost and snow, flower in spring and go dormant with the onset of the hot dry summer weather. Knowing these simple requirements, it is tempting to grow a few species. Success needs research and patience, but this is not always assured, and failures are more frequent than we would wish.

While hiking around in search of these little treasures, it bewildered me at first why they were usually found growing in the poorest ground, consisting largely of sand, clay and gravel, which packed as hard as concrete in the summer. The fact is, the ground is so poor that not even grasses or shrubs can survive, giving the bulbous plants a maximum of the often poor winter light.

Their two natural enemies are the moles and baboons who consider them a great delicacy. Their third and greatest enemy, which kills most plants in cultivation, are the soil-borne fungi and bacteria which abound in composts and garden soils.

To grow the more difficult of these bulbs successfully, particularly many species of *Babiana*, *Gladiolus*, *Synnotia*, *Lapeirousia*, and *Romulea*, the best growing medium, to my mind, is clean sharp sand mixed with a small portion of loam. This medium gives free water movement through the pot, and excess fertilizer and salts are easily leached away. As soon as they start to go dormant, withhold all water, until the start of

the next season. This helps to ripen the bulbs.

Spraying with a good fungicide should keep the bulbous plants free from diseases.

Geissorhiza, Spiloxene, Moraea and *Watsonia* are among the easier genera in cultivation. Most *Gladiolus* species will thrive in a compost of equal parts of sand and loam with a low pH value.

Unlike many species, the hybrid ixias, freesias and tritonias, so often encountered in cultivation, do not do well in such a poor medium and seem to enjoy a richer compost.

It is of course very difficult to group all plants of a particular family together and generalize on their cultural requirements, as they are found under a wide variety of conditions in nature. For instance, the beautiful *Ixia viridiflora* is usually found growing along the side of small mountain streams, in what can only be called a sandy-clay soil. *Geissorhiza rochensis* grows in the sandy marsh with their corms and roots completely submerged during the growing season, while species of *Gladiolus* may be found from sea level to the tops of our tallest mountains. Each species seems to have its own natural distribution—beside or in the mountain streams; on the cool mountain slopes; or sometimes wedged in the cracks of a rock on high mountain ledges.

Unfortunately, like other places in the world, many species are becoming scarce due to careless picking.

It is often difficult to build up a collection of Cape species, for I personally do not know of any commercial source of bulbs, but fortunately for the real enthusiast, seeds of many species can be obtained from the Blombos Nursery, Durbanville, 7550, R.S.A. (and are sometimes offered in the S.R.G.C. Seed List.—*Ed.*).

I have been thrilled to find that most species of *Ixia* start flowering in six months from seed. In their second or third year most species of *Gladiolus, Babiana, Romulea* and *Moraea* come into flower.

The *Gladiolus* from the winter rainfall area show considerable variation in size, shape, colour and flowering times, (it is possible to have one species or another flowering every day of the year). Many can be loosely grouped together into several distinct categories.

The 'Painted Lady' types, which include the dainty *Gladiolus debilis* and *G. vigilans*, with their lovely spade marking and the numerous forms of *G. carneus*, (one of the best known species), *G. undulatus* and *G. angustus* with their branching flower stems, are all very desirable species, which flower in the mid to late spring. The colours are limited to white and shades of pink, usually with dark pink or red markings,

and the flowers are simple but striking.

To my mind, a group well suited to small or medium size pot culture is the 'Kalkoentjie' type (Little Turkeys). They bear two or three short, narrow leaves and numerous 1½ inch flowers on a 10 inch flower stem, with the charm of the small *Cattleya* species. *G. alata* is the best known in this group with bright red and yellow flowers. A pink form also exists.

Many of the 'Kalkoentjie' species grow in the drier areas where the summers are very hot and winter frost more frequent. The delicate *G. watermeyeri*, with white, yellow and red veining, show a beauty one would not expect to find on the fragile desert margins.

In a similar region one finds the green-flowered *G. orchidiflorus* and handsome pink *G. equitans*. Most species in this group are highly fragrant.

Another group which are well worth noting are the 'Hysteranthus' types and are recognised by their unusual habit of flowering in the resting season, producing flowers and seeds from what appears to be a dormant corm. This group contains some of the rarest and most localised species, including *G. stokoei*, *G. nerineoides* and *G. stefaniae*, all bearing bright red flowers but not easy to grow in cultivation. It is apparent that after flowering *G. stokoei*, it may take several years for the corm to build up enough strength to flower again, but fortunately the other species appear to flower freely each year.

Most species in this group grow on the summit or upper slopes of mountains, one of the few exceptions being *G. carmineus*, which prefers the rocky cliffs by the sea.

Many other species of the 'Hysteranthus' types bear medium to small flowers, including the white *G. monticola*, found on the top of Table Mountain, and the pink *G. brevifolius* found on many mountain slopes in the late summer.

With nearly 100 species and subspecies of *Gladiolus* in the Southern Cape, they make a fascinating study, for many of them possess infinitely more charm and character than any hybrids to date.

The Babianas are generally very low-growing plants and many are certainly well worth cultivating, but the more exciting species are very scarce.

B. pygmaea with its wide open flowers would have long since disappeared if it were not for the foresight of some Cape farmers. Through their good management of the land, the wild flowers have increased in the veld.

Most *Babiana* species grow in sandy or gravelly ground on the lower mountain slopes or on rocky outcrops.

The shapes, colours and forms vary considerably from the white *B. tubularia* var. *tubiflora* to the dwarf blue *B. nana*, the lovely pink *B. blanda*, the highly fragrant mauve or green *B. stricta*, bright red *B. villosa* and the multi-coloured *B. rubrocyanea* (Wine Cup *Babiana*) which must rate as one of the most strikingly beautiful of all bulbous plants, each flower resembling a half filled wine goblet.

Only a small percentage of the 80 or more species of Babianas are in cultivation.

I must not forget to mention the miniature species of *Watsonia* such as *W. humilis* or *W. marginata* var. *minor*, producing flower spikes twelve to eighteen inches tall. They are superb in pots.

I feel sure that when people do get to know these beautiful plants and understand how to grow them, they will be a welcome addition to the spring flower shows.

Many of these plants grow well in pots if properly looked after and will certainly delight the growers and induce them to try a wider range.

Angus Group Seed Exchange

As the Overseas members do not receive the September *Journal* before our deadline for receiving seed, may we remind you that we must have seed by the end of October or, in the case of late ripening seed, a list of seed to come also by the end of October, which will ensure inclusion in the seed list. We are getting a bit short of space, so we do not intend to include large shrubs and trees except those of great merit difficult to obtain elsewhere. Please see your seed is ripe and it is cleaned. It takes us all our time to clean our own contributions without having to start on yours, although we do have one or two contributors who have problems with poor eyesight and we are delighted to help them. We have a leaflet on cleaning seed obtainable by sending a S.A.E. Please PRINT the names on the packets.

We are, at the time of writing, in the middle of the distribution and while we had a very interesting varierty of seed in many cases there

was not much of it. This year there has been a great demand for seed of bulbous plants, fritillarias, good varieties of *Crocus*, very short of *Galanthus* except for *nivalis*, small *Narcissus*, small *Iris*, plieones except for *bulbocodioides* and *limprichti*. If you are sending bulbils you must give them protection, I think the Post Office must use mangles. We started off with a lot of *Cyclamen* seed but many of these were finished by the half-way stage. All these, of course, in addition to the real rarities which we have shared out to the best of our ability.

There seem to be a few more members interested in Ferns nowadays but we are getting fronds, or rather pinnae, sent in that have shed their spores. Fern spores are like a very fine brown dust and are most easily collected by putting the fronds in a paper bag and they should shed the spores in a few hours provided they are ripe and you have caught them in time. Please just send us the "dust".

In spite of the many generous members who send us extra money we incurred a loss for the season 1978-79 and expect to do so again this year. To save some money we have used 2nd class air mail when possible as an experiment to various parts of the world. This showed no difference in delivery time. Also we propose to raise the basic charge to £1. For this donors and overseas members will get 24 packets and non-donors 16. We are discarding the extra 6 packets in both sections; those who do not wish so many can notify us.

Some new members seem to be under the impression that we sell seed. You cannot buy seed from us. It is gifted by members for the benefit of members. However, we do require money to run the exchange, to pay for printing and the thousands of envelopes required, etc., hence the basic charge. We know it is difficult in some countries to send small amounts of money but we think that only those who wish to participate in the exchange should pay for the running of it.

Finally, enjoy with me the 'cri de coeur' I found in a box of packeted seed, fig. 10, all who have laboured in seed exchanges will appreciate this, I am sure.

JOYCE HALLEY

happiness is . . .
having only
enough seed for 4
packets when the
instructions say 40

Fig. 10

Recent Acquisitions from the Seed Exchange Part IV

by M. A. and P. J. STONE

Allium triquetrum

We have, in the front section of our garden, a series of narrow dividing borders about 1 m (3 ft.) wide, in which we are starting to grow shrub roses. Raising these from cuttings, to obtain them on their own roots, is rather a slow process; and so, to provide some more immediate interest, we have started to concentrate our open ground bulb collection into these borders. Eventually we hope that dwarf bulbs will provide colour early in the year, before the shrub roses are in leaf. The bulbs benefit from the fertilizer applied to the roses in the spring, and also from the rain-shadowing and "water-pumping" effect described by E. B. Anderson, which provides a drier summer rest period than in the open border. Shrub roses, especially the species, can be pruned into a natural "vase" shape to provide the necessary space underneath.

Allium triquetrum is described in two of the current bulb books as a "weed" and "rather a menace"; but they also state that it should naturalise in the shady positions under shrubs where, for example, crocuses are unsuitable in this garden as they never open. Therefore the *Allium* was an obvious choice for one of the shadier parts of the rose borders. Looking in a bulb catalogue, we were surprised to find that this "weed" was five times the price of the well-known *Allium oreophilum*; and so we decided to try seed. This was sown early in 1975 and germinated the following May. Growth was very rapid and they were potted individually two months later. The seedlings did not go dormant that year but continued in growth right through the following winter. As we had since read that *Allium triquetrum*, far from being a weed, could prove a little tender in a cold garden because of its wintergreen habit, we planted them out in a sheltered shady spot under a Caledonian pine by our 2 m (6 ft.) front wall. (The Caledonian race, with its irregular growth, red bark, and glaucous foliage, is a much more attractive garden tree than the general run of Scots pine). First flowers appeared the next year, in June 1977. The severe frosts of 1978-9 completely destroyed their leaves, but a second growth

appeared in spring and flowering was unaffected.

The bright green channelled leaves, about 150mm (6 inches) long and 6 mm ($\frac{1}{4}$ inch) wide, appear with us in autumn; and unfortunately are usually rather brown and battered at the tips by flowering time in June. The bell-shaped flowers are large for an *Allium*, the six segments of the family being white with a thin central green stripe, and about 20 mm ($\frac{3}{4}$ inch) long. They are borne in a lax one-sided umbel on a very distinctive 200 mm (8 inch) triangular stem.

Although a few self-sown seedlings are starting to appear around our plants, this species is by no means as rampant here as apparently it can be in its adopted "native" south-west parts of the British Isles. We value it because it extends the bulb season in our rose borders until the shrubs begin to flower, and because it brightens a dark corner.

Coriaria terminalis xanthocarpa

In common with most alpine gardens, ours is predominantly a spring garden. Locals visiting in high summer are often surprised at the lack of colour; we sometimes gently point out that green is also a colour. Apart from the inevitable autumn Gentians, lilies, and the aforementioned shrub roses, we rely heavily on berrying plants for late summer interest. We are always on the look-out for worthwhile plants to add to our collection; and, while browsing through "Hillier's Manual of Trees and Shrubs", we came across the genus *Coriaria*. Of the five species listed *C. terminalis xanthocarpa* sounded the most suitable and attractive for our garden. Coming from Sikkim, it should like Scotland; and its fruit, as the varietal name states, is yellow, not a common colour amongst dwarf berrying shrubs. Its name was added to the running list we keep of possible seed list requests, and we were sent the seed in the same year as the above *Allium*, 1975. Sown immediately, it germinated in June and the seedlings were pricked out into 3 inch pots in August. Mortality was very high during their first winter, only one surviving to be grown on to fill a $4\frac{1}{2}$ inch pot in 1976. Now having serious doubts as to its hardiness in Fort Augustus, we planted this lone survivor out under a beech tree, where the branch canopy provides a measure of frost protection. While on holiday in England during September 1977 we saw a fine specimen bearing fruit in Roy Elliott's garden in Birmingham, a year before our own plant decided to commence fruiting. It obviously disliked the 1978-9 winter here, as vegetative growth was very late in starting, and there have been no fruits this year (1979).

Coriaria terminalis is a sub-shrub, forming a woody rootstock, from which graceful arching annual growths appear each spring. These are up to 1 m (3 ft.) long and bear about two dozen pairs of ovate leaflets each about 50mm (2 inches) long. By mid-summer the larger stems are terminated by a raceme of rather inconspicuous green flowers. The petals do not fall, but, as autumn approaches, they become fleshy, turning first a pale green and then a most beautiful translucent yellow, and enclosing the shining black seeds. In this garden, the birds do not seem very interested in these fruits; and we had no difficulty in anticipating them to obtain the seed. This species is said also to produce "rich autumn tints", but in Fort Augustus, where cold wet autumns are the norm, it has not been noteworthy in this respect.

With its elegant habit of growth and its ability to produce attractive fruit of an unusual colour when only one specimen is present (i.e. without cross fertilisation), *Coriaria terminalis xanthocarpa* is well worth considering for the smaller garden.

Gaultheria humifusa and **G. ovatifolia**

So far, we have always included at least one ericaceous plant in each instalment purely because we find them fairly easy to raise in our climate. We are not specialists in the family, unlike one visitor who dismissed our Asiatic *Primula* and *Meconopsis* beds in full flower as "that herbaceous stuff". In fact, our ambition is to grow as wide a range of good plants as is possible in our environment.

Of the six putative American species of *Gaultheria*, one plant, sometimes included in this genus, we have already described in Part III under its alternative name of *Chiogenes hispidula*. Another, *G. miqueliana*, has only been recorded once in America on Kiska Island in the Aleutian chain; but is widespread in Japan and common in cultivation. Two more, one Easterner: *G. procumbens*, and one Westerner: *G. shallon*, are also well-known ground covers; but the remaining two are not seen very often in cultivation. In order to avoid going over largely the same ground twice, we will break with the practice of our first three parts and describe them both here. *G. humifusa* is the smaller of the two as befits its preference for the higher altitudes in their common provenance of the Cascade range from British Columbia to N. California. *G. humifusa* is also widespread in the Rockies from Alberta to Colorado; whereas *G. ovatifolia* is reported in Idaho and Montana. *G. humifusa* is usually a plant of the moist and peaty alpine meadows; *G. ovatifolia* prefers coniferous woodland and, although sometimes

also found in bogs, will tolerate a much drier environment. Hybrids are occasionally found in the Cascade range; and might be worth introducing, or making, as neither parent is particularly amenable in cultivation, especially, we have read, in the south. In general, we much prefer species as nature intended, but there are exceptions to any rule; the *Camellia* x *williamsii* hybrids are more satisfactory garden plants in Scotland than any of the species. We have hybrid vigour to thank for *Saxifraga* x *tyrolensis*, which is a better grower than its parents: *Ss. caesia* and *squarrosa*.

There should be no confusing our present two subjects in the garden; the leaves of *G. humifusa* are generally elliptic (i.e. broadest near the middle with rounded ends) about 20 mm (¾ inch) long and concave on the upper surface. They overlap on the stems, producing a congested mat scarcely 40 mm (1½ inches) high and,here, not spreading very freely. *G. ovatifolia* is altogether a looser grower, up to 100 mm (4 inches) high, producing individual runners at some distance from the main plant. Its leaves are larger at 30-40 mm (1-1½ inch), ovate in outline, usually tapering to an acute point, and convex on the upper surface. There is little to choose between them in flower or fruit, both producing white or faintly pinkish 4 mm bells from the upper leaf axils, followed by scarlet fruits of around 6 mm (¼ inch) diameter. However, the calyx of *G. ovatifolia* is hairy, the hairs persisting on the fruit (which, as in all Gaultherias, is the calyx becoming swollen and fleshy); *G. humifusa* has glabrous calyces and fruit.

In the garden, *G. ovatifolia* is far more likely to be confused with a Japanese species, *G. adenothrix*, which is superficially very similar. The stems of the latter have longer hairs, a less pronounced zig-zag, and bear leaves which are flat or slightly V-shaped in section, with persistent marginal hairs. The leaves of *G. ovatifolia*, as mentioned above, are convex and lack the marginal hairs when mature. In flower there is no comparison, the Japanese plant being far superior; its white globular corollas are twice the size at 8 mm (⅓ inch) long and contrast beautifully with the conspicuous bright red-brown hairy calyces. The scarlet fruit is also hairy, and slightly larger at 8-9 mm.

We obtained wild-collected seed of *G. ovatifolia* from the 1974-5 exchange, and *G. humifusa* a year later in January 1976. Both were sown on our usual "ericaceous" mix of grit and sieved dried sphagnum, and germinated freely the first June after sowing. Continuing with our standard procedure, they were allowed to grow on undisturbed, but for an occasional very weak liquid feed, for twelve months before

potting up individually in spring.

The bed, where we intended to grow the more rampant Gaultherias under some larch trees, wasn't ready until September 1978; and so the planting of *G. ovatifolia* was delayed until then. *G. humifusa*, although a year younger, was planted out at the same time but in a rather choicer position in a raised bed of leafy-peat where there is no overhead cover or competition from tree roots. Both species flowered and fruited well the following year (1979) but the birds beat us to the seed. Since then, we have an effective antidote; old wire lamp-shade frames covered with netlon. These enabled us to harvest berries of *G. sinensis* and *Vaccinium praestans* for future propagation.

While it must be admitted that *G. ovatifolia* is inferior to *G. adenothrix* in garden value and will probably only appeal to the collector, *G. humifusa* is quite a distinct little plant and well worth growing. Barry Starling (''The Smaller Gaultherias'', A.G.S. *Bulletin* Vol. 45 p. 188 *et seq.*) even recommends it for a trough; but in Scotland it would need to be a fairly large one.

Lilium parryi

It is not our intention to add significantly to the vast bibliography on the genus *Lilium*, just to mention one outstandingly beautiful lily which is not seen as often as it should be; for example, it is not mentioned in Brian Mathew's recent ''The Larger Bulbs''. Most newcomers to the genus are surprised to learn how easy many lilies are to grow, in spite of their exotic appearance. We have a planting of over fifty *Lilium* ''Imperial strain'' (*Ll. auratum* x *speciosum*) in front of our house, originally raised from seed. With their huge 250 mm (10 inch) flowers on stems of 2 m (6 ft.) they have caused much comment each September; but are completely trouble-free. There is, unfortunately, one serious fly in the lily ointment: virus diseases. This is passed on by ordinary vegetative propagation from infected plants, and by aphids from one lily to another. The standard advice, which we have followed, is to burn all affected plants and raise new ones from seed, the virus not apparently being passed on to the next generation. We have taken this a stage further by not bringing into the garden any lily bulbs from commercial sources; many of the tougher species and hybrids can carry the virus while showing few if any symptoms.

We requested *Lilium parryi* from the 1973-4 exchange, sowing the seed in January 1974. *L. parryi* has what is known as hypogeal delayed germination, which means that the seed converts its energy store into

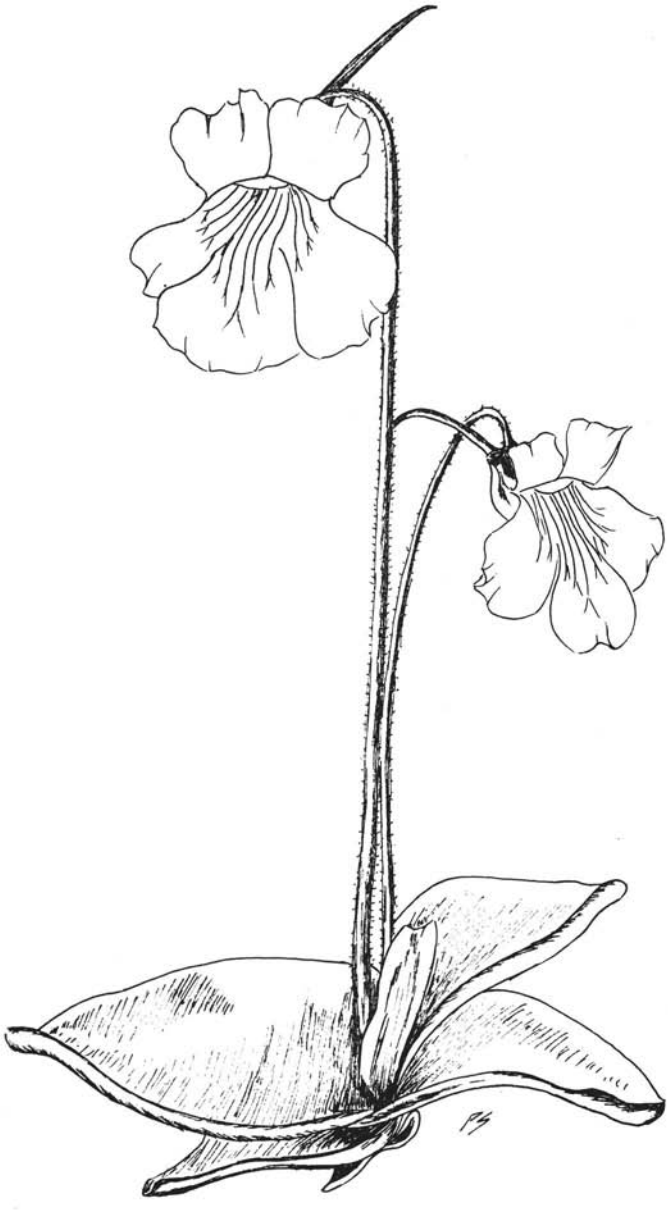

Fig. 11—*Pinguicula grandiflora* See page 65 Polly Stone

Fig. 12—*Cyclamen libanoticum* See page 69 Photo—J. Crosland

Fig. 13—*Allium beesianum* See page 73 Photo—The late D. Wilkie

Fig. 14—*Colchicum sibthorpii* See page 73 Photo—H. Esslemont

Fig. 15—*Calluna vulgaris* 'H. E. Beale' See page 74
Photo—The late D. Wilkie

Fig. 16—*Primula gaubaeana* See page 76 J. Forbes

a tiny underground bulb during the first growing season, a single broad leaf appearing the next year. Right on cue, our plants did so in April 1975 and were pricked out the following August, taking great care not to damage the roots. Early growth was very slow and they were still rather small when planted out in May 1977. The position chosen was in a raised bed of roughly equal parts of loam, peat and leaf-mould, which contains nothing but lilies, ferns (some evergreen), and a large plant of *Galax aphylla* whose red leaves provide something to look at during the winter. Two further years of growth were required before the larger plants flowered in the summer of 1979 at about 500 mm (18 inches) high.

L. parryi belongs to the group of American Pacific coast lilies having rhizomatous bulbs with small scales. It is found in the mountains of California and Arizona, and can be up to 2 m (6 ft.) tall with slender stems and narrow, bright green, stem-leaves. The recurving, funnel-shaped flowers are a delightfully clear shade of lemon yellow, offset by brown anthers. The long pedicels, and narrower petals, give the inflorescence a feeling of grace lacking, for example, in the mid-century hybrids. A connoisseur's lily, and in our opinion well worth the long wait.

Pinguicula grandiflora (fig. 11)

Our three children have never really expressed any great interest in plants, with the exception of the seedlings of the Sundew, *Drosera rotundifolia*, which turn up regularly as weeds in the sphagnum mixture we use for raising ericaceous plants. A plant was potted up by each of them; and they competed to see who could feed their "baby" the most insects. It is a wonder the poor sundews didn't suffer from indigestion! Encouraged by the ease with which these sundews were grown, we tried two more carnivorous plants: a hardy pitcher plant *Sarracenia purpurea* from seed collected by Mollie Harbord in Nova Scotia, and *Pinguicula grandiflora* from the 1976-7 seed exchange. They were sown on the ericaceous mix which had seemed to suit *Drosera*, and both duly germinated, the *Pinguicula* in May 1977. The latter grew into small rosettes, about 25 mm (1 inch) across, of overlapping pale green sticky leaves with recurved edges. Any small insect alighting on these is trapped and digested to supplement the plant's nitrogen supply. Although the peat bogs where these carnivorous plants grow are rich in nitrogen, it is in a form unavailable to plants, hence the need for such exceptional measures.

During the winter the hardy Pinguiculas die back to a pointed resting bud. They have no roots at this stage and require a little care to avoid being scattered and lost. They were potted up while in growth in June 1978, in a mixture of 50% dried sphagnum, 25% peat and 25% grit, and kept very well watered. One advantage of a sphagnum-based compost is that it is almost impossible to over-water, the excess just runs straight through. No fertilizer was used, in case *Pinguicula* is nitrogen-shy. Next May we were rewarded with deep violet flowers, large for the size of plant, carried singly on 10 cm (4 inch) stems. They are flat-faced, over 25 mm (1 inch) across, with a lined white throat and a long spur. The flowers are decidedly ornamental. While flowering, we transplanted one into a shady trough alongside *Soldanella pusilla* and *S. minima*, two *Pygmaea* species, and *Primula reptans*, amongst others; and it didn't turn a hair, growing on well and setting seed. Several more were planted out later, beside the water-course in our Asiatic *Primula* beds. The remaining three were repotted and kept for a special "bog trough" which we constructed this summer and intend to plant up next spring (1980).

Pinguicula grandiflora is a native of western Europe including South-west Ireland and is a much showier garden plant than the smaller, Scottish, *P. vulgaris*. Once established, propagation is easy by division of the resting buds; and, providing it is not allowed to dry out, doesn't seem to mind moving at any time.

Primula cockburniana

Unlike most of the candelabra primulas, *P. cockburniana* is definitely short-lived in cultivation, often little more than a biennial. As such, seed raising is obviously the best way to acquire this species and, being easy to manage, is a good plant for the newcomer to the seed exchange. Our stock came originally from the 1975-6 exchange and germinated in late April on a leafmould-based compost. By the time they were large enough to prick out (two pairs of true leaves) the 1976 drought had set in; so we left them alone until the following April, planting them straight out. Some flowered one month later in May, the rest in 1978. This was all to the good; obtaining seed in 1977 and 1978, we were able to start the steady flow of young replacement plants necessary if this species is to be maintained in the garden.

P. cockburniana has a limited distribution in the wild, being confined to South-west Szechuan in wet, alpine meadows at around 3000 m (10,000 ft.). In cultivation it retains its liking for a moist soil, which

should, however, be well-drained in winter. In Scotland at least, it has no aversion to some sun, but is better for shade during the hottest part of the day. The deciduous rosette is typical of the section with narrowly obovate leaves about 150 mm (6 inches) long and 40 mm (1½ inches) wide. Only about 300 mm (12 inches) high with a slender mealy stem, a single plant does not produce much effect in the garden in spite of the several whorls of intense orange-red flowers. The candelabra primulas look so much better in groups or drifts; who can afford mass-plantings nowadays without recourse to seed-raising?

Show Reports

NEWCASTLE UPON TYNE—7 April 1979

THE WORRIED look on the face of Show Secretary Eric Watson gradually eased as entries started arriving during the days prior to the Show. Due to the severe winter, plants were up to a month later than usual and it was feared the benches would be rather bare. A good effort was made by the exhibitors, including a number of entries from first-time competitors, and the final count of entries was 208, which was 48 down on last year. The day of the Show turned out to be cold and wet, a factor which must have kept a number of the public away, as the customary battle to get to the Local Group Plant Sale did not reach the pitch of previous years.

The judges were A.G.S. President, Dr. Lionel Bacon, and Mrs. Bacon, Kath Dryden, John Main and Duncan Lowe. After the judging was completed, Dr. Bacon congratulated the prize-winners and spoke about the success of the Show.

In Section C, a fine specimen of *Dionysia lamingtonii*, 9 cm diameter, exhibited by Wilf Kirby of Kirkham, Lancs., was awarded the Farrer Medal. Wilf must have been pleased he came to the Show for he was awarded the A.G.S. Golden Jubilee Goblet for the same plant and also a local award, the Cyril Barnes Trophy, for the highest aggregate of first prize points in Section C.

There was some fierce competition in this section and the Saxifraga and Primula classes had 10 entries each. Both classes were won by Wilf and had interesting runners-up; second place in the former was a large flowered *Saxifraga oppositifolia latina* exhibited by Dr. John Richards, Hexham. Third in the Primula class was Mr. D. H. Gibbs

of Middlesbrough with the seldom seen *P.* x *wettsteinii*, a natural hybrid between *P. minima* and *clusiana*. *Primula allionii* took second place, exhibited by Mrs. Nan Watson (Wide Open), who was reluctant to reveal the secret of how this plant had such large flowers, but eventually hinted at a compost of equal parts grit, leaf-mould and Dachshund manure!

Our exhibitors came from as far afield as Edinburgh (Jill Sleigh and Harley Milne) and Newark (Mrs. Wilson), but the long distance record this year was taken by Brian Davidson who brought a pot of *Pulsatilla vernalis* from The Hague, Holland. It was unfortunate that Brian returned to Holland on the Friday and was unable to see his nicely flowered *Pulsatilla* take a first prize.

In Section B, Ray Johnstone (Ryton) earned enough aggregate points to win the Gordon Harrison Cup and by winning the 6 pan Class gained the Greenfield Spoon, the first time this trophy has been awarded at Newcastle. Among plants exhibited by him were six species of *Cyclamen* including the not-so-often-seen *C. repandum* var. *rhodense*; a well-flowered *Saxifraga oppositifolia* and the beautiful *Crocus pestalzzae coerulescens*, a *Crocus* that should be more widely grown. In the same class as this *Crocus*, although unplaced, *Eranthus* x *tubergenii* "Guinea Gold" shown by Angus Merelie (Ponteland) cheerfully smiled its bright yellow flowers from above its green ruffs. In the 3 pans Bulbous Class, Dr. Paddy Ryan (Nunthorpe) won with *Leucojum vernum*, *Galanthus* 'Sam Arnott' and *G. nivalis lutescens*, in which the usual green markings are replaced by yellow.

The Open Section, although high on standard, was rather low on entries and it would have been nice to have had more competition.

Eric Watson (Wide Open) retained the R. B. Cooke Plate for the highest aggregate of first prize points in the open section. His collection of Dionysias had suffered during the winter, and were not so much in evidence. *Dionysia bryoides* H.1990 was one species he exhibited, open flowers on the crown of the cushion and masses of buds round the sides promised a good show still to come. Other plants staged by Eric included *Saxifraga hypostoma*, an unusual saxifrage collected in Nepal, *Haastia pulvinaris*, about 13 cm diameter, which is well on the way to becoming a full-sized 'vegetable sheep', and *Fritillaria stenanthera* grown from wild seed collected in Tashkent.

Fritillaries were late and there were nowhere near the numbers exhibited at last year's Show. David Mowle (Lancaster) could not attend in person this year but sent a trio of *Fritillaria kurdica*, *michail-*

ovskyi and *syriaca* for the 3 pan Class. Arthur Holman of Milnethorpe collected the A.G.S. Medal in Class 1, his entries including attractive *Jeffersonia dubia* and an excellent *Cyclamen persicum.*

Duncan Lowe, Mobberley, made his first attendance at the Newcastle Show and entered a well-flowered *Saxifraga oppositifolia*, a neatly presented plant lifted from the open ground; *Saxifraga hypostoma*; a beautifully flowered *Androsace montana* (which to add to controversy was labelled 'Douglasia Section') and *Saxifraga oppositifolia alba*, an eye-catching exhibit in a three pan class.

Alan Stubbs from Leeds staged some very good plants including a specimen of *Primula marginata* smothered in flower. His *Cyclamen libanoticum*, as in previous years, was well-flowered and the neat and clear labelling of his plants was noted (fig. 12).

The A.G.S. Medal in Class 25 went to Mrs. Wilson (Newark) for her very well presented six pans. A good specimen of *Kelseya uniflora* and the little-known *Dielsiocharis kotschii*, a yellow-flowered crucifer from Iran, were two of the exhibits which caught the eye.

In order to minimise the danger of hernias among exhibitors, the Trough Class had been changed to a pan containing more than one variety of rock plant. This did not stop Rob Brown (Hexham) staggering in, eyes watering, with a 12 in. pot which took the first prize from two other good exhibits.

David Riley (Kendal) was awarded a first in the 3 pans raised from seed class. His entry consisted of the odd looking *Ricotia davisiana* (sown April 1978) from the MacPhail and Watson Turkish Expedition, *Androsace carnea* x *pyrenaica* and *Primula hidakana.* David's *Soldanella carpatica alba* was admired and the only gentian to be exhibited at the Show was his *G. verna alba.*

In the new or rare class, Eric Watson's *Saxifraga* species from Nepal took the lead from Tony Hodgson's (Stokesley) *Raoulia* x *logani* and David Mowle's *Androsace lehmannii* from Japan. The other exhibits in this class were Robin Brown's *Diapensia lapponica* with two flower buds and *Dionysia viscidula* staged by Geoff Rowlinson (Holmfirth).

An exhibition of stamps depicting alpine flowers won a well deserved A.G.S. Special Award for Norman Woodward (Middlesbrough) who also manned the Publications with his usual efficiency. Norman had decorated this stand with dwarf conifers and various plants. Thanks to the Regius Keeper of the Royal Botanic Garden, Edinburgh, a huge specimen of *Primula whitei* x *sonchifolia* looking rather like a big blue cauliflower stood at one end of the bench. As if this was not enough,

a flash of blue lured the eye along the bench to where *Tecophilaea cyanocrocus* var. *leichtlinii* sat among the publications.

An A.G.S. Silver Medal was awarded to the University of Newcastle upon Tyne for their display of 'Alpines of the World' illustrated by colour photographs, described and presented by Drs. John Richards, Alan Davison and Dexter McArthur.

Other attractions included plants available from the Local Group Plant Sale and Hartside Nursery's sales area. In the comfortable lounge adjoining the main hall, refreshments, including an excellent lunch, were provided all day by the lady members of the local group.

A stir was caused amongst the exhibitors by the appearance of two specimens of "Dionysia horridula var. frankensteinii". These had creamy yellow sessile flowers on close green cushions, each filling a 6½ in. pan. Close inspection proved them to be cakes cooked and decorated by Paul Matthews, a local member. It was sharp-eyed Alf Evans who pointed out that they could not be Dionysias as they had six petals instead of five! These cakes, one coffee the other vanilla, were generously donated to the Lucky Draw.

The Newcastle Group wish to thank all exhibitors and visitors for their support. It was, despite the weather, quite a good Show, and we look forward to seeing you all in 1980, hopefully with more of our friends from North of the border, when our Show will be held under S.R.G.C. rules.

J. R. JOHNSTONE

SHOW AT DISCUSSION WEEKEND

THIS SHOW was held on 22nd September 1979, in Cowan House, University of Edinburgh Pollock Halls of Residence, when there was a fine display of plants, some of which had never before been seen at an Autumn Show in Edinburgh.

The coveted George Forrest Memorial Medal for the most meritorious plant was awarded to *Coprosma petriei*, exhibited by Mr. Ray Johnstone, Ryton. This prostrate New Zealander was covered by translucent white berries bearing a striking resemblance to those of Mistletoe. Male and female flowers are borne on separate plants and Mr. Johnstone had pollinated by hand to achieve this splendid result. He had attached a note which said that the plant had been grown in three parts leaf mould and one part one-eighth-inch grit with the addition of one ounce per bushel of John Innes base fertiliser. Mr. Johnstone also won the Mary Bowe Trophy by gaining most points

in Section I with a well grown and varied collection of plants. Among them were *Cyclamen hederifolium* 'Bowles Apollo', a very deep pink which is said to come true from seed, *Saxifraga georgii*, understood to be a Dr. George Smith introduction from Nepal, which, although the plant was not in flower, looked promising, and a very fine *Pygmaea pulvinaris*.

The East Lothian Trophy for three rock plants of different genera went to another member from south of the border, Mr. Frank Tindall, Huddersfield, who showed large well grown pans of *Cyclamen hederifolium album*, *Acaena microphylla* and *Origanum tournefortii*. Mr. Tindall's other plants which caught the eye were a fine old specimen of *Cedrus brevifolia* 'Compacta' and the easily grown but splendid autumn-flowering plant *Sedum hidakarum*.

The Peel Trophy for three Gentians, distinct species or hybrids, was won by Mr. and Mrs. Henry Taylor, Invergowrie, with *G. verna*—what was it doing in such good flower at this time of the year?, *G.* 'Leslie Delaney', a pale blue hybrid, and *G. prolata*. The Taylors, as one expects of them now, had forward a good varied collection of plants, among them *Sagina boydii* and *Tripetaleia bracteata*. They are keen *Primula* growers and had on view for the first time, flowering out of season, a small European hybrid of their own raising which holds much promise for the future. The parentage was given as 'Linda Pope' x *P. allionii*, the same, if I recall correctly, as that splendid but rare *Primula* 'Joan Hughes' raised by Jack Drake. The Taylors' plant is quite different in appearance. It is slightly larger in its growth, has serrated leaves like 'Linda Pope' but with only a trace of farina on the edges, and has fairly large pink flowers with a yellow eye somewhat like 'Barbara Barker', which also has 'Linda Pope' as one of its parents.

Mrs. Jill Sleigh, Edinburgh, although deeply involved with the administration of the Discussion Weekend and with the preparations for the 1981 Conference, still managed to put up a number of exhibits, the best of which was a magnificent large pan of *Campanula cashmeriana* in full flower. She had appended a note to the effect that it had been over-wintered in an alpine house and then planted out in spring in a peat bed against a rock, giving it a north-east aspect. The plant had begun to flower in July and there it was in late September smothered with its small blue bells over grey-green leaves, an attractive combination. Mrs. Sleigh's other outstanding exhibit was the small Japanese holly *Ilex crenata* 'Mariesii' with many small fruits.

Dr. and Mrs. John Gosden, Eskbank, gained a well merited first prize with *Caloscordum neriniflorum* which I had never seen before. It is aptly named as it was well covered with clusters of pink flowers for all the world like a miniature *Nerine bowdenii.* A note attached said that it had been grown in John Innes Compost No. 3 plus sand in an alpine house, that it flowered from July to September, and that after flowering water was withheld until growth started again in spring. Another good plant shown by the Gosdens was *Cyclamen cilicium,* raised from their own seed in July 1973. It had been grown in J.I. Compost No. 3 plus extra peat and sharp sand and had been kept plunged outside except when in flower.

In the class for one rock plant native to Scotland, Mr. and Mrs. M. A. Stone, Fort Augustus, were awarded first prize for a very healthy *Diapensia lapponica,* not in flower of course at this time of year. Not so many years ago, this far from easy plant would have been inadmissible as a Scottish native but it is now known that there is one station for it which, for obvious reasons is kept, as far as is possible, unidentified. The Stones produced an outstanding autumn foliage plant in *Shortia* (*Schizocodon*) *soldanelloides magna.* It had large red leaves, shining as though burnished. Who needs flowers with such magnificent foliage?

Mr. K. M. Roberts, Preston, reigned supreme in the two classes for conifers with *Cryptomeria japonica* 'Knaptonensis', which needs to be guarded against burning by hot sun and cold winds (no contradiction), and *Chamaecyparis obtusa* 'Minima' and *Ch. obtusa* 'Juniperoides Compacta', both in tip-top condition. Mr. Roberts had also brought along, not for competition, *Ch. obtusa* 'Caespitosa', which created considerable interest as it was said to be at least 55 years old. Another of Mr. Roberts' plants of special interest was the neat prostrate shrub, *Pernettya tasmanica* with a plentiful supply of red berries which had been grown in a peat bed. There is also a white berried form which I have grown and the late Willie Buchanan told me that there was also a yellow berried form. Is it in cultivation in this country?

The class for one pan *Cyclamen* attracted eleven entries, all of which were good and some excellent. The judges must have had a difficult task in deciding which should have the prizes. Their decisions were, first Mr. Jack Crosland, Torphins, with *C. mirabile,* second Mr. Alistair McKelvie, Aberdeen, with *C. hederifolium,* and third Mr. K. M. Roberts with *C. africanum.* Other species of *Cyclamen* shown in this class were, *Cc. graecum, cilicium, alpinum, purpurascens,* and

hederifolium album.

Hardy ferns have been growing in popularity recently but I think members were a little surprised to see twelve entries in the class for one pan. Mr. B. Russ, Ormskirk, was a worthy winner with *Asplenium trichomanes* 'Incisum', closely followed by Mr. W. T. Murray, Edinburgh, with *Phyllitis scolopendrium* 'Crispum'. Mr. Russ also won a first prize for a sedum judged for its foliage with *S. kamtschaticum*, the nicely serrated leaves of which had changed from their summer dark green to reddish-purple. Mr. Murray also won a red ticket for two unnamed *Calluna vulgaris*, a single white and a double pink. Forms of *C. vulgaris* grow in number and one hesitates to name those which exhibitors have not labelled.

Mrs. Joan Stead, Thorntonhall, had forward a good and varied collections of plants. I was especially attracted by her Spider Orchid, *Caladenia dilitata*, which had been grown in an alpine house in a sandy compost. Also noted were *Gnaphalium mackayi*, a New Zealand native which requires a sandy-peaty soil, and the attractive *Allium beesianum* (fig. 13).

Mrs. Bette Ivey, Dalry, again demonstrated how to grow sempervivums to catch the judges' eye by winning both classes with *S. arachnoideum hookeri* and two pans of *S. arachnoideum* which displayed the variation in rosette sizes one finds in the wild.

Mr. Harold Esslemont, Aberdeen, had fewer entries than usual but his *Colchicum sibthorpii* (fig. 14), created much interest. It had been collected on Mount Parnes, Greece, and had been grown in a gritty soil in full sun. Mr. Esslemont stated that he repotted annually, that he gave the bulbs a summer baking, and that he started to water again on 1st Septenber. Valuable information for those who can lay their hands on this desirable colchicum.

Gentiana x *caroli* with smallish pale blue flowers and a rather sprawling habit gained a first prize for Mr. Malcolm Adair, Glasgow, who also showed a fine plant of *Sedum cauticolum* which has two attributes, striking foliage and clusters of red flowers at a time when flowers are more than welcome.

The Logan Home Trophy for a miniature rock garden in which only plants are allowed—no cut flowers—was won by Mrs. Jean Wylie, Dunblane, who used *Salix boydii* and various Cyclamen, Sempervivums and silver Saxifrages to pleasing effect.

The Wellstanlaw Cup for an arrangement of flowers and/or berries cut from rock garden plants was won by Mrs. Joan Dodds, Alnwick,

with attractively set out *Dianthus, Astilbe, Cyclamen* and various berries. Elsewhere Mrs. Dodds was showing an interesting but small unnamed gentian, unfortunately in bud only. She had collected it in Alaska in 1978. Its habit of growth was not unlike that of *G. verna.* I look forward to seeing it again in flower.

In Section II, which is open only to those members who have not won a Medal or Trophy at any previous Show, the East Lothian Cup for the best plant in the Section was won by Mrs. Alice Spensley, Richmond, Yorkshire, with a fine large specimen of *Cyclamen graecum* which would not have been disgraced in the highly competitive class for Cyclamen in Section I.

The Bronze Medal for most points in Section II was won by Mr. Alan Leven, Dunblane, who picked up no less than twelve first prizes. It is true that competitors were few, but the two main contenders had a good selection of plants on show and Mrs. Lynn Almond, Dundee, must have felt slightly disappointed that, although her plants were good, she had to take second place in the points tally to Mr. Leven. Noted amongst Mr. Leven's plants were *Potentilla eriocarpa,* a fine dwarf creeping form for late flowering, *Sedum cauticolum, Pinus sylvestris* 'Beauvronensis', *Calluna vulgaris* 'Peter Sparkes', a better doer with me than the old favourite 'H. E. Beale' (fig. 15) and the hybrid *Gentiana* x *macaulayi.* Mrs. Almond's plants which caught my eye were *Astilbe chinensis* var. *pumila, Helichrysum marginatum,* x *Gaulthettya wisleyensis, Calluna vulgaris* 'Soay' and the hybrid *Gentiana* 'Elizabeth'. Mrs. Almond will one day soon take home that elusive Bronze Medal!

The section for non-competitive items was better supported than ever before. Mention was made earlier of Mr. Roberts' aged specimen of *Chamaecyparis obtusa* 'Caespitosa'. Alongside it was the rarely seen pink chequered *Colchicum parkinsonii* brought from Aberdeen by Mr. Esslemont and another far travelled member, Mr. Russ, Ormskirk, had fetched two Sempervivums not very often exhibited at our Shows, *Ss. borisii* and *ciliosum.* As a change from living plants Mr. James Forbes, Dairsie, had staged a display of drawings which earned for him a well merited Special Award.

Last but not least mention must be made of the fact that two of our Trade Members, John Ponton, Old Cottage Gardens, Legerwood, Earlston, Berwickshire, and Jim Jermyn, who has now settled in as the new owner of Edrom Nurseries, Coldingham, Berwickshire, again supported the Show with exhibits of rock plants and, to the delight

of members, with plants for sale, thus saving postage and packing. Both Nurserymen were well satisfied with trade done. Satisfaction all round!

DAVID LIVINGSTONE

Plant Notes

TCHIHATCHEWIA ISATIDEA. BOISS.

THE PLANT which has been saddled with this unlovely appellation is a monotypic crucifer, named after its discoverer, Count Pierre de Tchihatchev. Presumably the specific name refers to the superficial resemblance of the seed pods to those of Woad—*Isatis tinctoria.*

It was introduced to cultivation by Dr. Peter Davis and collected again by Furse and Synge in 1960, but as a monocarp which is reluctant to set seed in cultivation, it has remained rare in gardens.

The Watson & MacPhail, 1977 expedition to Turkey again collected seed from plants growing on "sheer limey valley banks" at 1975 m (Mac/W 5780).

Seed from this collection, sown in March 1978, in lean limy compost, germinated a month later (with gentle bottom heat); four plants were potted on in May and there were two further germinations later in the year. They formed delightful hairy rosettes, with all the charm of mini monocarpic *Meconopsis*, the best specimen a full 7 ins. across, and the hairs so stiff as to be almost prickles. Unlike *Meconopsis*, there was little likelihood of their withstanding our winter wet in the West of Scotland, and they were over-wintered in the alpine house, where two further repottings were necessary, finishing in 6 in. pots.

In spring 1979 the charm of the rosette was lost as the centre erupted into a 10 in. high flower stem (taking the leaves with it), and surmounted by a more or less conical head of lavender stock-like flowers. Alas! Farrer's "crowded pyramids . . . have exactly the fragrance of *Daphne cneorum*" was more than a little wide of the mark and, to me, they were infinitely better to look at, than to smell.

The largest plant did, however, produce ample seed, whose viability will be tested by the seed exchange.

One plant failed to flower and could live to flower another year, but it is much less vigorous than its siblings and, should it flower next year, could well be too weak to set seed.

One plant which did flower has produced a weak side rosette on the base of the old flower stem. It remains to be seen if there are enough roots to carry it through the winter.

Tchihatchewia isatidea was given the accolade of an A.M. in 1965 when shown by the late Eliot Hodgkin.

Thorntonhall JOAN STEAD

PRIMULA GAUBAEANA (fig. 16)

Primula gaubaeana belongs to the *Floribundae* section. The pertinent characters are involute leaves; the yellow flowers arranged in superimposed verticels; foliaceous bracts and globose capsules.

This recently described species is founded on material collected by Gauba in 1936 and by Koie 1937 from Luristan in S.W. Persia, the only known area where it is found, strangely on the bank of a mountain stream. Bornmuller gives the plant an intermediate position between *P. floribunda* and *P. boveana.*

Primula gaubaeana is a strong-growing plant in nature, reaching heights of 20-50 cm. It cultivation it is generally about 30 cm tall. It has a tough rhizomatous-like stem topped by oblong to oblanceolate leaves which taper at the base into a winged petiole. The tip is broadly pointed and the leaf margin is prominently toothed. The leaves are usually without farina but the flower stem is conspicuously speckled with white farina. One or two whorls of flowers are carried on these stems and each whorl contains 4-6 flowers and leafy bracts. The calyx is prominently white farinose and the tubular flowers, some 1-1.5 cm long, are bright yellow with a small orange spot at the base of each petal.

Few of the species of the Section *Floribundae* are hardy, all are plants for the cool or alpine house.

Primula gaubaeana dislikes damp conditions, especially during the winter months. It is best grown in the same soil mixture as for *Dionysia* and is given the same treatment. Seedlings should flower the year after germinating. They should be grown in the double pot technique where the sand between the pots is watered when necessary.

One of the enemies of this *Primula* is the vine weevil. The damage is not discovered until it is too late. The roots are eaten to the base of the plant which then wilts. The treatment for this is described in the *Journal* No. 64 (April '79), p. 223, in "Primulas: A Miscellany" by David Livingstone.

Dairsie J. FORBES

The American Rock Garden Society

Probably most members are aware of the existence in the U.S.A. of a Society comparable with our own. Some members may have wished to join this Society, but have been deterred by the apparent difficulty of transmitting their subscription. We understand that this difficulty is not insuperable. In practice it would probably be best to consult one's Bank, which could supply advice and the appropriate forms.

The annual subscription is 8 dollars, and the Secretary, who will send further particulars, is

Donald M. Peach,
Box 183,
Hales Corner,
Wisconsin 53130, U.S.A.

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

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SUMMER & AUTUMN HOLIDAYS

with Fairways and Swinford

PONY-TREKKING IN KASHMIR

26th July to 11th August

One of the chief joys of this holiday, now in its 12th season, is the profusion of rare alpines to be found at higher altitudes, including the blue poppy. The itinerary is leisurely, with four nights at Strinagar in houseboats on the Dal Lake followed by a ten days' trek on pony-back. Distances are covered in easy stages and, while a certain amount of walking is involved at places where some uphill scrambling is necessary, the ascent to our objective, Lake Gangabal at 12,000 ft., is very gradual. Previous riding experience, while useful, is by no means essential; ponies are sure-footed and docile and each person can go at his or her own pace. Camping is really comfortable; all personal belongings, apart from odds and ends you need with you as you ride, are carried by porters. Seventeen days: £835.

SOUTH AFRICA

20th September to 11th October

This is a tour of Cape Province to see and enjoy the spring flowers and is one we have been operating over many years. The itinerary begins with a direct flight to Cape Town, where we stay for the first week at the lovely *Mount Nelson Hotel*, making excursions by private coach or in cars to places of horticultural and botanical interest in the vicinity. Drives are neither long nor tiring and visits include, amongst many others, a day at the National Botanic Garden at Kirstenbosch on the slopes of the Table Mountain range at Newlands. It has been written that *on a spring day when Kirstenbosch is at its colourful best, there can surely be no fairer sight on earth*. A week is spent in touring within roughly 100 miles of Cape Town; and the last few nights are spent at Hermanus at the wholly delightful *Bay View Hotel* with one of the most charmingly landscaped gardens imaginable. It is also worth mentioning that on the whole tour a rich variety of birds is to be seen. Twenty-two days: £995.

AEGEAN TURKEY

4th to 17th September

A *Sites and Flowers* holiday, this tour covers some of the most famous archaeological remains in Europe, including Ephesus, Miletus, Priene and Didyma from Kusadasi; Aphrodisias and Hieropolis from Pamukkale and Pergamum from Izmir. All these sites are in rich countryside and afford good opportunities for seed-collecting. Two full days at Istanbul complete the picture. Fourteen days: £532.

ADDITIONAL HOLIDAYS INCLUDE: Romania in July; Southern India, Ladakh (on the borders of Tibet) with Kashmir, and Eastern Turkey in September; Southern Crete, a tour of Jordan and Syria and two departures to Panzano in Chianti near Florence and Siena in October, as well as to Nepal and Kashmir; a superb journey through Rajasthan in North India in November; and a Christmas holiday for bird and wild-life enthusiasts in December. All details from

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S.R.G.C. Publications

FOR NEW MEMBERS who wish to get as much information as possible on their hobby a set of the available *Journals* is good value, as 15% discount is offered on orders for 40 or more, bringing the cost of 44 *Journals*, including postal contribution, to less than £17. Overseas members must pay £1.40 extra postage because two parcels are necessary.

Current availability and price to Members

Journal	*Pence*		*U.S. Dollars*
1-6	200	when available	5.00
7. 8, 11-18, 21, 22, 27, 29, 35	100	,, ,,	2.50
9, 10, 19, 20, 23-26, 28, 30-34, 36-59	40		1.00
60-66	60		1.50
Index *Journals* 1-19	20	post paid	0.50
Index Vol. VIII (Xerox)	32	,, ,,	0.80
Index Vols. IX, X+XI	16	each, post free	0.40

Postal contribution 7p (18 cts.) per *Journal* up to a maximum of £1.40 ($3.50). Although U.S. $ prices are given, sterling remittances are preferred.

Old *Journals* are urgently needed, as the growing "When available" list indicates, and will gladly be received or bought and postage paid.

BOOK BARGAINS

The following books are available to members:—

A Quest of Flowers. H. R. Fletcher. £9.25 post paid. (£12 elsewhere). Only published account of the Ludlow and Sherriff collections.

The Larger Species of Rhododendron. P. Cox. £14.50 post paid. (£17.50 elsewhere). A new book from a master of the genus.

SPECIAL PUBLICATION

The latest information on "Petiolarid Primulas", an entrancing but difficult section of a wonderful genus, is available in Dr. Richards' article. 75p post paid.

Write to the Hon. Publications Manager, Dr. D. M. Stead, Esk Hause, Bishop's Park, Thorntonhall, Glasgow G74 5AF.