



The JOURNAL of
THE SCOTTISH
ROCK GARDEN CLUB

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VOLUME XVI Part 3
No. 64

APRIL 1979

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

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NOTICE

The ANNUAL GENERAL MEETING will be held in the McLellan Galleries, Sauchiehall Street, Glasgow, on **Saturday 3rd November 1979, at 2 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, seconded by another Club member or members*, must be sent to the Honorary Secretary not later than 20th August 1979, the nominator having ascertained that the nominee is willing to serve if elected.

Mrs. Kathleen S. Hall, having served as President for three years, is not eligible for re-election but, as immediate Past-President, will serve automatically on the Council as a Vice-President.

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

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

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Mr. M. S. Bremner

Mrs. S. M. Simpson

Mrs. J. Sleigh

Mr. J. Wotherspoon

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48 St. Alban's Road,

EDINBURGH EH9 2LU

Discussion Week-end 1979

THE UNIVERSITY OF EDINBURGH
POLLOCK HALLS OF RESIDENCE
HOLYROOD PARK ROAD
EDINBURGH EH16 5AY

SATURDAY and SUNDAY, 22nd to 23rd SEPTEMBER 1979

PROGRAMME

Saturday 22nd:

- 1.00 p.m. Lunch
- 2.15 p.m. Address of Welcome
- 2.30 p.m. The W. C. Buchanan Memorial Lecture
"Plants for Screes and Troughs" Alfred Evans
- 4.00 p.m. Tea
- 4.30 p.m. "Mountains and Flowers of the Caucasus"
Gilbert Barrett
- 6.30 p.m. Dinner
- 7.45 p.m. "Botanica Adagio" Jim Sutherland

Sunday 23rd:

- 8.30 a.m. Breakfast
- 10.00 a.m. The Esslemont Lecture
"Plant Hunting in Nepal 1978" David Binns
- 11.15 a.m. Coffee
- 11.45 a.m. "Trilliaceae" Bob Mitchell
- 1.00 p.m. Lunch
- 2.30 p.m. "Historical Background to Rock Gardening"
Professor William T. Stearn
- 4.00 p.m. Close of Proceedings
- 4.15 p.m. Tea and Disperse

As in 1974-75 and 77 the Discussion Week-end returns to Edinburgh to the Pollock Halls of Residence..

Accommodation will be single student-type bed-sitters.

The Halls are situated in a pleasant part of Edinburgh below Arthur's Seat and are readily accessible from most quarters.

Accommodation may be booked for the duration of the Conference or for the whole week-end. Members may wish to come for the day

only, in which case appropriate charges can be made. Day members are requested to book in advance.

CHARGES, INCLUDING V.A.T. AND CONFERENCE FEE:

Full board from Friday dinner till Monday breakfast	..	£32.00
Full board from Friday dinner till Sunday tea	..	25.00
Full board from Saturday lunch till Sunday tea	..	17.50

Day Charges:

Saturday: Lunch, tea, dinner	..	..	..	8.50
Sunday: Coffee, lunch, tea	..	..	..	6.00
Lectures only: per day	..	..	..	3.00

Applications should be sent initially to the Registration Secretary, J. Harley A. Milne, 15 Merchiston Place, Edinburgh, EH10 4PL, enclosing the appropriate remittance, by Saturday 18th August.

An interesting and instructive programme has been arranged and there will be an opportunity to visit the R.B.G. on the Saturday morning.

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

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.

The Garden

Here is a garden green and gay.
Whose is this garden, tell me pray?
Mine said the slug;
Mine said the speug;
Mine said every garden bug,
As its champing jaws went chug, chug, chug;
Mine said the owner, stupid mug,
As he dug, and dug, and dug.

G. VAUGHAN

The Cultivation of Androsaces

by E. G. WATSON

The W. C. Buchanan Memorial Lecture given at St. Andrews 1978.

ANDROSACES, particularly the Aretian and the choicer Chamaejasme, always attract a great deal of attention when they are on display at our Shows. The following article is a brief description of my method of growing these plants.

PROPAGATION

All the European Androsaces set an abundance of seed in cultivation—often far more than one needs. If I wish to increase my stock I sow the seeds in pans about Christmas time, using a compost of roughly half loam and half chippings ($\frac{1}{8}$ in.), the exact mixture is not important; Androsace seeds are very accommodating and will usually germinate in any composition of soil. In fact many of my seedlings come from seeds which germinated in the open garden because I scatter the top dressing, from repotting, on the scree. The seeds are quite large and can be handled easily, therefore it is a simple matter to space them out when sowing. About 8 seeds are ample for a 3 in. pot. I place the seeds on top of the growing compost and cover with a liberal dressing of $\frac{1}{8}$ in. chippings. These chippings have a two-fold benefit in that they slow down the growth of moss and liverwort and, as the seed pans are plunged in a seed frame, which is generally exposed to all weather, they prevent the seeds from being splashed out of the pot by rain. Exposure to frost is not absolutely necessary. Germination usually occurs in the spring and apart from thinning out, if necessary, I leave them alone until the following year, when about April or May I transplant into a large pot so as to let the little plants grow on from which I can eventually select good forms. The offsprings vary a good deal and if I have a mature plant of a good form which I wish to perpetuate I usually detach one or two rosettes about May or June and insert, sometimes, in pure sharp sand or a mixture of sand and a little peat. A good proportion readily “strike” and are usually ready for potting on into individual pots within about 6 to 8 weeks. This method of increase is important for those species which cross freely

with others when grown in the small space of an alpine house, i.e. *Aa. hirtella* and *cylindrica*. Of course, one should be sure that the parent plant is true.

Even though I have managed to flower several of the rarer Nepalese *Androsaces*, my experience so far is that they do not set seed in this country and therefore cuttings are the only known method of increase.

COMPOSTS

Apart from seed sowing the compost I use for all the plants grown in pots, irrespective of whether European or Nepalese, is an adaptation of the well-known 3 of grit and 1 of leaf-mould. My mixture is 2 of $\frac{1}{8}$ in. grit, 1 of sharp sand and 1 of leaf-mould. The sharp sand helps to hold the root ball together when knocking the plant out of the pot for potting on.

I do not use any "secret" additives such as crushed slate or crushed pot. The type of grit is not important; it depends on what I have available—sometimes sharp granite, whinstone grit or very coarse agricultural sand.

For leaf-mould I collect dry fallen beech and oak leaves, stack them in a wire cage and leave for about two years. After this period of time I rub them through a $\frac{3}{8}$ in. mesh sieve, discard the rubbish on to the peat garden, and place the flaky leaf particles in a bin ready for use. I prefer flaky leaf-mould to leaf soil. My source of leaves has a pH which is neutral.

POTTING ON

I only use clay pots.

Because of the very sparse growing compost it is necessary to repot each year. I usually carry this out after flowering and when I have removed the setting seed capsules. This operation is tedious, time consuming and requires patience, otherwise the cushion can be easily damaged. If seed is required then obviously repotting will need to be delayed until the seed has been gathered.

Repotting usually takes place with me in May and sometimes in June, depending on the season and work load.

No matter how dry the clean pot was when last used, I find that the roots cling to the side and if one tries to knock the plant out after 12 months growth, severe damage usually results. For this reason, I always go round the pot with a kitchen knife so as to sever the hold which the clinging roots make.

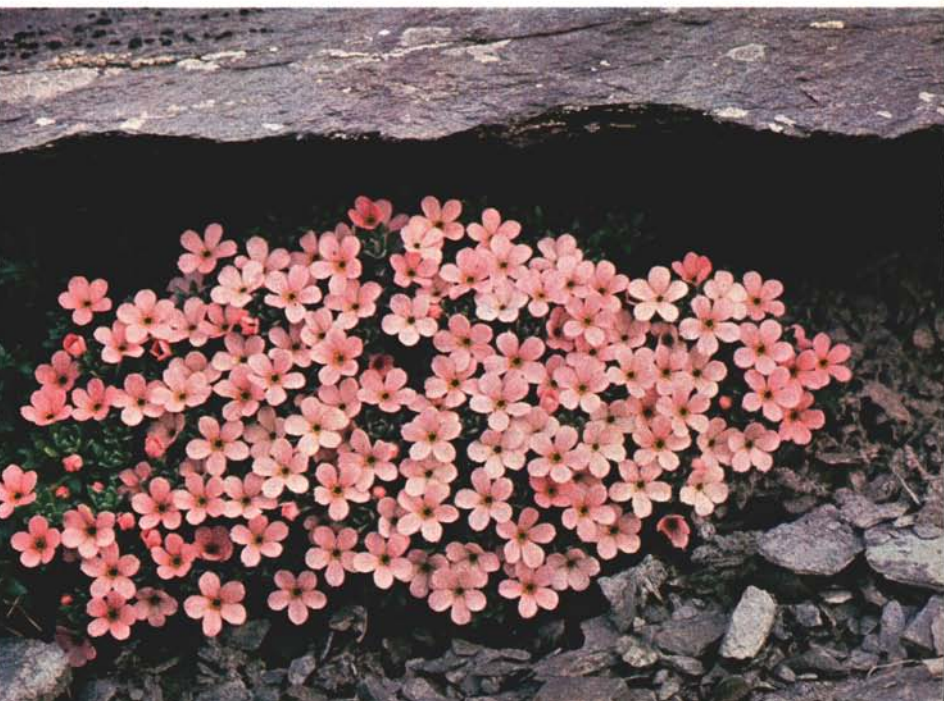


Fig. 27—*Androsace wulfeniana*

Photo—Dr. D. M. McArthur

Fig. 28—*Androsace alpina* in the wild

Photo—H. Esslemont



Having used the knife I tip the pot so as to remove the top dressing on to a paper and then stretch a piece of a lady's stocking over the cushion (like a snood), making sure that the stocking is tucked well under the edges. This holds the cushion together, prevents cracking and makes handling so much easier. (I use this technique on all soft cushion plants such as *Draba*, *Dionysia*, etc.).

A clean pot is prepared first by placing a piece of perforated zinc over the drain hole, covering this with drainage chips and filling with compost to a level which I think will be about right for when the plant is transferred. I place the old pot, complete with plant on its side, insert the fingers of one hand under the cushion and push the plant out of the pot with a pencil. Whilst there is some damage to the root ball, this is reduced to a minimum due to the use of sharp sand in the compost and having used the knife. Because the cushion does not need holding together (piece of stocking) it is now possible to remove the old piece of perforated zinc and drainage chippings and carefully to pick up the plant using both hands and gently position in the clean pot. Check to make sure that the cushion will be positioned at the right height when finished and if it is acceptable I proceed to insert compost between the root ball and pot to the level of the old root ball; this is usually about 1 in. below the top of the pot. I then fill the remaining 1 in. with $\frac{1}{8}$ in. chippings and pack these very tightly under the cushion. In my opinion the degree of firmness and shape of the cushion is determined by how tight the top dressing is stuffed under the cushion. All that is necessary now is carefully to remove the piece of stocking by slowly pulling it out from under the cushion and working around the cushion until completely free. This process disturbs the top dressing slightly, so it is necessary to repack the top dressing under the cushion and generally tidy and level off.

I water and stand the pot on the bench in the shadiest part of the alpine house for about a week, after which the plant can be placed in its normal position.

ACCOMMODATION

Mature plants, plants growing on for specimens and the rare Nepalese plants are housed in the alpine house and frames.

Seed pans and seedling plants are kept in frames.

WATERING

(a) ALPINE HOUSE

I do not plunge my pots in any medium whatsoever. They simply stand on the gravel-covered benches.

Watering is easy, foolproof, controlled, and the plants are given individual attention.

Each day, summer and winter, I lift each pot and if there is a damp patch showing on the gravel where the pot has been standing, then that plant does not need any water that day. Conversely, if there is no damp patch then the plant requires water and I apply this by watering round the pot between the cushion and the edge of the pot using a watering can which has a fine spout. At the time of lifting I automatically turn the pot as I replace it. This movement ensures the plant flowers evenly.

Probably this system of watering sounds very time consuming, but I do not find this so. It takes me about 20 minutes to deal with approximately 200 pots of various sizes. I go into the Alpine House each day in any case.

Problems do arise at holiday time and it is then necessary to get a friend or neighbour to help out.

(b) FRAMES

During the summer they are open to the weather, but shaded.

In winter the frames are covered with lights but opened occasionally to allow gentle rain to enter if necessary.

All pots are plunged in sand.

GENERAL CARE OF PLANTS

During the summer the alpine house is shaded with curtains which can be opened on dull days.

The ventilation is fully open all year, even in foggy weather. On occasions, due to driving snow or gale force winds, part of the ventilation is closed.

No heating is used and therefore the plants are occasionally frozen in their pots. Obviously no water is given under these conditions.

The only pest I experience is greenfly and I occasionally fumigate the alpine house—more so in summer than winter.

I continually examine the cushions with the aid of an eye glass for greenfly and also rotting rosettes which are pulled out with tweezers.

LIST OF ANDROSACES GROWN IN ALPINE HOUSE
AND FRAMES

<i>adenocephala</i>	<i>lehmannii</i>
<i>alpina</i>	<i>muscoidea</i>
<i>carnea</i> x <i>pyrenaica</i>	<i>nortoni</i>
<i>ciliata</i>	<i>pubescens</i>
<i>cylindrica</i>	<i>pyrenaica</i>
<i>cylindrica</i> x <i>hirtella</i>	<i>tapete</i>
<i>delavayi</i>	<i>vandellii</i>
<i>globifera</i>	<i>wulfeniana</i> Fig. 27
<i>helvetica</i>	<i>zambalensis</i>
<i>hirtella</i>	

OPEN GARDEN

The following are grown in scree:

WITHOUT WINTER PROTECTION	WITH PROTECTION
<i>carnea</i> —all varieties	<i>adenocephala</i>
<i>hedraeantha</i>	<i>alpina</i> Fig. 28
<i>mathildae</i>	<i>brevis</i>
<i>pyrenaica</i>	<i>ciliata</i>
<i>pyrenaica</i> x <i>carnea</i>	<i>wulfeniana</i>
<i>villosa</i> —all varieties	

PESTS

Greenfly	..	Cure—spray
Slugs	..	Cure—pellets
Birds	..	Netting

Note: I apply the techniques described in this article to the genus *Dionysia*.

I live just north of Newcastle upon Tyne.

According to the Meteorological Office the average rainfall is 26.5 inches (675 mm). There is very little fog or industrial air pollution.

For those members who wish to know more about this genus I would strongly recommend the recently published A.G.S. Guide on *Androsace* under the joint authorship of Dr. G. F. Smith and D. F. Lowe.

Rock Gardening in the West of Scotland

by BILL HEAN

**The Clark Memorial Lecture given at Edinburgh
on Saturday 11th November 1978**

TO CULTIVATE the rarer alpine in the west of Scotland requires a great deal of skill and can often lead to much frustration, as year after year one sees carefully nurtured or expensive plants succumb to the damp conditions which prevail in winter. This is not surprising, since there are few parts of west Scotland with under 40 ins. of rain a year and 50 to 60 ins. is quite common. Much of this falls in winter, while snow, when it does come, tends to be of the slushy variety which usually melts in a few days, adding to the general discomfort of these plants which are in the habit of spending winter in a dormant state tucked up in a blanket of powdery snow. A rainfall map shows only a small area of the Ayrshire coast relatively dry, apart from some of the outlying islands of the Hebrides, such as Tiree, where rainfall is below 40 ins.

It is not surprising, therefore, that west coast gardeners tend to turn to plants more suited to these conditions, but despite all the faithful soldier on, finding among the alpine flora plants which, often to their surprise, stand up well to the wet conditions and in some cases will even do better than in the east where 20 to 30 ins. of rain is more common. This sometimes requires a great deal of ingenuity and it is to look at some of these devices and to discuss some of the plants which will survive with reasonable regularity that I intend to devote this talk.

The rate of growth is much faster and inevitably the light poorer, which leads to elongation in many plants. Dwarf conifers, for instance, will outgrow themselves unless the true dwarfs are used, in 10 to 15 years, and many of the sub-shrubs such as penstemons and helianthemums require very regular replanting. Between this and the inevitable losses from wet roots, a regular propagation programme is imperative if the rock garden is to be kept well stocked. We are always on the look-out for compact forms of plants and find *Dimorphotheca barberiae* 'Compacta', or the form of *Leontopodium alpinum* known as 'Mignon' will stay respectable longer than the true species.

Moss growing up through the longer-lived plants and lichen on the shrubs such as Kurume azaleas are often problems, neither of which are readily controlled and must be removed laboriously by hand.

At Threave, where all my west coast gardening has been practised, the natural soil is a heavy silt, almost the worst possible for rock gardening, but even with such a soil many plants will grow well, particularly the North American alpiners. *Phlox* are most reliable, *douglasii* and *subulata* varieties as well as *ovata* and *nivalis* all seem to revel, as do the penstemons barring an occasional death, and rather surprisingly many of the *Helianthemum* cultivars, in the wettest winters. In this category one could include *Sedum spurium* cultivars, *Epilobium glabellum*, a wonderfully hardy plant, and, despite what is often written about them requiring an open gritty soil, practically all geraniums.

Naturally on such a soil one uses every device to provide better drainage in an attempt to widen the range of plants, but no matter how well drained the soil be in trough, raised bed, or scree, the humidity and constant moisture at the neck of the plant is a limiting factor. The ultimate deterrent to this problem appears to be the dry wall (so ably described by Jim Sutherland in a recent issue) which will allow us to grow our lewisias, haberleas and any other rosette forming plants which collect water on the horizontal, while *Aubrieta*, which we find particularly difficult, and *Dianthus*, which flowers poorly, will rejoice and justify their existence in the crevices.

The raised bed with good drainage is where we plant small bulbs which we hope to keep for more than a year. *Iris histrioides*, for instance, seems to have become almost naturalised in such a bed, whereas we seldom saw much in the second year on the top mounds in the rock garden. The smaller species and cultivars of *Tulipa* likewise will only persist in the driest sunny bed.

The trough, well raised on two bricks, is a useful addition to the armoury and many of our best plants are grown in this way. It's not often that they require summer watering, but when one does get a summer drought, as we did in May/June of 1978, it's a job that is easily overlooked, particularly if one is not in the habit of having to water. The browning of some favourite shrub gives the first and often belated indication that all is not well. The trough can also be sheltered from winter rain more readily than some screes or raised beds, either by moving them to shelter, if not too large, or by having a temporary roof to put over them.

The scree, with its large proportion of stone to soil, about 6 : 1 in our case, has as its main advantage the restriction of growth in the more rampant plants and the consequent increase in flower. In our case broken blue slate from a local disused quarry replaced the more usual gravel and has been found to be just as effective, blending in with the broken shale which is the natural rock outcrop in the rock garden. It is always important when excavating 12-18 ins. of soil to make a scree bed that you ensure that water is getting away and that you have not merely formed a sump. A tile drain leading from the lowest point is a wise precaution.

Despite all these little problems there are still many people in the west who successfully grow a very respectable range of alpines, though I am afraid we will always be at a disadvantage when it comes to the real treasures.

The Sandy Bed

by ISA HALL

WHAT we call the "Sandy Bed" was made at the bottom of the garden, where the slope plunged steeply in the last few feet before flattening out so sharply at the river-side that no lawn-mower could really cope. In the winter of 1974-5 the turf was stripped off, a low wall built across the foot of the slope and tapered up at the ends, a crushed stone path made across the top, and the bed itself, some 38 ft. long by 8 ft. wide, filled up with anything we could lay our hands on: the stripped turves; some more turves, previously stacked; top soil filched from anywhere else in the garden; peat; garden compost; and a good deal of the sandy silt that is deposited annually by flood water in the grass and the bed of *Erica vagans*. There was nothing scientific about the proportions, but necessity, the mother of invention, created for us a "coming-on powder" that, a few months later, was to startle us by the explosion of growth it induced in everything we planted in it.

Our first intention had been to plant this bed with slow-growing and/or procumbent conifers which would eventually take over when we were "old and grey and full of sleep". Meanwhile, the spaces could be temporarily filled with nice little herbs or shrubs, or used as a nursery, or a temporary lodging, for plants on the way from pot to permanent home. So on our 1975 Spring Tour with the North

Northumberland group, we bought some dwarf conifers and other things, and in May 1975 the Sandy Bed was fully planted up.

The growth in the first season was phenomenal. A small *Lithospermum diffusum* 'Grace Ward' from a nurseryman's 2½ in. pot grew to 2 ft. across as we watched; a newly-rooted cutting of x *Halimio-cistus sahucii* spread into a similar-sized bush by the end of the summer; a seedling *Daphne retusa*, which had sat sulking at two inches high under its parent bush for two years, shot up to nearly a foot in no time and had to be removed; the prostrate Junipers made it clear that they were not prepared to wait until we were "old and grey, etc." before taking over. In the burning days of summer the sandy silt became really hot for a hand's depth down. We gave up for lost the first-year *Cyclamen hederifolium* seedlings that we had put in there "temporarily" and forgotten; but in the autumn up they came in fine style, and one of them flowered.

As the Sandy Bed developed, we found ourselves revising our plans. By the end of 1976 most of the larger things had had to go: the Junipers; *Potentilla arbuscula*; *Penstemon scouleri*; a bronze *Helianthemum* . . . ; similarly the coarser-growing herbaceous plants and ramping carpeters: *Potentilla fragiformis*; *Geranium renardii*; *Oenothera flava*; *Pterocephalus parnassi*; *Helichrysum bellidioides*; *Diascia cordata* And the Sandy Bed was beginning to reveal itself as an ideal home for bulbs.

Before giving an account of the bulbs in the Sandy Bed, I should point out that (a) this lower corner of the garden, a sun-trap in summer, is a frost pocket in winter, receiving no touch of sunlight at all around the time of the winter solstice, while frost can lie there for days; (b) all the lowest part of the garden is subject to flooding, particularly in winter and early spring, by a river that can rise twelve feet in a couple of hours; in 1977 the Sandy Bed was submerged, wholly or in part, five times in fairly rapid succession, while this year the worst flood covered the top of the bed at least 6 ins. deep in water and the bottom of the bed to a depth of about 18 ins., replacing the 18 ins. of snow that had possessed it for the previous fortnight.

In this bed, besides one or two tulips, dwarf *Iris* and dwarf narcissi planted as mature bulbs, we have planted a number of bulbs in seedling form. Mainly American, they include *Allium crispum*, *A. falcifolium*, *A. fimbriatum* var. *purdyi*, *A. hyalinum*, *A. serratum* and *A. peninsulare*; *Brodiaea ida-maia*, *B. laxa*, *B. peduncularis* and *B. terrestris*; *Calochortus catalinae*, *C. luteus* and *C. vestae*; *Erythronium oregonum* and *E. grandiflorum*; *Fritillaria agrestis*, *F. camtschatcensis* (S.R.G.C. seed),

F. lanceolata, *F. liliacea*, *F. pluriflora*, *F. pudica*, *F. purdyi* and *F. recurva*; *Iris reticulata*; *Tulipa urumiensis*; and *Zigadenus fremontii*. Most were dumped into the Sandy Bed either in their first year or on their first re-emergence from dormancy. To put these little things out so young may seem foolhardy at best. But I lose them in pots; the wide world cannot be a more dangerous environment than a pot in my charge. Once, seeing roots emerging from the drainage holes, I turned out a pot of quite recently germinated *Allium serratum* to find that the tiny bulbs were forming in the space between the bottom of the pot and the disc of pierced zinc I had placed there to keep out worms. I doubt if they would have survived their first dormancy in such a situation.

Some of the seedlings may not survive. *Calochortus catalinae*, for instance, has not thriven like the other two, which produced flower buds in 1977, only two years and seven months from sowing. Both are well budded again in 1978, in spite of the snows and winter wet. Their leaves appear very early—November or December—and are usually browned at the tips by the frosts (20 degrees F. maximum this past winter). *Brodiaea ida-maia*, sown as long ago as 1972, has not yet flowered, though, to be fair, I must say that the earliest seeds to germinate died in the pot, and that it was the survivors of the second and third germinations in the seed pan that reached the haven of the Sandy Bed in 1975. *Brodiaea peduncularis* flowered two and a half years after sowing, and so did *Brodiaea terrestris*. Neither has yet set seed, though *Calochortus luteus* did last year. *Allium hyalinum*, sown in November 1976, and turned out into the Sandy Bed almost as soon as germination had taken place, flowered in May 1978. Of the Fritillaries, *F. liliacea* goes back furthest, to a 1973 sowing; it has been in the Sandy Bed since 1975 but is still producing only one leaf per bulb. *F. purdyi*, sown in November 1975 and planted out in spring 1977, produced surprisingly large and beautifully healthy leaves in 1978, rivalling those of *F. liliacea* in size in spite of the latter's two-year start. *F. pluriflora*, lost in the pot in its first dormancy, is hanging on (so far) in the Sandy Bed, having been put out at once on germination of a second sowing (this time of S.R.G.C. seed). All these Americans (with the exception just noted) have been raised from seed received from Wayne Roderick, whose generosity has enabled us to make this trial with first class material that would otherwise not have been available to us.

Other bulbs, planted there at flowering size, are doing well. *Iris danfordiae* is increasing. So are *Tulipa linifolia* and *T. batalinii*. *Tulipa*

chrysantha is creeping along stoloniferously, it seems. *Tulipa tarda* (supplied to us as *T. humilis*) looks like becoming a pest; its little green thread-like cotyledons, topped by their papery brown seed coats, were standing up like soldiers in the wake of the receding flood water last February. This year I have removed all the seed pods before they could ripen. *Narcissus asturiensis* is sowing itself nicely. *Narcissus watieri*, bought dormant in a pot and dumped into the Sandy Bed in May 1975, grew into such a huge clump of big, bonny, bouncing *N. bulbocodium* that this year it had to be split up and a dozen or more large flowering bulbs planted out elsewhere. Another narcissus from the same pot remains unflowered, though increased; it may yet turn out to be *N. watieri*. Or not, of course. *Cyclamen mirabile* has flowered, though sparingly, for two years. *C. balearicum* has survived as long, and produced one rather unhappy-looking flower this year.

Of non-bulbous plants, *Lewisia rediviva* has flowered three years running in the Sandy Bed. *Morisia monantha* made three huge flower-studded mounds in 1977, one of which rotted off in winter, thereby giving birth to a fine group of new crowns. *Gentiana verna*, germinating in February 1975 and planted out in May next to a sturdy *Salix herbacea*, has verified the theory that it might like the company by growing into the best *G. verna* in the whole garden, spreading strongly amid *Salix*, which now surrounds it, and positively shouldering it aside. It has 25 fine seed pods now, in June 1978. A sister seedling, planted at the same time in a pocket with a piece of *Oxalis laciniata*, has not yet flowered, or increased to more than two small rosettes, though the *Oxalis* has prospered. *Saussurea obvallata*, grown from Len Beer's seed, has made its best growth in the Sandy Bed. *Corydalis cheilanthisfolia* (S.R.G.C. seed) has belied its delicate appearance by surviving "winter's rains and ruins" for two years down there. *Iris innominata*, planted out as a very small seedling, has grown into a good flowering clump in two years; some seed sown *in situ* near this plant on 9th February 1977 and flooded on the 10th produced four seedlings in November, of which three remained after the snow and floods of February 1978 (which is more than could be said for the Sandy Bed's plant labels).

The Sandy Bed is not ideal for everything, quite apart from the fact that its first, dramatic burst of fertility has dwindled. *Convolvulus cneorum* gave us two years of silver-plated splendour and then succumbed to the successive floods of spring 1977. *Lithospermum* 'Grace Ward' died the same spring, at four feet across, largely, we think, of

a surfeit of silt in her hair. For the river either bares the roots or buries the plant in silt. Numerous plants of *Gentiana saxosa* just disappeared under this year's deposit, only struggling to the surface by May. *Rhodohypoxis rubella* has hardly made it to the surface yet, its tiny flowers striving to open their petals in mid June, before they are clear of the dust. *Lewisia cotyledon* does not like floods much and tends to rot off at the neck more readily here. *Androsace carnea* prefers our scree, as does *Helichrysum milfordiae*. Strangely enough, some drought lovers don't seem to mind: *Erinacea pungens* and *Ptilotrichum spinosum* have never turned a hair. But then they haven't much hair. Nor are they fleshy like the Lewisias. *Aethionema pulchellum* and *Linaria supina* have to be weeded out quite ruthlessly to counter their ruthless take-over bids. Since the tragedy of 'Grace Ward', however, we are careful to dust the Daphnes and to pick the straws from the x *Halimio-cistus*.

Another hazard is the biters and nibblers, not exclusive to our Sandy Bed, of course, but possibly more fatal to bulbous than to other seedlings. Slugs got every flower of *Iris danfordiae* this spring, and many of the *Iris reticulata* too. Last year, something bigger—(water-hens? rabbits? pigeons? pheasants? an escaped tortoise from No. 13?)—razed *Calochortus vestae* to the ground. Worse, it bit off our only *Lilium sherriffiae* seedling just as it had gathered all the strength amassed in five years' growing into its first flower bud. *Calochortus vestae* has flower buds again this year; but *Lilium sherriffiae* has produced only a wisp of leaf, very late, at ground level, and may be making its last farewell.

We realise that growing bulbs from seed is a long-term business, and that by eschewing the controlled conditions of pots and frames we are giving free rein to all the agents of destruction. But we want to raise our bulbs where we want them to grow—in the garden. Few of our plants have yet flowered. Many are at the one-leaf stage and are very vulnerable. Some have already vanished—or nearly so: *Calochortus catalinae* and *Allium falcifolium*, for instance. *Fritillaria recurva*, ruthlessly planted within a few weeks of germination into a soil which the succeeding rainless weeks have baked like the Sahara, has gone dormant and may never see another spring. But so many factors are involved in the life or death of a plant that one can never be sure of failure any more than success. We enjoy the suspense and the excitement. And we are learning all the time.

La Grave 1978

by NORMAN WOODWARD and ROY METCALFE

LA GRAVE was popular in 1978. Paul Ingwersen's Camping Tour at the end of June was followed by an A.G.S. Tour at the beginning of July, whilst a Ramblers' Association Party, including S.R.G.C. and A.G.S. members, overlapped both the other groups. This article has contributions from all three.

La Grave lies roughly in the centre of the extensive mountain mass which includes the Savoy, Dauphine and Maritime Alps in south-east France. The River Romanche rises a few kilometres to the south-east, and from La Grave has carved a series of enormous gorges westwards through the mountains, before reaching the wide Isère valley near Grenoble. The road from Grenoble up the valley runs variously beside the river, through tunnels, and precariously along narrow ledges cut into sheer rock faces, some hundreds of metres straight up, and the same down on the other side to the river, with only a low fence for protection!

Some fifteen kilometres before La Grave, the road and river meet again at the Chambon Barrage, a regulating and holding reservoir for the hydro-electric stations in the lower valley. Roads run north and south from here into the mountains and some notable skiing country. Ramblers' Association reports indicated pleasant but steep walks, with plenty of meadow flowers. Immediately to the south of La Grave, which lies at under 1500m., is the huge massif of La Meije and Le Rateau, with peaks at nearly 4000 m., barely four kilometres from La Grave. A large part of this area lies within the Parc National des Écrins, formed in 1973, and the latest of five such parks in France. To the north of La Grave the land rises again steeply, but to high terraced meadows rather than rocky mountains. Half way up these slopes, roughly along the 1800m. contour, lies a string of four hamlets, from west to east—Le Chazelet, Les Terrasses, Ventelon and Les Hières. It was to the last of these that our coach took us, leaving La Grave through a 300 m. tunnel, and then doubling back over the main road, and up ten hairpin bends to Ventelon, before continuing more sedately to Les Hières.

Our hotel, the Chalet Fleuri, which our party practically filled, stood right at the top of Les Hières, so that we looked out over the tightly packed roofs of the village, and over the Romanche valley to the

magnificent vista of La Meije and Le Rateau, stretching from the green woods and meadows 300 m. below us to the glaciers, snow fields and tremendous rock cliffs towering to over 2000m. above us. The hamlets were once thriving agricultural centres. Now they appear to have few permanent residents, their houses being largely renovated as holiday and summer residences, and their fields, terraced from the river below to the skylines far above, no longer cultivated. Beyond Les Hières, to the north-east, a track continues up the Valfroide valley. The underlying rock is largely soft schist, through which the stream has cut a deeper and deeper gorge on its way down to join the Romanche. At the other end of the road, northwards beyond Le Chazelet, is another pleasant valley. Here, however, with a much harder underlying rock, the Torrent du Gâ flows along a fairly level bed until, south of Le Chazelet, it plunges as a spectacular waterfall, the Saut de la Pucelle, over the cliff edge to join the Romanche below. An accompanying footpath picks its way down rather more circumspectly.

The outstanding plant in these valleys and meadows was undoubtedly *Narcissus poeticus*. Beyond these villages, in both valleys, it grew by the acre (or even hectare), its fragrance spreading far beyond the meadows, especially after a little rain. There was some slight variation in these plants, some flowers being paper-white, others a delicate cream colour. Petals ranged from wide and overlapping to narrow and separate. Yellow-rattle, *Rhinanthus alectorolophus* and Lousewort, *Pedicularis barrelieri* supplemented the *Narcissus*, and in places took over as the dominant plant. Many others added their quota of interest and colour. *Trollius europaeus* and various marsh orchids grew in the damper places. The blue and white *Linum alpinum* was in the meadows above Les Hières, while taller yellow senecios, tragopogons, various umbels, Sainfoin, blue *Salvia pratensis*, *Phyteuma orbiculare*, centaureas, and white leucanthemums were all prominent. *Ornithogalum umbellatum* opened its small white cups in the sun, whilst most rocky areas had large patches of *Sempervivum arachnoideum*, always tight, small and compact, some with so much 'cobweb' as to be almost white, others in various shades of red and green and almost devoid of 'cobwebs'. A frequent companion alongside the *Sempervivum* was *Saxifraga paniculata* (aizoon), with its encrusted green rosettes and sprays of white flowers. For the discerning there were orchids to be found. Commonest were the many forms of Marsh and Spotted Orchids, *Dactylorhiza majalis*, *D. maculata* and *D. fuchsii*. The Fragrant Orchid, *Gymnadenia conopsea*, the Military Orchid, *Orchis militaris*, and the

Black Vanilla Orchid, *Nigritella nigra*, were also to be found. Close to the footpath from Ventelon to La Grave was a large patch of nearly thirty flowers of the Burnt Orchid, *Orchis ustulata*, growing amongst *Aster alpinus* and other meadow flowers. Smaller contributions, often nearly buried in the taller herbage, included *Myosotis alpestris*, *Viola calcarata* and *V. lutea* in many colour forms, the purple Field Gentian, *Gentianella campestris*, as well as *Gentiana kochiana*, (Fig. 38.) some euphorbias, both *E. cyparissias* and *E. myrsinites* being seen, as well as numerous vetches and trefoils.

The valley of the Torrent du Gâ, upstream of Le Chazelet, has fairly easy walking on either bank, although higher up there are a number of bridgeless tributaries which at snow-melt time can increase alarmingly during the course of a warm sunny day. The path up the east bank offers views of the Petit and Gros Têt to the west. Beyond the few buildings of Rivet de la Cime we found a 'drystone' cross of brown porous rock standing beside the path. The Croix de Tuf was a reminder that not only is this a Catholic area, but that tufa is common locally and is widely used for building. Possibly it has 'built-in' insulation properties as well as being lighter for transport. In addition to the previously mentioned meadow flowers, here was the red *Pedicularis verticillata*, *Anemone baldensis*, *Sempervivum tectorum* growing in grass, not rock, some patches of *Vitaliana primuliflora*, *Cerastium cerastioides* with *Sempervivum*, *Saxifraga* and *Globularia cordifolia* on the rocks, and a large stand of *Ranunculus aconitifolius* in a wet meadow, with *Pinguicula vulgaris* in some ditches. Those who braved the torrents as far as La Buffe found enormous spreads of *Corydalis solida* and a carpet of *Gagea fistulosa* reported as 100 m. long! Some hardier campers achieved 2700 m. up the Pic du Mas de la Grave beyond the head of the valley, finding *Ranunculus glacialis* as their reward. Mar-mots were common in this area, one community near La Buffe appearing to have a communal meeting area of a circle of flat stones. The path down the valley, on the west bank, had patches of *Caltha palustris* and *Pulsatilla alpina* as well as many orchids. Attention to the flowers and the views of La Meije was occasionally interrupted by having to negotiate the snow bridges and cornices across several streams.

West of Le Chazelet, over the stream, a path zigzags steeply up to the Serre Bernard, giving access to the Plateau de Paris, a region of high meadows and rocky outcrops between 2000 and 2500 m. During this 300 m. climb we saw the change from the lower meadow flowers, *Narcissus*, *Trollius*, *Primula farinosa* and *Ranunculus pyrenaicus* to

higher alpine plants, blue, white and yellow violas, *Gentiana kochiana* and *pumila* and *Primula hirsuta*. Higher still came *Vitaliana primuliflora*, *Saxifraga oppositifolia* and white forms of *Androsace carnea*, with *Bulbocodium vernum* and *Crocus albiflorus* at the top near the melting snow. Nearby grew *Pulsatilla vernalis* by the hundred. The earlier party found them just starting, but this flower 'goes over' very quickly, and our later party found only one small patch displaying its beautiful pale petals and golden stamens, most being then past their best, with lengthening stems and drooping, ghost-like heads. Once over the top to the high meadows, the Trumpet Gentian, *G. kochiana*, came into its own, growing so thickly in many places that it would have been hardly possible to walk between them.

Winter lasted long and summer was late this year. It had still been snowing in late July, and the campers had been unable to go far along the plateau. A fortnight later, we were able to reach Lac Lérié, although we had to cross a considerable amount of snow. Lac Lérié, surrounded by rock and crags, was still largely snow-covered. We were quite surprised to see a creature swimming in this icy bath, but this turned out to be a dog, rather than a form of '*Nessia alpina*'! Around here we found a little *Saxifraga oppositifolia* and a lot of *Primula hirsuta* growing on, in, and under many of the rock faces. *Vitaliana primuliflora* of the lower slopes was here replaced by the equally bright but smaller patches of *Draba aizoides*. Lac Noir, when reached, completely belied its name, being still completely snow-covered. At the far end were some large cushions of *Silene acaulis* growing on rocky ridges, but only sparsely flowered. And then, just a little further, were the bright blue eyes of *Eritrichium nanum*, just two or three small patches on rock faces, and then a larger clump on level rock. However, this plant was a bare metre from the edge of the cliff, and a cautious investigation suggested that there was nothing of significance to prevent anything going over the edge from continuing downwards until it reached the main road, 1200 m. below! My photographs of that plant were taken with a telephoto lens, against the light!

The Bois de Fréaux, across the river from La Grave, were a complete contrast to the snowy Plateau de Paris. The woods on the lower, steep, stony slopes of La Meije are largely coniferous, with a narrow strip of meadow at their foot, and mixed woodland bordering the river. Plants here were much more advanced than higher up, *Pulsatilla alpina* was already in seed, whilst above Les Hières its buds were just opening. Amongst the many orchids found in these woods, new ones

included the Frog Orchid, *Coeloglossum viride*, the Small White Orchid, *Leucorchis albida*, the Globe Orchid, *Traunsteinera globosa*, and the Lady Orchid, *Orchis purpurea*. *Maianthemum bifolia* was seen here, and the campers claimed a huge bush of *Hugueninia tanacetifolia*. This was the only area where we saw campanulas in any number, probably *C. rhomboidalis*, but we found several good stands of *Listera cordata* and *L. ovata*, and *Pyrola rotundifolia* and *P. minor* in flower. *Clematis (Atragene) alpina* was draped over many of the smaller trees and shrubs, and in a small clearing in the conifers at the foot of the stony slopes were just one or two plants of *Aquilegia alpina*. There might well have been more of their brilliant blue flowers had we had the time and energy to explore a little higher. Another very non-alpine memory from these woods was a stand of Butterburr, *Petasites albidus*, with its large, bright green leaves gleaming in the late afternoon sun, and its white, fluffy seedheads brilliantly contrasted against a background of dark conifer trunks. *Lilium martagon*, slow to open, remained in bud throughout, but *Aconitum vulparia* and a yellow Foxglove, *Digitalis lutea*, were seen in flower. At the Hermitage camp-site, 1½ kilometres west of Les Fréaux, situated between the road and the river, were masses of orchids, whilst in the rocks between the road and the foot of the towering 800 m. wall of the Combe de Malaval were found *Asphodelus albus*, *Astragalus alpinus*, *Centaurea montana*, *Cerintho glabra*, *Cichorium intybus*, *Dianthus sylvestris*, *Paradisea liliastrum*, *Salvia verticillata* and *Saxifraga paniculata* and *S. moschata*.

There were only two footpaths ascending the lower slopes of La Meije. Both start together up through the meadows opposite La Grave. One then traverses through the woods, climbing slowly until below the very well hidden Lac de Puy Vachier, when it then climbs steeply until reaching the lake and the nearby alpine hut, the Refuge Evariste Chancel. Ramblers who managed this walk reported the lake and surrounds still completely snowbound. The other path follows the Torrent de la Béous towards the foot of the Glacier de la Meije. This is a fairly steep but pleasant, open path, with fine views of La Grave and the hamlets above it. In addition to many familiar flowers, we first saw *Dryas octopetala* and *Linaria alpina* up here, whilst just before the Chalet de Chal Vachère at the top, was one of the largest stands of *Caltha palustris* that we saw, like a long, broad, yellow river winding down the hillside and fed, no doubt, by underground moisture from the snow above. In the wide, grassy basin below the glacier, we counted some forty species, although there was no spectacular display

by any of them. Beyond the Chalet, there is a very steep, rocky climb, with no recorded path, to a téléphérique station, some 600 m. higher. This cable car, starting from the western end of La Grave, is fairly new. The cars, each holding six passengers, are linked in convoys of five, the leading car being bright red, and its followers shading through orange to yellow for the last. After the intermediate station it then rises to over 3000 m. in the snowfields of Le Rateau, from where, weather permitting, there are magnificent scenic views. However, the fares, according to our financial experts, work out at about £2 per kilometre, and the system is around six kilometres long. Furthermore, those Ramblers who scrambled up from the Chalet de Chal Vachère to the intermediate station, finding some *Eritrichium* en route, discovered that there was no half-price for the one-way trip down! They walked!

East of La Grave, the woods give way to higher cliffs, with the river in a deep gorge. A footpath struggles round the top of the cliffs, and then follows the river southwards along the upper Romanche valley towards its source. The nearest road access to this area is through Villar d'Arène, just off the main road east of La Grave. Even our hardy campers found the footpaths up this valley tedious and exhausting, although *Daphne mezereum*, and a white form, *Rhododendron ferrugineum*, and *Primula hirsuta*, *P. viscosa* and some hybrids were found. The head of the valley had spectacular mountain and glacial scenery but was also blocked by snow below the Col d'Arsine.

Beyond Villar d'Arène the road climbs for a few more kilometres to reach the renowned Col du Lautaret, and then descends the Guisane valley to Briançon, a further 28 kilometres. The Pics des Combeynot lie south of the meadows round the hotel at Lautaret, which is at about 2000 m. Both ramblers and campers found *Eritrichium* on snow-free ridges up there, another discovery being *Chrysanthemum alpinum* ssp. *hutchinsiiifolium*. To the north, the Col du Galibier climbs to over 2600 m., leading to the Savoy Alps. We set off to this Col between banks of cleared snow, but one look at the first car that we met descending, and a word with its driver, convinced our coach driver that discretion was the better part of valour. Some who managed the journey to the top later in the day were rewarded with splendid snow scenes, but had no time to look for the *Ranunculus glacialis* seen earlier by campers.

The meadows round the hotel were the home of *Gentiana kochiana*, *Androsace carnea*, *Vitaliana primuliflora*, *Gagea lutea* (or *fistulosa*?),

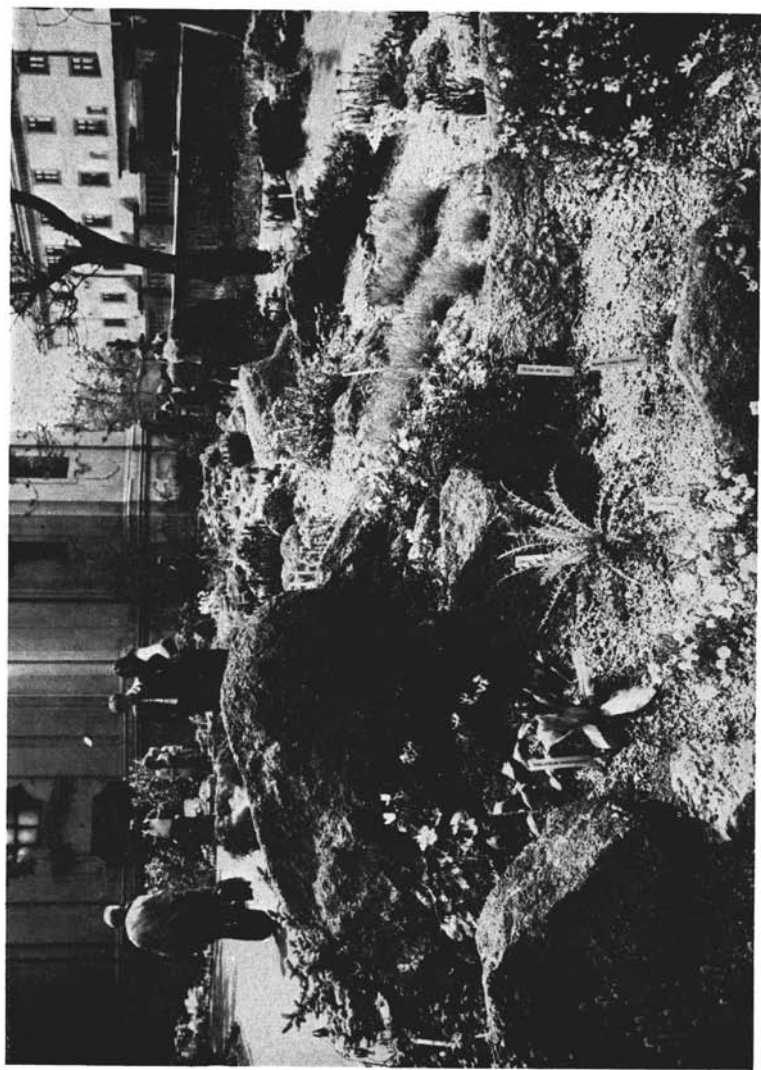


Fig. 30—Prague Rock Garden Club Show Garden

Photo—J. Klima

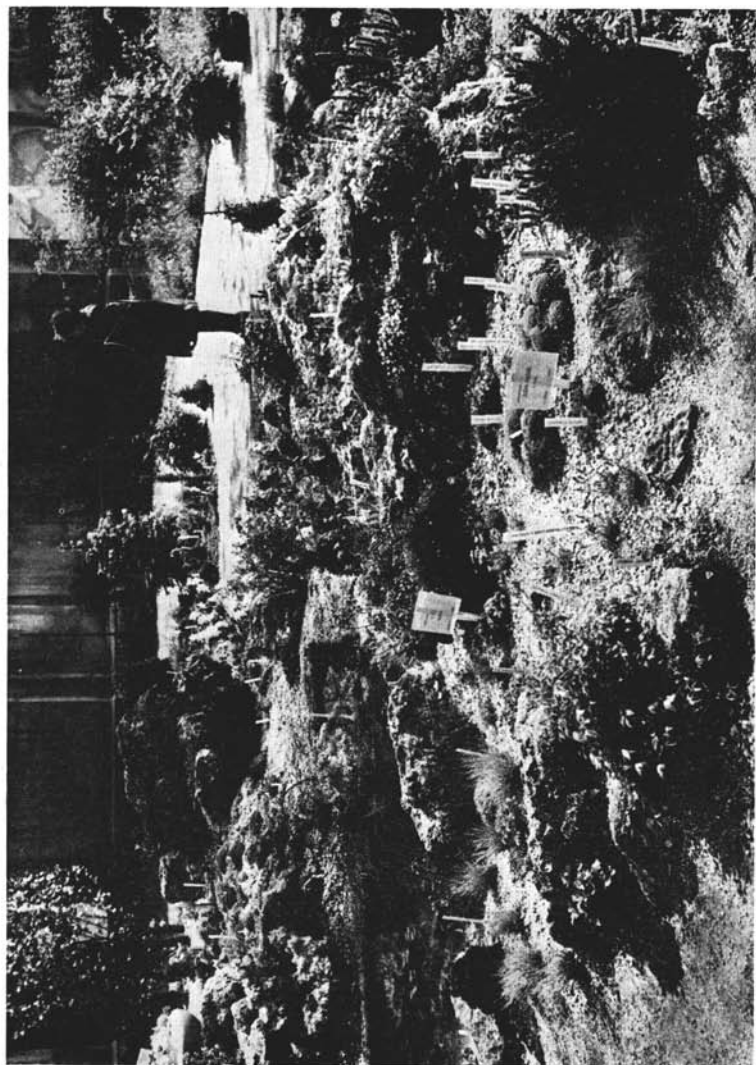


Fig. 31—Part of the Prague Show Garden

Photo—J. Klima



Fig. 32—Rock work and plants at Prague Show

Photo—J. Klima



Fig. 33—Joyce Halley, Manager of the Angus Group Seed Exchange

Photo—Dundee Courier

Ranunculus pyrenaicus, *Soldanella alpina*, *Crocus albiflorus*, *Geum montanum* and many forms of *Viola calcarata* and *V. lutea*. On the stony hillside beyond the 'hill' were one or two purple *Primula viscosa*, and *Daphne striata* was also reported in this area, but we seemed to be too early for *Dianthus*. Down the Guisane valley, below the avalanche shelter on the Briançon road, the Yellow Elder-flowered Orchid, *Orchis sambucina*, still grew in considerable numbers, whilst on the rocky slopes above the road, north-west of Le Lauzet, campers found both red and yellow forms. These bare crags also held the ubiquitous *Saxifraga paniculata* and *Sempervivum arachnoideum* and *S. tectorum* in addition to *Globularia cordifolia* var. *nana*, whose shades of blue varies from deep blue in bud to pale blue when fully open. *Asplenium trichomanes*, Maidenhair Spleenwort, hid in the shadier parts, and many rocks were clothed with *Rhamnus pumilus*, Dwarf Buckthorn. A *Viola wulfeniana* hybrid was seen, and *Amelanchier ovalis* and a white *Hepatica nobilis* grew in the larch woods.

Although open to visitors, the Alpine Garden of the University of Grenoble still had large areas under snow and 'out of bounds'. There was *Gentiana kochiana* and *Geum montanum* flowering profusely in the lower lawns, but *Pulsatilla vernalis* was over. At a higher level was a beautiful plant of the white *Daphne blagayana* in full flower, and nearby a good display of the Alpine Poppy, *Papaver alpinum*. Two huge clumps of *Vitaliana primuliflora* some thirty centimetres across, completely covered with vivid yellow flowers, rather outclassed the more numerous but smaller patches in the meadows. A number of primulas were in flower, including *Pp. elatior*, *auricula* and its subspecies *balbisii*. A list of plants in the garden, identified by numbers, was found to be far from complete. Many plants were not numbered, possibly because there had not yet been time, but there was no reference to primulas at all, and there was quite a large number of species growing there. Whilst no staff were available for information, too adventurous photographers were occasionally startled by a whistle blast, and an abrupt request from an upstairs window of the laboratory to 'Ne promenez sur le Jardin, s'il vous plaît!' At the top of the garden stands the French explorers' memorial to Captain Robert Falcon Scott, whose expedition trained in this area in the early winter of 1908, before their ill-fated South Polar expedition.

Perhaps the most rewarding walks from Les Hières were those up the Valfroide valley. Nearly the last building up the valley was a small, neat cottage, whose wide window sills were invariably

ornamented with large bowls full of the meadow flowers. Here we were able to cross the stream to gain access to the ridge opposite to Les Hières, the Crête de Puy Goléfre. On the north-west facing slopes, immediately over the bridge, *Pulsatilla alpina* took over from the narcissus, together with the smaller, cluster-headed *Anemone narcissiflora*. Snow patches on both sides of the stream had the usual fringe of *Crocus albiflorus*, with just a few purple forms, and *Soldanella alpina*. In the turf at the top were large patches of *Antennaria dioica*, and numerous patches of what appeared to be *Androsace carnea* var. *alba*. The peak at the end of the ridge, l'Aiguillon, provided magnificent views of the whole of the local area, and two new flowers. *Geranium aconitifolium* is not a very exciting plant, but much more interesting was *Alyssum wulfenianum*, growing in bare rock on the south side. This is a quite distinctive plant, with a central rosette of grey-green leaves and longer, leafy flower stems, each with a cluster of orangy-yellow flowers at the end, the whole lying prostrate on the rock. We saw only two plants here, and one or two a little further on. The south-facing slopes of this ridge were much less floriferous, although we found the common Cowslip, *Primula veris*, hobnobbing with *Pulsatilla alpina* at around 2300 m. Misled by the meadows below, we noted that all the narcissi seemed to be over, before realising that we were looking at the leaves of hundreds of plants of a *Colchicum*, probably *C. autumnale*. Seed was, unfortunately, not yet ripe. Numerous small bushes of *Daphne mezereum* were seen around here, some with leafless stems covered with fragrant flowers, others already in leaf. All were low growing, less than half a metre, and all grew beside rocks or stones of a similar height.

Returning to the Valfroide valley, our last walk took us right to the head of the valley, and over the top to Lac Goléon. The last meadows gave us all the usual flowers, and a little *Corydalis solida*, with some of the best *Gentiana kochiana* and *Viola calcarata* that we saw. The lower screes did not have much in them beyond some *Gentiana verna*, including a light blue patch, and *Globularia*. The highest flowers on this scree were our common Coltsfoot, *Tussilago farfara*. Climbing steadily and steeply, we crossed several snow- and mud-filled gullies before reaching higher patches of grass. Here were good plants of *Vitaliana primuliflora* in the grass, and *Primula hirsuta* in rock crevices. Right in the middle of this valley, where we crossed from one side to the other, and where the snow-melt water pouring down was deepest, we found three large stout clumps of *Soldanella*, from twelve to twenty

stems to a clump, with larger flowers than previous ones, more fringed, and turned outwards. These, we think, may have been *Soldanella montana*. A little way before the top, *Pulsatilla vernalis* was at its best, and one huge, tight clump of nearly thirty flowers of *Gentiana kochiana* restored our faith in those Alpine Calendar pictures.

The final few yards to the top were up a stony path, doubling as a stream, with a near vertical bank of very wet schist on the right. Here we found our only specimens of *Ranunculus glacialis* and *Geum reptans* at about 2500 m. We paused before climbing over the ridge to look back at the breath-taking view behind us, down the valley and over La Grave to La Meije and the Romanche valley beyond. Then, over the ridge, and we were back into winter. The lake and its basin were still deep beneath the snow, although there were long ridges of rock protruding in places. There we searched for the *Eritrichium* which was reported from this area, but without success. Along with *Primula*, *Saxifraga*, *Sempervivum* and others was *Pulsatilla vernalis*, here barely in bud, growing very largely as a saxatile plant in all the crevices in these ridges. On enquiring about the *Eritrichium* from two French climbers who had come from the far end of the lake, we were told to look at the rocks on the way down. Following their advice, we found that we had earlier taken the Psalmist's advice too literally. As we had lifted our eyes at the top of the path to look at the view of the distant hills, we had failed to notice the ridge of sandy flysch literally under our noses on the other side of the path. And there, of course, was our *Eritrichium*. We counted up to about a hundred plants, many small, but the largest having some fifty to sixty blooms, and there could well have been more down the far side of the ridge. A very satisfying end, almost, to our last walk on our last day.

Summing up, this area requires fairly good legs, and private transport would be a great help. The only public transport is the Grenoble to Briançon bus service, which has only two buses per day, morning and evening, and the private minibus 'taxi' at La Grave was very expensive. For parties, of course, coaches can be hired. La Grave has adequate shopping facilities for what we required, and has an Information Bureau where the local large-scale maps are cheaper than in London, but the only 'bank' operates in a wooden hut one afternoon per week. We walked most days in shirt sleeves, but there were some flurries of snow, and it could be quite cold—below freezing point at night at Les Hières. Finally, although there were many people

walking besides ourselves, we never felt ourselves in a crowd, except, perhaps, round the hotel at the Col du Lautaret in the afternoon as we awaited our coach. It may not be quite as Farrer found the area, but is still very well worth visiting.

Craspedia

by BRIAN HALLIWELL

Craspedia is an Australasian genus of non-woody composites occurring in New Zealand and all Australian States except for the Northern Territory. The exact number of species is uncertain for much depends on the botanical status afforded a plant, whether species or variety. The whole genus needs investigation, for the floras I have consulted have spanned a period of 80 years and no doubt when the older ones are revised a more accurate classification will emerge. I have picked out from eight different floras thirteen species, although according to the latest edition of Willis' "Flowering Plants and Ferns" there are only seven, so it seems obvious that the same species has more than one name. The following are the species with their distributions that I have culled from the various floras consulted:

- C. alpina*—Tasmania.
- C. chrysantha*—Queensland, Victoria, South Australia.
- C. glauca*—Australian Capital Territory, Western Australia, South Australia, Tasmania.
- C. globosa*—Queensland, New South Wales, Victoria, South Australia.
- C. incana*—New Zealand.
- C. lanata*—New Zealand.
- C. macrocephala*—Australian Capital Territory.
- C. major*—New Zealand.
- C. minor*—New Zealand.
- C. pleiocephala*—Queensland, New South Wales, Victoria, South Australia, Western Australia.
- C. richia*—Queensland, New South Wales.
- C. robusta*—New Zealand
- C. uniflora*—Victoria, South Australia, New Zealand.

Certain species are widespread geographically and altitudinally and so considerable variation is to be expected. Some species can extend from coastal regions to sub-alpine pastures and vary accordingly in size, e.g. at sea level a species may be 1000 mm and at the uppermost extremity of altitude it may be only 200 mm. Their habit of growth is equally variable, being in addition to altitude affected by soil, rainfall and competition, which can go some way to explaining why the same species in different floras can be described as annual, biennial or perennial; it seems they are best described as short-lived perennials.

Plants form a loose rosette from a perennial rootstock of more or less oval, usually pointed leaves. These can vary from being glabrous, even sticky, through varying degrees of hairiness to being covered with white wool. From the rosettes, flower stems arise, usually with a few leaf-like bracts, to support a single globular flower-head of the batchelor button type (a common Australian name for members of the genus is "Billy Buttons").

There are no petals and flower colour varies from white through cream and shades of yellow to gold and may verge towards orange. Mostly plants would be grown for their flowers; whilst at least three species have attractive foliage, in one the flowers are vastly inferior.

Plants are easily raised from seed, although there is always a high percentage of infertile seed in any sample; under English cultivation good seed is rarely produced. It should be sown on a lime-free, well-drained compost in gentle heat and following germination seedlings should be potted singly into small pots as soon as big enough to handle. All I have grown have proved to be hardy out of doors under dry winter conditions, but they are intolerant of winter wet. Plant in full sun, in a lime-free soil that is gritty or even in a scree and cover the hairy ones in winter with a sheet of glass. Even the non-hairy kinds benefit from such protection in wet districts. They make good plants for the Alpine House for whilst their main flush of flowers is produced in the late spring, in most species flowers can be produced erratically at other seasons. As many have thick, rather long roots, they are better grown in pots rather than pans. Under pot culture they should never be allowed to dry out and a watch kept for aphids which congregate in the base of the crown where they are difficult to reach with sprays.

I have very little personal experience with those from Australia; these have been omitted. The small compact forms from high altitudes of most, if not all, species are desirable plants for any rock garden.

Of the Tasmanian and New Zealand plants I shall confine my remarks mainly to species only, as I have insufficient botanical knowledge to sort out the different varieties.

C. glauca is widespread in Tasmania in grassy places from sea level to alpine slopes. Mature leaves are usually glabrous, even sticky, although when young can be sparsely hairy and will vary from being oval and broad to narrow and linear. Flower stems range between 200 and 1000 mm and the globose heads, whilst usually yellow, can be cream or white. In the 'Students Flora of Tasmania', Curtis lists four varieties: *glauca*, *gracilis*, *macrocephala* and *glabrata*. The highest altitude forms are good rock garden plants and I am told that the variety *glabrata* is the best.

C. alpina can form extensive drifts in alpine grass on mountain plateaux. There is less variation in form than in the previous species, with leaves being invariably narrow and covered with a white cotton. The flower-heads on stems up to 250 mm are quite large for the size of the plant, being some 25 mm in diameter and always white. This is the better of the two Tasmanian species for cultivation in the rock garden, but it benefits from scree conditions and a sheet of glass to cover it in winter so as to keep it dry.

C. uniflora which also occurs in Australia is the most widespread of the New Zealand species and the most variable. It ranges in altitude from sea level to sub-alpine pastures and the flower stem varies in height from 150 to 450 mm. Leaves which are usually spoon-shaped, although often pointed, are bright green and mostly glabrous, although when young they can be covered with a cobweb of hairs which mostly disappear with age, although some are usually retained on margins. The semi-globose head of flowers may be white or yellow. Allan in 'Flora of New Zealand' lists four varieties: *uniflora*, *subhispida*, *grandis* and *maritima*. The smaller forms and varieties of this species are easy of cultivation in almost any soil; they are not over large and are floriferous.

C. minor forms small rosettes of spoon-shaped leaves which are about 250 mm in length and covered with bristly hairs. Flower-heads which are produced on stems up to 250 mm are yellow. Amongst the smallest of the species, it is an easy one for cultivation and quite showy.

C. major, although larger in all its parts, is not so much bigger than the previous species as to warrant this epithet. Though mostly glabrous, the young leaves may be hairy and a fringe is retained along the leaf margins of mature leaves. Yellow globose heads are produced on

stems up to 300 mm. Not as desirable a species as the former, but the smallest forms are worth a place on the rock garden.

C. robusta is restricted to coastal regions, being found mostly on cliffs. Its leaves are very variable and may be narrow and linear, spoon-shaped, oval or almost round with the tip elongated to a point. The underside of the leaf is shiny, sometimes silvery, with prominent veining; the upper surface is usually glabrous but may retain some hairs along the margins when mature. Substantial flowers are produced on long flower stems which can reach 600 mm. Mostly too large for all but the bigger rock gardens, they might be considered for the herbaceous border, for they are easy to grow. Allan in 'Flora of New Zealand' includes with this species the variety *pedicellata*.

C. lanata has oval, rather upward pointing leaves which may reach 100 mm and which taper towards the petiole. Leaves are covered on both surfaces when young with grey or greyish-white hairs, and although these sometimes disappear from the upper surface with ageing, a vestige usually remains. Flower-heads which are yellow or white are produced on stems up to 250 mm. A species which combines both attractive foliage with showy flowers, it deserves a place on the rock garden in the scree or planted in a vertical crevice.

C. incana is possibly the smallest of the craspedias, rarely producing leaves longer than 70 mm and a flower stem perhaps 150 mm. Leaves, petioles and flower stems are all covered with a white wool. Small flower-heads are for a short while sulphur yellow but quickly become white like the rest of the plant. This is the best of all the species, at least for its foliage, although its flowers are insignificant. Planted on the rock garden or in a scree, it needs no glass for protection for its leaves die down in the winter. It is well suited to cultivation in a sink garden where the restriction keeps all parts even smaller. Slug pellets should be scattered around in the spring as the young leaves begin to emerge from the soil.

Craspedia is a very variable genus in habit, hardiness and size. Selection is of utmost importance with the smallest and most compact seedlings retained and the others discarded. Whilst not the most spectacular of flowering plants, they bloom regularly and are not difficult to cultivate. Their rather unusual form should make people want to try them if only to introduce something different into their gardens. Seeds of most of the New Zealand species and varieties and those from Tasmania are offered in the Seed Exchange list of the Canterbury Alpine Garden Society of New Zealand.

Plant Shows of the Prague Rock Garden Club

by JAROSLAV KLIMA

PRAGUE ROCK GARDEN CLUB has a long tradition of Shows. Nine have been arranged in the Club's history, but these are Shows with a difference. Like most clubs we too have financial problems with high expenses and heavy financial commitments for running a seed exchange, bulletin and lecture programme. Our club therefore produces, for the public's education and in the hope of attracting new members, a Show where the plants are displayed as they would be found growing in the wild. To do this we arrange our plants in rock gardens in the park. Not all of our nine Shows have been successful. Till last year we were not able to obtain a permanent place for holding our Shows. The first three were held on the same site and were successful and the third one was visited by 27,000 people. Then we had some bad years. We had to move all our stones from one place to another, which was neither pleasant nor easy, but last year we obtained a very interesting yard to create a little park with rock and peat gardens. The place is a garden of St. John Nepomucký Church, which is situated in the very centre of Prague. The place will provide us with asylum for five years and then we shall see (Fig. 30).

Last year's Show was not quite successful because of the short time we had available to prepare the gardens. This year's Show was better and our tenth Show is already being prepared to show the earliest blooms.

Exhibits at the Shows are continually being evaluated. The arrangement of the plants does not allow us the broad classification as that known in Britain. Exhibits come for the Show in pots and pans. Large pans are placed throughout the garden while pots are built into prepared rock gardens and covered with stone chippings. A jury of experts evaluate the three best exhibits. They use criteria like performance of the plant, rarity and difficulty. Visitors also vote for the best exhibits.

The rock garden is constructed from big stones, and broad crevices are planted with pot-grown plants. The surface is then covered by stone chippings. Stony places are followed by larger screes where the

exhibits are also placed in their pots. These exhibits, brought by growers, are carefully checked for the correct botanical name. A label is written and the plant prepared for arrangement in the garden (Fig. 31).

Selling of surplus plants donated by members is organised during the Shows and this has proved very successful. Exhibited plants of course are not available for sale.

This year the Show was held from 20th May till 4th June. We had few representatives from the mountain tops, but the Show was colourful in the richness of colour from the spring flowering blooms (Fig. 32).

Plants of New Zealand gave us plenty of material to create an individual section in the Rock Garden. Family Compositae showed almost a complete range from the biggest representatives to the smallest—one of which, *Raoulia eximia*, was eaten by a blackbird!. Other plants included large pans of *Celmisia hectori*, *C. coriacea* and its bronze form, *C. allionii*, *C. sessiliflora* and *C. verbascifolia*. The collection was completed by *C. hookeri*. We could see small *Raoulias*—for example *R. lutescens* and an interesting cross—*R. hectori* x *Leucogenes grandiceps*. The collection included *Aciphylla subflabellata* and *A. montana*, *Helichrysum selago*, *Leucogenes grandiceps*, *Coprosma petraea* var. *purpurea*, *Brachycome nivalis*, *Liriope nigrescens*, *L. variegata*, *L. japonica* and *Parahebe decora* among many others.

The best plant in the family Primulaceae was a large pan of the blue *Primula bellidifolia*. Nine plants were exhibited, but one was stolen during the Show. Eye-catching groups of *Primula polyanthus* were used for good colour effect together with many primroses of the *Candelabra* Section, and Dodecatheons grown in the peat garden.

Ranunculaceae representatives were much admired, particularly *Paeonia tenuifolia* and *Delphinium nudicaule*, and would be good for selling in our shop. *Clematis sibirica* and *C. alpina* x *macropetala* were also showy.

The family Caryophyllaceae was prominently displayed and I would like to mention a complete collection of *Phlox douglasii* cultivars from Jack Drake's catalogue. The best was, of course, the red 'Cracker-jack'. Pinks were well represented and in particular with a pretty specimen of *Dianthus gratianopolitanus* 'Mars'. Plants such as *D. x arvernensis* and *D. petraeus* ssp. *noeanus*, etc., had many admirers. There was one plant quite new to us—*Saponaria pumila* x *S. ocymoides* 'Rubra Compacta'. This new cultivar was raised by Mr. Kummert of Austria and is a very compact plant with quite large, red flowers, not higher than 5 cm.

Another pretty but not a new exhibit was *Silene hookeri*, and *Petrocoptis pyrenaica* added to the display of colour.

Penstemons represented the Scrophulariaceae. There was a good variety of them in the rock garden but *P. rupicola* 'Humilior' was admired most of all. The plant did not exceed 4 cm. and was covered in bloom—a real treasure for the deep crevices; its rose-red flowers were a real eye catcher far from the display.

Mention must be made of tufa stones planted with various plants. They made a great impression at the Show and their owner, Mr. Pangáac, obtained 1st Prize. His real treasure was *Leontopodium alpinum niveum*—a woolly plant with flowers supported by short greyish silver leaves about 2 cm. high. It was planted together with *Draba bryoides* and *D. mollissima*. Another stone was planted with *Draba polytricha* and *Saxifraga stribrnyi*. Our shop at the Show had many requests for these stones, especially the planted ones on exhibit, but of course they were not for sale.

The peat garden provided a temporary home to a wonderful specimen of *Ulex europaeus* hidden in its yellow flowers in pretty contrast to *Arctostaphylos uva-ursi*, full of red berries. Some of the family Araceae were included here, for example *Arum maculatum* and *Arisarum proboscideum*. *Pieris japonica* 'Pygmaea', *Pernettya mucronata*, Tiarellas, the double *Trillium grandiflorum*, *Corydalis wilsonii*, blue *Meconopsis*, some ferns of which *Phyllitis scolopendrium* 'Cristatum', with finely divided leaves was the best, and *Blechnum spicant* all provided a welcome display in the peat garden.

Corylus avellana 'Tortuosa' and Japanese maples were placed on a bank beside our bigger pool, while the opposite rock above the water level was occupied by a few *Cistus* shrubs—*C. purpureus* and *C.* 'Silver Pink' in full flower, and *Syringa velutina* and *S. palibiniana* covered in strongly scented flowers.

Salvia caespitosa gave a good display in the rock garden with its large rose-coloured flowers, and nearby *Rhodiola atropurpurea* with orange flowers, and the yellow *Rhodiola stephanii* together with *Veronica schmidtiana* gave a good example of alpine plant diversity.

On the whole the Show was successful, attracting 13,000 visitors. We were busy building the Show garden from March to May and our members devoted 1000 hours free of charge to do this. We exhibited about 500 plant species and 56 exhibitors took part in the Show. The Show shop sold 20,000 surplus plants donated by members.

Shows of this type enable us to exhibit the plants for a longer time

than the conventional method of exhibiting potted plants on tables. The organisation of such a Show is strongly dependent on helpful members and it helps to concentrate the truly devoted members for creating something interesting to the general public and not only for experts.

“I Always Plucked A Thistle”

by HELEN FORD

I CANNOT remember when I first read these words of Abraham Lincoln: “Die when I may, I want it said of me that I always plucked a thistle and planted a flower where I thought a flower might grow”; the quotation has remained a favourite of mine, in spite of the number of thistles I have encountered, in circumstances where there was no time, energy or opportunity to replace them.

I made up for that when we began to garden in Scotland, and I met the native variety which were of a height and circumference beyond my wildest Sassenach dreams. For what seemed eternity, I struggled with thistles, determined to plant ethereal, ephemeral, sculptured plants in their stead. STEAD is the operative word. Remember it!

My planting began, and it felt good. No need any longer for quick results, plants could be nursed and watched over with care. A ‘must’ was *Alstroemeria*, which I liked, even in its flamboyant orange form, found in a ditch near Ascot: quite appropriate, in a stockbroker belt! I was presented with ‘Ligtu hybrid’ seed which I raised on a window sill, and which rewarded me with flowers in subtle shades of apricot and pink.

Then I was ‘gifted’ something undreamed of, a pot of wee plants of *Alstroemeria* raised from seed collected by Cheese & Watson in the Andes in 1971-72. The seedlings had no name, only a number: 5209, like tiny prisoners, and were a present from the STEAD home of Esk Hause, near Glasgow. I planted them with care during a drought when my “Bill and Ben” garden consisted of small plants sheltering from sun and wind under cool protective clay flower-pots.

They lived! The first year I was rewarded with three flowering stems. The second year more, and half the small patch passed into the mentor’s garden. This year they are burgeoning. Lovely flowers, the colour of pale mahogany, the size of ‘Ligtu hybrids’, on stems only

7 ins. high. This is in a windswept exposed sunny herbaceous border in neutral soil.

Imagine my surprise and pride when I took an out-of-the-blue telephone call from a florist with a nursery in the South of France who wanted to discuss species *Alstroemeria* with a Scottish Doctor member of the S.R.G.C. For once I could actually understand and participate in a message to be passed on, and could give an account of my protégé C & W 5209! I had planted my flower!

Footnote: The day after I had finished this note, news came from the A.G.S. that prisoner No. 5209 now has a name: *Alstroemeria haemantha* (bloody-flowered).

The Genus *Oxalis*

by DON STEAD

THIS is one of the genera which can cause feelings of exasperation or admiration or both. Thus, when I told a South African correspondent of an interest in *Oxalis*, he wrote

“Why on earth are you interested in *Oxalis*? They are absolute pests. I would give you many pounds to remove them all from my garden”. He went on, though,

“I must admit that my lawn is quite nice when it is covered with hundreds of pink blooms”.

A love-hate relationship typical of the genus!

It was my intention to group the *Oxalis* species of which I have experience as Weeds, Rock garden plants and Alpine house plants, but then I had a look at the R.H.S. Dictionary of Gardening. I found that *Oxalis rubra* (floribunda), which I prize, was described there as a weed and *O. oregana* which I regard as, at the best, vigorous ground cover, was recommended for a position in the rock garden! One man's weed . . .

The genus *Oxalis* is large—800 species at the time of the last comprehensive review by Knuth in 1930—and no doubt more have been discovered since. It is a genus with representatives in all continents, more in tropical and sub-tropical areas than in the cool-temperate regions. Most of the garden-worthy species come from two areas, South Africa and southern South America. None are alpinists in the normal sense of the word but a number are good rock garden plants

and more are attractive subjects for the alpine house.

It is hard to make descriptive generalisations about the genus without obvious exceptions coming to mind and in what follows this should be borne in mind.

South African species commonly form small to medium sized corms and a number of the South Americans form rhizomes, often scaly. Other species may retain a somewhat succulent stem above ground. Leaves are almost invariably compound and palmate and a high proportion have the trefoil structure characteristic of clover. Others may have upwards of twenty leaflets. Some species show "sleep" movements, turning their leaflets down at night and the flowers furl their five petals in a neat parasol fashion, invariably at night and commonly when the sun is obscured for any length of time. Most *Oxalis* are sun lovers but our native *O. acetosella*, Wood Sorrel, is an obvious exception. For this reason they are not the best of show plants since one must have warmth or a very good light to make them give of their best.

Leaf type, texture and colour vary considerably and the foliage can be an extremely attractive feature. The thick coating of hairs on *O. speciosa* leaves gives them a delightful silky grey-green appearance; *O. purpurea* spreads its medium size dark green leaves flat on the soil so that the beautiful ciliate edge is clearly outlined; the mound of grey-green leaflets of *O. adenophylla* makes a pleasant rock garden feature even when it is out of flower; *O. palmifrons*, of which I have not seen the flower, forms an exquisite symmetrical rosette of flat palmate leaves which is a joy to see. The whole gamut of greens is covered, from the brownish-green of *O. magellanica* through the emerald of *O. acetosella* to the glaucous green of *O. enneaphylla*. The mid-green leaves of *O. stellata* var. *glandulosa*, not particularly noteworthy during the day, turn their leaflets down at night and reveal violet reverses in almost startling contrast.

In those cases where the outer edges of the petals are coloured, e.g. *O. versicolor*, the furled flower buds have a quite separate attraction from the open flowers.

Flower form varies from flat to funnel-shaped and the colour range goes from white through yellow to a series of pink, red and rose shades; *O. laciniata* has near blue and violet shades and a newly introduced species is a very deep violet.

In view of what has been implied above about the subjectivity of the word "weed", the list of species which follows has not been grouped in any stigmatising way, but words of warning are given

where it seems appropriate. It should be noted that New Zealand prohibits the importation of some *Oxalis* spp. and Australia has a similar attitude.

The division into "Rock Garden Plants" and "Plants for Protected Cultivation" is equally subjective and should be taken as relating to cool West of Scotland conditions.

Cultivation. *Oxalis* spp. do best in a fairly light soil but cultivation conditions are not critical. *O. adenophylla* is reputed to have a liking for lime but it and all other species described appear quite happy in a slightly acid soil. The South African cormous species enjoy a good bake in summer.

ROCK GARDEN PLANTS

O. acetosella. Wood Sorrel. Europe. White, delicately veined flowers and emerald green trefoil leaves come from a scaly rootstock. A pink form exists. Will stand moderate shade. Could be invasive.

O. adenophylla. Chile. The name indicates a stickiness of the foliage but this is far from being an obvious feature of the grey-green palmate leaves. From a translucent fleshy rootstock brown bulb-like fibrous structures emerge through the ground and persist in winter. From these the leaves and flowers appear and on a sunny June day the pale pink flowers will all but obliterate the foliage. Easily propagated by division and seed setting does not seem common. Seed from good colour forms was collected by the 1972 Beckett, Cheese and Watson expedition but it is not thought that there were any successful germinations.

O. chrysantha. Brazil. The neatest species apart from *O. corniculata*. Small bright green leaves and golden flowers—opening in profusion on a sunny day—come from runners which rarely root as they go but can be used for propagation. Not robustly hardy and better with its roots under a rock, but even this did not save it in '77-'78 winter.

O. corniculata. Cosmopolitan. This and the variety *O. c. purpurata* are two of the most diminutive species with leaves scarcely 1/5 in. across and starry funnel-shaped yellow flowers. I must confess that I was entranced by it when I accidentally acquired it and didn't know what it was. I asked a visitor. "That horror!" he exclaimed, and moved smartly away as though afraid he would be contaminated. The hint was taken and the plant consigned to the dustbin, but the process had to be continued for a full year, as *O. corniculata* has a very efficient seed scattering mechanism and the frame in which it had fortunately

been confined was well inoculated. It creeps and roots as it goes and if one does have a bad infestation then the most practical advice is that one should become one of its admirers, which is not difficult. Probably of European origin but has earned the distinction of "cosmopolitan weed" description.

O. depressa (*O. inops*). A very pleasant acaulescent plant for a pot, with large rose coloured flowers offset by dark green leaves. Late June. Small brown corms. Here it is invasive in the open ground and I was given mine on condition that I didn't release it. To be fair, it has not managed to distribute seed.

O. enneaphylla. Patagonia. Rather similar in habit and flower size to *O. adenophylla* but grows from scaly rhizomes slightly thinner than a pencil. Grey-green leaves with 9-20 leaflets. Flowers white, 1 in. across, but a variety *O. e. rosea* is obtainable. *O. e. minutaefolia* has smaller leaves, packed more closely, and pink flowers. For those who have difficulty in remembering which is *O. enneaphylla* and which is *O. adenophylla* I offer the mnemonic "ABER"-Adenophylla Bulb, Enneaphylla Rhizome.

O. laciniata. Patagonia. One of the most prized species. The grey-green leaves with their neat zig-zag channelled leaflets are a beautiful feature of the plant, and the funnel-shaped flowers, $\frac{3}{4}$ in. across, vary in the reddish-blue to purple range and are generally veined. The orange, scale covered, horizontal rhizomes like to lie just below soil surface. In favourable circumstances, *O. laciniata* will self seed and if the seed is to be collected, then, according to the late E. B. Anderson, the capsules should be enclosed as soon as they turn upright. This plant was introduced by Mrs. Tweedie and more recently she has introduced another species of rather similar type. This has smaller leaves and flowers which can be a very deep violet, almost black.

O. lactea. New Zealand. The only native Australasian species in this review. Said by some to be identical with *O. magellanica*, but from examination of a plant recently received from Tasmania, this seems doubtful. An Australian, writing in the A.G.S. Bulletin some years ago, included it in his list of "12 Best Alpines", but on the other hand a New Zealand correspondent said: "We try to keep it to the wilder part of the garden". There is a rather rare double form which does not spread like the type plant.

O. magellanica. Argentina. From small brownish-green trefoil leaves clear white funnel-shaped flowers on short stems are produced in profusion in a sunny spot. It roots as it goes and if you don't like it

fairly fast action is necessary, otherwise it becomes part of the garden. It can look delightful in sunny paving and this is the best location for it. *O. oregana*. N. America. A woodlander with large trefoil leaves and rose coloured flowers on 4-6 in. stems. Can be used as fairly good deciduous ground cover.

O. patagonica. Argentina. Has pinkish rhizomes of similar type to those of *O. laciniata* and bears pink flowers for some people, not so far for me.

O. rubra. (*O. floribunda*). Chile. Cymes of rose coloured flowers with darker throats rise on 4-6 in stems from a brown scaly rhizome. A common garden plant in mild districts. The R.H.S. Dictionary calls it a weed but it is slowly dwindling in my garden.

O. simmsii. S. America? A rather succulent stemmed annual, the validity of whose name is a matter of doubt in that I have not found any reference to the plant. Pale violet flowers produced freely on a 6-10 in. high plant. Seeds itself but seedlings and plants easily removed.

O. valdiviensis. Chile. One of the caulescent species forming a 10 in. high bush of succulent stems with trefoil leaves and yellow flowers. Perennial with care and winter protection but best treated as annual. Whether its progeny are too plentiful or not will depend on climate, conditions and taste, but unwanted seedlings are easily removed. Those left will cover themselves with flowers in late summer and early autumn.

PLANTS FOR PROTECTED CULTIVATION

O. brasiliensis. Brazil. Short peduncles of up to three red flowers over medium-sized trefoil leaves.

O. deppei. Four Leafed Clover. S. America. The leaves, which are about 2 ins. across, carry a roughly circular purplish mark. Pink flowers are borne on 5-8 in. stems and the corms, if one ever has a surplus, are edible. A white form is available but is relatively squinny.

O. eckloniana var. *sonderi*. S. Africa. The $\frac{1}{2}$ - $\frac{3}{4}$ in. trefoil leaves have a delicate fringe of hairs and a brown reverse, and turn red as the plant ages. The pink flowers, on 3-4 in. stems, appear in late autumn.

O. hirta. S. Africa. A bulbous species which forms 4 in. stems carrying sessile compound leaves consisting of three narrow leaflets. The compound nature of the leaves is not obvious to a casual glance with this and other species such as *O. tenuifolia*. Flower colour varies from white through lilac to purple and flowers appear in the autumn.

O. lobata. Chile. This cormous species shares with *O. speciosa* the very unusual habit of producing two sets of leaves. The first lot appears in spring, unaccompanied by flowers, and then dies away completely.

A new lot appears in autumn and is this time accompanied by bright yellow flowers $\frac{1}{2}$ in. across. The leaves are bright green and one of the three lobed leaflets lies at an angle to the other two. One of the dainty species, well worth growing inside or out, as one's climate allows.

O. obtusa. S. Africa. In a pot of this species numerous silky flowers, opening flat in the sun, rise from a carpet of small grey-green leaves. New corms of rice grain size are produced freely and *O. obtusa* could give trouble in a warm sandy soil. The flower colour generally seen is rose, but in S. Africa it occurs in a yellow and a tangerine form.

O. pes-caprae (*O. cernua*). Bermuda Buttercup. S. Africa. The last name is the bulb catalogue name but one suspects that it has a number of less complimentary names in the mild to hot countries where it proves very difficult to eradicate, once established. In the West of Scotland it only just survives in a frame, but is showing more signs of vigour in a frost free bulb house. It is one of the few species with pendant flowers and the 3-4 in. stems carry clusters of lemon yellow flowers above rather sparse trefoil leaves. New clusters of corms are developed from side-spreading roots. Despite its reputation, an attractive plant. A double form exists but has not yet come my way.

O. purpurea. (*O. variabilis*, *O. grandiflora*) S. Africa. Leaves up to $\frac{1}{2}$ in. across, arranging themselves flat on the soil to display to perfection their ciliate edges. Flowers from August to November, producing a succession of exquisite pink flowers, 1 in. high, $1\frac{1}{2}$ in. across. When going over, the flowers furl with the top edges turned over and they then lie down and vanish without fuss. Occurs in white and rarely yellow forms.

O. speciosa. S. America. Produces two sets of leaves, the yellow flowers coming, if one is favoured, with the second, autumn, set. The layer of adpressed silky hairs on the small trefoil leaves make the plant well worth growing for the foliage alone.

O. sp. BCW 4782 The Beckett, Cheese and Watson Andean collection included a number of new *Oxalis* species, several of which were attractive yellow-flowered species which did not persist long. BCW 4782 has remained in cultivation and is a slightly succulent type whose trefoil leaves are tinged with brown. Clusters of deep rose flowers are produced in great numbers from mid-May to September. As with most of the plants in this "Protected Cultivated" section, protection is only necessary during winter. In a warm summer a few seed are set and self-sown seedlings appear in early May. A short-lived perennial but best treated as a biennial.

Travels in Turkey

by LYNN and MICHAEL ALMOND

PART I

TURKEY is a land of contrasts, a country as big as France and Germany together with flat, wide-open steppes and high, rocky mountains covered with forests or snow. This account is mainly concerned with a small part of Turkey—the south-west corner, south of the Menderes river (the ancient Maeander) and as far east as the Pamphylian plain around Antalya. To try to explore only this small corner of Turkey, however, in two short weeks (as we did in the first two weeks of April 1978) is to obtain but a fleeting glance of its rich variety of flora, fauna, archaeology and scenery. What follows is by way of a few jottings from our diary of a whistle-stop tour of the ancient lands of Caria, Lycia and Pamphylia. See map (fig. 34).

First the preliminaries. To reach the valley of the Menderes from Istanbul in the north involves crossing the western edge of the Turkish plateau. The average height of the plateau at its western end is about 3500 feet above sea level and in early April there is little of interest in flower in the flat-lands themselves. Even so (and in spite of driving the five hundred or so miles from Istanbul to Denizli as quickly as possible) we did see *Aubrieta deltoides* and *Muscari pulchellum* (or possibly *M. neglectum*) growing on a roadside cliff in the hills north of Bilecik, together with savory and some other shrubs. Just a few miles further on we screeched to a halt after spotting a group of beautiful *Iris pumila* on the top of a bank above the road, at the edge of a pine wood. They were creamy-yellow in colour with brown falls and were growing in considerable numbers. Far to the south—having crossed most of the plateau and stopped for lunch in some hills south of Afyon—we were surprised to see mauve and yellow crocuses growing in the short, well-grazed turf above a small stream.

As the road gradually descends into the Menderes valley the landscape and vegetation change; scrub covers the limestone hills and *Euphorbia rigida* and *Asphodeline lutea* make a colourful display. Near Denizli, by the side of the old Seljuk caravanserai of Akhan, a solitary *Adonis annua* brought a spot of colour to the stony roadside verge.

About five miles from Denizli, on the northern slopes of the valley, is Pamukkale. The Turkish name means 'Cotton-wool Castle' and

the petrified cascades formed by deposits of lime from the hot springs higher up the hillside have to be seen to be believed. Among the ruins of the ancient city of Hierapolis, built on top of the limestone deposits, the short grass was dotted with red *Anemone coronaria* and more *Muscari pulchellum*. *Euphorbia rigida* grew amongst the old stone tombs, with its attractive dark seedheads projecting from its orangey red bracts. Numerous lime-coated channels carry the warm water down into the valley below, where it is used for irrigation, and in these channels live terrapin—well protected from the cold of the winter.

Westward down the valley and again on its northern slopes, above the little town of Sultanhisar, lie the remains of the city of Nyssa, covered with olive trees and giant fennel. A tall *Campanula* pressed itself against the stone benches of the ancient council chamber, its bell-shaped flowers a delicate lavender blue; it was probably allied to *Campanula rupestris* (at the time we wondered whether it was *C. ephesia*, as Ephesus is only about fifty miles away, but the *Campanula* we found there was quite different). Also inhabiting the cracks between the stones was a fine tassel hyacinth and nearby a Judas tree (*Cercis siliquastrum*) almost dazzled us with its bright pink blossom reflecting the late morning sun.

At various places between Selcuk and Izmir there were to be found *Ornithogalum umbellatum*, *Gynandiris sisyrinchium*—at times forming an extensive carpet of mauve—and *Ophrys scolopax* ssp. *orientalis* (or possibly *O. carmellii*—how can one identify any *Ophrys* with certainty when they are all so variable?). At Ephesus we were duly rewarded with the rare *Campanula ephesia* growing in several places amongst the ruins, the unexcavated parts of which were bright with the yellow flowers of giant fennel. Unfortunately we had no time to explore the marshes to the west of the site, which are said to harbour *Iris ochroleuca*. To the south of Ephesus, at the mouth of the river Menderes, is the ancient city of Priene; just inside its east gate *Cerintho major* (Honeywort) huddled against the grey stones of the wall (this is a hairless member of the borage family with yellow, *Onosma*-like flowers, brownish purple at the base). On the ruins of the old city centre, a few yards west of the council house, grew a *Campanula* similar to the one we had seen at Nyssa and all around the long grass was thick with *Serapias parviflora*.

On the coast south of the mouth of the Menderes, alongside the road to the magnificent temple to Apollo at Didyma, were extensive

tracts of *Cistus*—a mixture of white *Cistus salvifolius* and pink *Cistus albidus*. On the roadside verge beside the *Cistus* a solitary Mirror Orchid (*Ophrys speculum*) stood in all its glory; it was a fine specimen but we searched in vain for another.

A little way inland, the site of Heracleia occupies a weird landscape of huge boulders at the bottom of the rocky Mount Latmus (in Turkish called Bes Parmak—the Five Fingers) and on the shores of Lake Bafa (once an arm of the sea). The ancient market place, now the village school-yard, was dotted with heliotrope-coloured *Anemone coronaria* and *Gynandiris sisyrinchium*. On the edge of the village, the corner of a field was bedecked with *Scilla hyacinthoides*, an attractive bulbous plant about three feet high with conical heads of lilac-blue flowers. Some miles away, about half way between Heracleia and Milas, the area around the delightful little Corinthian temple of Euromus contained small specimens of *Ophrys*, *Serapias parviflora* and *Lavandula stoechas*; lack of time, however, prevented us from exploring this comparatively ungrazed site as fully as we should have wished.

Much of south-west Turkey has been heavily grazed for a long time. Many areas which appear suitable for exploration in search of flowers turn out to be devoid of anything of interest except, perhaps, for a few bulbous plants or *Cyclamen* which have escaped the attentions of the sheep and goats by growing beneath impenetrable thorn bushes. In the hills between Mugla and the sea there is an abundance of *Daphne sericea* growing amongst the scrub. We had been told that *Fritillaria bithynica* was to be found in this area and, sure enough, there it was growing on patches of bare ground between the scrub, its brownish yellow tubular flowers scarcely noticeable against the light brown earth and rocks. Further investigation also revealed *Orchis anatolica* growing under the protection of the Kermes Oak, *Quercus coccifera*, a very common scrub bush all over south-west Turkey. Some miles further along the road, in similar surroundings, we also found *Orchis simia*.

At the bottom of the steep hill down which the road from Mugla to Marmaris approaches the Ceramic Gulf, there are three rock tombs carved out of the cliff beside the old road (and now bypassed by the new road). On the cliff face, beside the tombs, there was growing another *Campanula* similar to the one we had found at Nyssa and also an *Onosma* with bright yellow flowers deepening with age to orange at the tips. On the roadside verge nearby were several specimens of *Cynoglossum creticum*, the Cretan Houndstongue.

Alongside the road leading down from the main road to Dalyan, clumps of Yellow Flag Iris (*Iris pseudacorus*) were growing in a ditch and in an old graveyard a mass of White Flag Iris (possibly *Iris florentina*) gleamed from the shadows beneath the pine trees. We were heading for the ancient city of Caunus, about a mile south of the village of Dalyan as the crow flies and about three miles as the river flows. The site, which can only be reached by boat, is overgrown with fairly lush vegetation which gives a home to countless tortoises, some quite large. As well as the abundance of common flowers (such as *Anemone coronaria*) growing there, we were greeted by another *Campanula*, different again from all the others we had seen so far. Its flowers were widely bell-shaped, larger and somewhat darker than the others, and its leaves were almost heart-shaped. In the ruins of the theatre *Euphorbia spinosa* was growing out of the cracks between the stones forming the seats; this is a plant a little less compact and pin-cushion-like than the *Euphorbia acanthothamnos* so common on the hillsides of Crete.

West of Fethiye, where the hills crowd right down to the sea, several areas near the road repaid our attentions handsomely. To the west of Dalaman *Lloydia graeca*, *Lavandula stoechas* and a tiny white pansy were growing among the *Cistus* scrub and tree heather. In a pine wood on a steep hillside east of Dalaman we found *Iris unguicularis* var. *cretensis*, *Cyclamen* leaves (possibly the autumn flowering *Cyclamen cilicium*) and several specimens of *Limodorum abortivum*, not yet fully in bloom but impressive nonetheless. Fethiye itself is a very pleasant little seaside town, well endowed with ancient Lycian tombs of all shapes and sizes; it would make an excellent base for exploring this part of the coast and the mountains behind. A few miles to the north of Fethiye, beside the road to Kemer, we found another group of *Iris unguicularis*, larger in number than the previous ones and the flowers were different in that the falls had a distinct white margin round the edge. See map of this area (fig. 35).

East of Fethiye lies the valley of the Kocacay, the ancient river Xanthus, which was the heartland of the kingdom of Lycia and is rich in fascinating archaeological remains. We also found it very interesting botanically during the short time we spent in it. At the Sanctuary of Leto (the Letoon), close to the mouth of the river, *Anchusa azurea* was growing on the remains of one of the temples and the seats of the little Hellenistic theatre were dotted with the beautifully marked leaves of the autumn flowering *Cyclamen hederifolium*. At Kalekoy,

also in the lower reaches of the valley, is the site of the Lycian city of Tlos. The main items of interest here are the fine rock tombs and other ancient remains, but we did stumble across a magnificent *Aristolochia*, aptly called in English the Dutchman's Pipe. It had large, rounded trumpets about three inches across, brown purple inside and a buff colour on the outside. We were also delighted to be shown by our guides, at the bottom of the cliff beneath the tombs, a porcupine's nest, with quills liberally strewn around.

Above Kemer, on the steep sides of the valley, open pine woods are interspersed with scrub containing in places *Thymelaea tartanraira*, a relative of the *Daphne*. Higher up the pine trees become more closely packed and the ground beneath them is mainly grazed bare. We drove upstream for many miles before we discovered an ungrazed area. Here, in a small side valley at a height of about 3000 feet or so above sea level, we were rewarded with our first sight of *Cyclamen* in flower. The flowers were a deep pink and the petals were twisted so that they looked like tiny aeroplane propellers. The leaves were rounded and only slightly marbled. We later identified them as *Cyclamen alpinum*, a member of the *Coum* group. In the same side valley there was an abundance of *Anemone blanda* varying in colour from a deep blue to white and bicoloured; here too were several small, deep blue *Chionodoxa* and a white *Corydalis*. Orchid leaves gave promise of more interest to come, but we were too early for the flowers.

On the upland plain at about 4500 feet above sea level near Seki, beside the old stone bridge which carries the main road north from Fethiye over the Kocacay, a small purple borage with a yellow eye was to be found growing on the cliffs above the gorge where the river had carved its way through the limestone barrier between two parts of the plain. Here too were a *Gagea*, a pretty, deep pink *Erodium* with finely divided leaves, a fine bank of *Aubrieta* and some clumps of small, attractive, white flowers which could belong to the *Geranium* family (but which we have been unable to identify). On the plain itself, a few miles north, there were a few flowers of *Cyclamen alpinum* hidden beneath thorn bushes, where they had escaped the attentions of the ubiquitous goats. The air hereabouts smelled distinctly of gin at times, due to the berries which had fallen from the surrounding Juniper trees.

The highest point we reached in this area was the top of the pass to the south-east of Altinyayla, where the road reaches a height of about 5500 feet. Here, among the pine woods and beneath the melting snow,

the ground was carpeted with the same deep blue *Chionodoxa* and *Anemone blanda* we had seen lower down, and also with two types of *Crocus*—one a bright yellow and the other a beautiful translucent ice blue with darker blue veining in the petals and a grey-blue throat. With the crocuses there was also *Colchicum catacuzenium* (unusual among the colchicums for flowering in the spring) with its globular, rosy lilac petals and brown anthers. Above the snow banks (and so without irrigation from them) on bare, stony ground up on the shoulder to the south-west of the pass were a considerable number of golden yellow fritillaries only a few inches tall. Their widely campanulate flowers resembled those of *Fritillaria pudica* and they have been tentatively identified as *F. latifolia aurea*.

Recent Acquisitions from the Seed Exchange: Part II

by M. A. and P. J. STONE

Cyclamen coum album: There is no doubt that fashion is as important an influence in alpine circles as in most other fields these days. One of the prices we have to pay for living in an age of mass communication, but a very small price when one considers the benefits: seeds and plants from the four corners of the world (except China, but there are increasingly hopeful signs). We digress; it is not the present subject, but the tender indoor species *Cc. persicum*, *graecum*, *rolfsianum* et al, often seen masquerading as alpines in our Shows, which are the most sought after. However, we have a feeling that *C. coum* will be growing happily outside in our gardens long after the fashion has changed.

We raised *C. coum* from seed sown in January 1974 and germination followed in October of the same year, as is usual with *Cyclamen*. They were given a feed of slow-release fertilizer, as a topdressing, and left to grow on undisturbed until dormant; when they were potted up in May 1975. Planting out occurred, again while going to rest, in April 1976, and most flowered the following winter. The period is usually given as December-March, but we find that the main display is deferred until the end of this period in our climate. A pity, as genuine winter-flowering "dicot" herbs are far from common.

The flowers are rather squat when compared with most other *Cyclamen* species, as the recurved petals are much shorter compared with their width, being only some 1.5-2 cm. long. What they lack in elegance they make up for in toughness, being completely frost-resistant. In colour our seedlings were all "white"; the inverted commas are necessary for all were slightly flushed with pink and/or purple. Actually, we prefer the red form of *C. coum* which we bought as a single tuber and have spread around by self-sown seedlings, although the "white" flowers do contrast well with the almost round, unmarked, black-green leaves.

It is advisable to give a winter-green plant shelter from the extremes of weather and we have ours planted in the problem area under a beech tree. The flower-buds and leaves travel some distance underground before emerging through the leaf-litter. Many gardening writers advocate such rampant ground-covers as *Hypericum calycinum* and *Pachysandra terminalis* for such a position. In a small garden, this is a waste of space. Many choice summer-dormant plants will grow well under deciduous trees, completing their growth cycle before the trees leaf out and reduce the available light and moisture. There are also many better ground covers than the above pair; one of our *C. coum* appears through a six-foot (sorry, 2 m.) diameter patch of the native Scottish form of *Linnaea borealis*.

Romulea longituba alticola: On a visit to the Pitlochry garden of the late Major-General Murray-Lyon in October 1974, shortly before his death the following February, one of the first plants to catch our eye was a pot full of small yellow crocus-like flowers labelled *Syringodea luteo-nigra*. This plant is now referred to *Romulea*, a Mediterranean and South African genus containing one fairly widely-grown species—*R. bulbocodium*. *Romulea* usually differs from *Crocus* in having a shorter perianth tube, and an obvious true stem at flowering time, which carries the ovary above ground. This is clearly shown in the drawing (fig. 36) and so here we must disagree with Brian Mathew writing in "Dwarf Bulbs": the flowers of our *R. longituba alticola* are indeed long-tubed like a *Crocus*, but the ovary is not below ground, in our experience.

The flowers, 8 cm. high and 4 cm. across, are lemon-yellow with an orange-yellow throat and matching orange pollen on the anthers. They are shaded grey externally, so are only conspicuous when open. Unfortunately, warm sun is required to open and this is not common in



Fig. 34—Map of Western Turkey

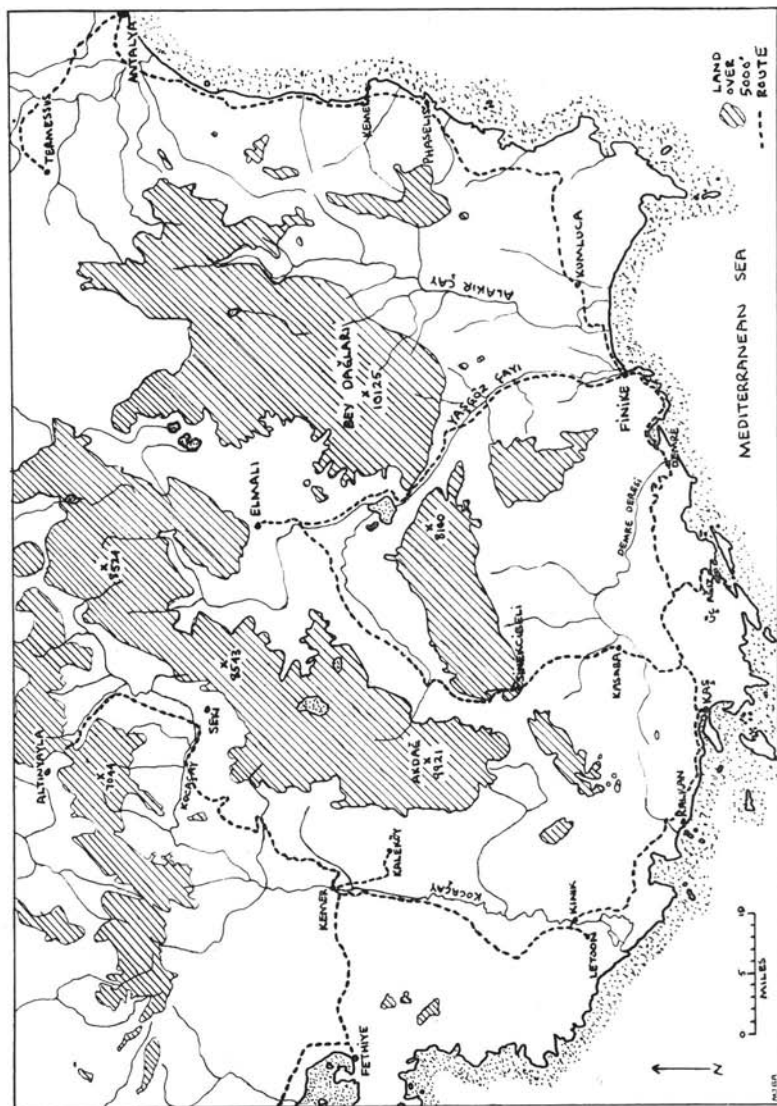


Fig. 35—Route and altitudes in South Western Turkey

ROMULEA LONGITUBA
ALTICOLA

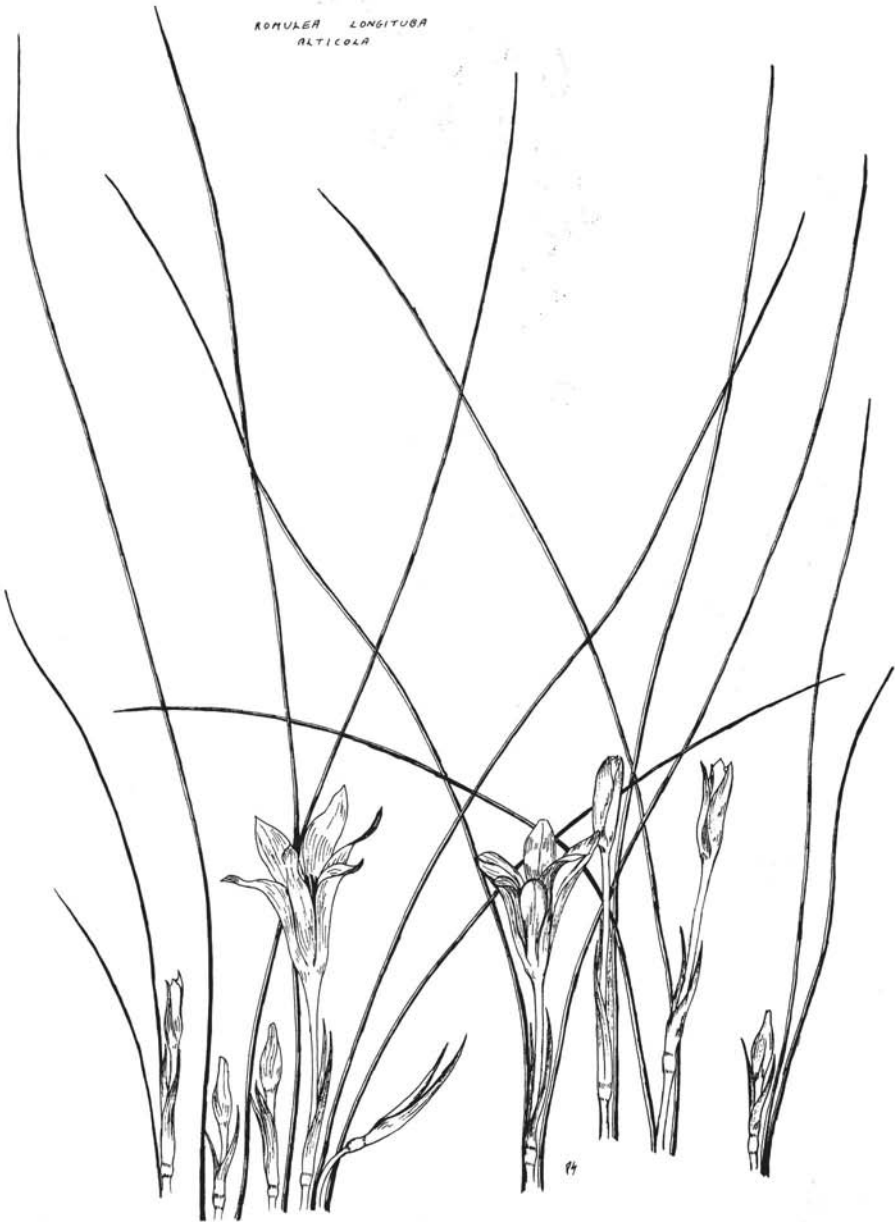


Fig. 36—*Romulea longituba* var. *alticola*

Polly Stone



Fig. 37—*Gaultheria depressa* in fruit

Polly Stone



Fig. 38—*Gentiana kochiana*

Photo—Dorothy Holford

the North of Scotland during the flowering period of late September-early October. We have on occasion cheated and taken the pot indoors, briefly. The plant itself is perfectly hardy, coming from high in the Drakensburg, and sets seed during the winter, although frequently frozen solid in its pot. The long, thin leaves, up to 12 ins. (30 cm.) are dark green and slightly striate. Plants here are almost evergreen and don't appear to be totally dormant at any time.

Our original seed was offered in the 1974-5 exchange and germinated in July 1975. As with many "bulbs" (we use the term loosely, *Romulea* has a corm), this coincides with the time that the adult plant produces its new foliage, cf. *Cyclamen*. With all "bulbous" seedlings, we don't prick them out in the first year, contenting ourselves with a good feed of slow-release fertilizer. Sometimes the lazy way is as good as any. They were repotted just as growth was restarting in July 1976 and the first flowers followed that autumn. This is much sooner than most "bulbs" from seed, and can be commended. And don't forget that yellow flowers are not at all common in autumn. Unlike *Sternbergia*, this *Romulea* does not require a dry rest period and so is much easier to grow well in Scotland.

Gaultheria depressa: This, the smallest of the eight New Zealand *Gaultheria* species, is the only one which is not endemic, occurring also in Tasmania. For a while it was reduced to a variety of the much larger *G. antipoda*, but has now itself been divided by Franklyn into two varieties: var. *depressa* (round, hairy-margined leaves and a trailing habit) and var. *novae-zealandae* (a matted habit, rather more pointed foliage, slightly toothed, and lacking the marginal bristles when mature). *G. antipoda* and *G. depressa* are the only New Zealand species to bear solitary flowers, but are completely different in growth habit. *G. antipoda* is an erect shrub; we saw a fine red-fruited specimen in R. B. Cooke's old garden at Corbridge which was about 5 feet high. *G. depressa*, as its name suggests, differs in its low-running habit, smaller leaves and, most important, larger fruits.

We have raised *G. depressa* twice from wild-collected seed. The first time from the 1973-4 exchange produced plants with 1 cm. white fruits; the others from 1974-5 with larger pink fruits 1.5 cm. in diameter. The latter came from seed marked *Pernettya macrostigma*. Both unfortunately represent var. *novae-zealandae* (hint to N.Z. donors).

The seed sown in January 1975 germinated very well in June. We find that ericaceous seed, if it germinates at all, either produces just one or two seedlings or a completely green pan. In this case a careful

massacre with the tweezers was necessary to give the tiny plants room to grow undisturbed for a season. They were potted up individually into 3 in. pots in May 1976 and flowered and fruited during 1977. The aforementioned solitary flowers are relatively inconspicuous tiny white bells, but the plant is quite splendid in fruit (see fig. 37).

According to Barry Starling in his excellent article on the smaller *Gaultherias* in the A.G.S. Bulletin Vol. 45, page 194, *G. depressa* is less easy to please than most. One must remember that he is writing from the south of England; we have found it no trouble up here on Loch Ness-side, in a raised bed of well-drained peaty, leafy soil, and an open position. *G. depressa* is not a high alpine and probably prefers the cool moist climate of the North. We put out a close group of three seedlings; although not functionally dioecious, we feel cross-pollination can only help them to fruit well. Three plants raised by cuttings from one clone will obviously not help here; another advantage of raising your own from seed!

Primula modesta alba: *P. modesta* is a Japanese relation of the Bird's-eye Primula, and our own *P. scotica*. It belongs to the largest section of the genus: the *Farinosae*, and is a member of the type sub-section, *Eu-farinosae*.

Our plants originated from seed offered in the 1973-4 exchange under *P. modesta* with no mention of "var. *alba*" but were all white-flowered. The type should be the usual pinky-purple of this section. We are not absolutely sure of our naming, but when we showed some of the plants in Aberdeen during 1977 they weren't queried. We really ought to apply the key in the A.G.S. publication "Asiatic Primulas" next time they flower. A pink-flowered form received a P.C. in 1974 as *P. modesta* var. *matsumurae*.

The seed germinated rapidly in March 1974, the young plants were potted-up in June and planted out the same autumn. Flowering occurred the following spring in late April-early May; a valuable time for the open primula beds since it bridges the gap between the petiolarids and the main display of nivalids, candelabras and the sikkimenses later on. The flowers are carried on a 3 in. (7.5 cm.) scape in a loose head of about a dozen and are the typical bird's-eye form with deep-notched lobes and a small orange-yellow eye. The spatulate (spoon-shaped) foliage is strongly farinose, particularly underneath, with a creamy-yellow farina, and blends with, rather than offsets the flowers.

The crowns multiply very quickly here and the plants must be lifted and divided every two years at least. If this is not done, the new roots do not penetrate the mass of old leaves and the clump tends to sit loosely on the ground. Fatal drying out will occur in a hot spell. This may be the reason they are sometimes said to be short-lived. Division is easier than re-raising from seed and can be carried out at almost any time. We prefer spring, before the sun is too strong. Seed set is good most years. Some shade may be advisable further south, and a moisture-retaining vegetable soil is recommended.

Rhododendron canadense: This little Azalea is condemned in the *R.H.S. Rhododendron Handbook* as F1 L1, the figure "1" signifying "of little merit". However, one must remember that Volume 2 of the same handbook gives the monstrous blousy flowers of the 'Loderi' hybrids an F4 ('excellent'); so one can draw one's own conclusions. How tastes vary!

R. canadense forms an upright twiggy bush, which can eventually reach 1 m., though usually rather less. As such it differs completely in habit from the majority of dwarf rhododendrons and, for this reason alone, is well worth growing in a collection of Ericaceae. The deciduous foliage is an attractive dull blue-green above, pale beneath; and here shows excellent autumn colour of orange and red (this alone merits more than L1). The flowers, appearing in May with us, are rather smaller and flatter than those of most azaleas, and are less than 2 cm. long. With a white centre and deep rosy-purple tips to the corolla lobes, they really are very pretty in a quiet way. They are not as garish as some of the 'Kurume' hybrids.

Our plants are from seed wild-collected by Dr. Pain in New Brunswick and contributed to the 1974-5 exchange. Germination was reasonable in the following June and, after the usual undisturbed year in their "Flora" carton, they were pricked out into 3 in. pots in May 1976. First flower occurred, on the plants we retained and planted out on our peat-wall, in May 1978. In this bed, *Polytrichum* (hair-mosses), introduced with the peat-blocks, are a great problem, and we are tending to replant with slightly taller plants. According to Peter Cox, *R. canadense* can be stoloniferous; our young plants have yet to show this habit. Having such a northerly distribution in East N. America, it is completely hardy. This is a great advantage in a garden where even *R. 'Pink Drift'* has suffered from bark-split, and *Cassiope* are browned by spring frosts.

Approach this species with an open mind; judged by the standards of dwarf shrubs in general, it really is very attractive in flower, and has good autumn colour. It reminds us of *Menziesia* in general effect.

Romanzoffia unalaschensis: We requested this unusual plant from the 1975-6 exchange, after seeing the description and photograph in Alf Evans' "The Peat Garden". It sounded like a plant for the Fort Augustus climate. The seed was the first of that season's exchange to germinate early in March 1976. Growth was very rapid: potting individually in June and planting out in October. Flowering followed in May; another plant giving a quick return to the seed-raiser!

Although compared, by some writers, with saxifrages of the *Neprophyllum* section, in particular with *S. granulata*, the Meadow Saxifrage, there is really only a superficial resemblance. *R. unalaschensis* is a much stockier plant only 2-3 ins. (5-7 cm.) high, growing not from a group of bulbils below the soil, but from a black, slightly hairy, rhizome which creeps slowly along the surface. The foliage is of the same lobed form and is rather thicker and semi-succulent. However, unlike most succulents, it seems rather heat sensitive. Our plants tend to produce two sets of foliage a year, one in spring which is largely lost during hot summer weather, and a second in early autumn. This doesn't appear to affect adversely either vigour or flowering. The white flowers have five petals like a Saxifrage, but are of a finer crystalline texture, and are carried in a close-branching inflorescence. Seed is set in quantity, and although we collect most of it to return to the seed exchange, some always escapes. Self-sown seedlings have appeared. The plants also show an interesting method of vegetative reproduction; as the seed ripens, small woolly rhizomes form in the inflorescence. These fall and take root in the autumn, leafing with the parent plants.

Our plants are in woodland, in a fairly sunny position not far from *Cyclamen coum*. In a shadier, moister environment they may well keep their foliage all growing season. We really ought to move some of the young plantlets to a new site. Instead, they have provided "give-aways".

Romanzoffia is a member of the small family Hydrophyllaceae which also contains two other genera occasionally seen in alpine circles: *Hesperochiron* and *Phacelia* (the latter includes the well-known annual *P. campanularia*, "poor man's gentian"). In fact Hydrophyllaceae is not at all close to Saxifragaceae (order Rosales), but is placed in order *Pelemoneles* between Polemoniaceae and Boraginaceae, i.e. between *Phlox* and Forget-me-not.

Orthrosanthus and Rigidella, Curious Names in a Seedlist

by HENRY TAYLOR

IT'S MIDNIGHT, books lie everywhere: a half cup of cold coffee sits beside the seed list. I'm sweating to catch the return mail and a place near the front of the queue. It was the altitude that decided it.

'*Orthrosanthus chimboracensis*, collected Mexico 5000 ft. '; but the



Fig. 39—*Orthrosanthus chimboracensis* K. Taylor

Dictionary says it is a half hardy perennial suitable for the cold conservatory.

'*Rigidella flammea*, collected Oaxaca 9000 ft. '; again the book suggests tenderness. Think, impressive long names. Take the plunge. Years later, I loftily consider rewriting the Andean Mexican. Thanks to our anonymous donors collecting at high altitude, their plants seem quite hardy outdoors. They survived last winter, whereas many border-line plants here at Dundee were killed outright. Both flowered in July, in the third year from sowing.

The *Orthrosanthus* grows 45 cm. tall with many sky blue, upright

facing, six-petalled flowers. The flowers are 4 cm. across, coming from a tuft of thin grassy evergreen leaves.

The other plant could be *Rigidella orthantha* according to Brian Mathew's "The Larger Bulbs". Our plant grows 50 cm. tall, bearing a succession of fiery red three-petalled stars pointing skywards, whereas

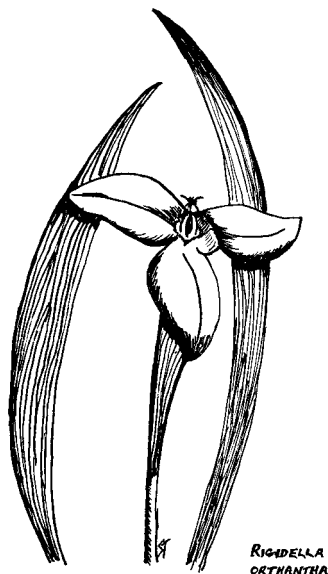


Fig. 40—*Rigidella orthantha* S. Taylor

R. flammea should have drooping flowers. I can't imagine a more luminous, redder, red. The leaves are 4 cm. broad with deep longitudinal ribs and die to the ground after the first hard frost.

Thanks again anonymous donors; carry on climbing to 9000 ft.

Angus Group Seed Exchange

ALL MEMBERS who use this exchange will wish to join me in thanking those who make this service possible. First and most important the donors who collect and clean the seed; the recorders; the small army from the local group who packet the seed; the typists, another small army, often the same personnel, who make up the orders; the Editor, whose help and advice are always available; all of whom are vital links in the running of the seed exchange.

At the time of writing we are wearing towards the end of the first distribution, a little late this year, as we usually have this completed by the end of February. Here I think I might enquire why so many Rock Garden members can't read a page of instructions, notably those who insist on filling in the numbers according to some arrangement of their own which causes us a great deal of trouble, and those who send in 18 or 24 numbers and expect 18 or 24 packets of seed. Even the first orders could not be guaranteed with such a form; we can list seed, but as all collectors know, some lovely fat pods turn out to have nothing in them.

We are still receiving seed of *Lewisia brachycalyx*, *Silene hookeri* and *Boykinia jamesii* which I have doubts about. I am getting some of the first two with a guarantee from the donors, but I am only sure of my own seed of the *Boykinia*. It is so difficult to harvest that I am suspicious of the considerable quantities sent in; would those who have this plant please check that it is a tufted plant with kidney-shaped leaves margined with red and a four to six inch inflorescence of bright pink flowers.

As the seed list is getting too long and unwieldy I propose to 'lump' most of the hybrids as few come true from seed and this might be the cause of some of our misnomers. Donors sending in seed of hybrids PROVED to come true, (some do), should state this on the packet and these will be listed separately. Let 'Beginners' note that they will get some very interesting collections from hybrids, also let them note that garden collected seed of notoriously immoral genera such as *Dianthus* and *Aquilegia* must all be checked for correct names when the plants have matured. I am sure that experienced growers will be willing to help with this checking or a local library should have books to consult.

There was a good response to my plea for seed of small bulbous plants and again there was not enough *Crocus*, *Cyclamen*, *Fritillaria*, *Galanthus* (very short except for *G. nivalis*), *Narcissus*, and the small Irises. Has anybody else got seed of *Iris winogradowii*? The rarities, of course, were in great demand and we parcelled them out to the best of our ability. We are very short of seed of *Douglasia* and *Cassiope*, although lots of people seem to grow them. *Phlox* and *Geranium* were also in very short supply.

As so many of you do not receive the September *Journal* until long after our deadline for sending in seed is past, please try to remember that I need the seed by the **end of October** or, failing that, a list of seed you mean to send. The list goes to the printer in the middle of November and we cannot wait for latecomers.

I hope you have a good season and your seeds help to fill the gaps left in the garden by this long trying winter.

JOYCE HALLEY

There's no cure for this "disease"

SNOW obliterated the number of Miss Joyce Halley's house in Abercromby Street, Barnhill.

But I'd no difficulty finding the honorary manager of the Angus Group Seed Exchange for the Scottish Rock Garden Club.

I just "homed in" on the most glass-housed, cold-framed, alpine-planted garden in the street.

Once inside her gate, I'd to weave my way through a carpet of flower pots and yoghurt and honey carton cuttings to reach the door.

Joyce greeted me apologising for the state of her study and dining-room.

As manager of the seed exchange, she's had to turn her home into a seed bank-cum-library.

SEEDS

For a full six months her life is decidedly "seedy" living, eating, sleeping seeds, seed catalogues—and more seeds!

Beginning in the autumn, she devotes herself to her seed exchange "post office" until the end of March, receiving, packaging and re-distributing over 3000 varieties to other rock garden aficionados.

Apart from being the busy intermediary for "alpiners" all over Britain, Joyce also gets seeds and requests from and despatches hundreds of little packets to every corner of the globe.

"Some of the seeds are so rare, I have to ration them by actually counting them out!"

While her living-room becomes a library for the index cards, her dining-room is turned into the actual seed "depot".

With the help of bakers' trays stacked on the table and all round the walls, the seed packets are neatly arranged and all the donors and customers carefully documented.

"But you can see how much entertaining I do these days!" she said.

This year, her ninth in her seed exchange manager capacity, Joyce and her fellow helpers will have "sent packing" 3315 varieties.

"But it's a job I couldn't do without the willing co-operation of the Group", she said.

An art teacher by profession until her retirement in 1974, Joyce (fig. 33) makes no great boast about her green fingers.

"Both my parents were keen gardeners, though not rock gardeners, but the most I used to do was a bit of weeding—and not very much of that!"

After the death of her father, Joyce realised keeping up the garden would be a matter of buckling to and doing it herself.

“One of the first things I did was to take out a huge, hideous monkey puzzle tree which was becoming dangerous.

“HOOKED”

“Then, of course, I was left with a huge hideous hole. Instead of filling it in, I decided to turn it into a sunken rock garden. From then on, I was hooked!

“Rock gardening is not a hobby or a skill—it’s a disease! And once you’ve got it, you’re incurable”.

Despite the fact she spends half the year “snowed under” by seeds, Joyce’s holidays are always “horticulturally” orientated.

“A holiday is just not a holiday for me unless it’s a mountain village, preferably in Switzerland”, she said.

“Mind you, the hills are getting gey steep these days!”

Not that steep apparently.

This year she’s bound for the U.S.S.R. and the mountains of the Caucasus.

(Reprinted by kind permission of the *Dundee Courier & Advertiser*)

Discussion Weekend Show 1978

ENTRIES and quality of plants were maintained to the level of past Shows despite the atrocious weather conditions during the summer months.

The judges on this occasion were Alfred Evans, David Livingstone and Henry Taylor, who had some difficulty in choosing the best plant of the Show. The coveted Forrest Medal went to an 8 in. pan of that rare and threatened plant from Turkey—*Cyclamen mirabile*, grown by Jack Crosland. A Certificate of Merit was granted to the runner-up—*Haastia pulvinaris*, a beautiful cushion almost filling a 7 in. pot and grown by Eric Watson.

Of the Trophy winners, Mike and Polly Stone carried off the Mary Bowe Trophy for gaining most points in Section I and, for the fourth consecutive time, the Peel Trophy for three pans of Gentians with *Gentiana* ‘Christine Jean’, *stragulata* and *prolata*.

Henry and Margaret Taylor won the East Lothian Trophy for Class 1 for three pans of Rock Plants of different genera with *Lewisia cotyledon*, *Cyclamen purpurascens* and *Primula halleri*. Joan Stead’s three

plants—*Cyclamen mirabile*, *Celmisia philocremna* and *Pratia puberula*, made the judges' decision a very difficult one.

It is always pleasant to see new names being added to trophies and this year we have three who appear for the first time. Mrs. Jean Wylie won the Logan Home Trophy for an interesting Miniature Rock Garden made on the design described by Margaret Taylor in the September 1976 *Journal*; Dr. J. Cobb won the Wellstanlaw Cup for an arrangement of flowers cut from the Rock Garden; and Mrs. Elizabeth Craig won the East Lothian Cup for the best plant in Section II with a well fruited plant of *Gaultheria cuneata*.

Colour at the Autumn Show normally comes from autumn colour and autumn flowering species. Autumn colour was certainly most evident with brightly coloured plants of *Shortia soldanelloides* var. *magna* and the subtle colouring of *Shortia galacifolia* in a 12 in. pan. A well grown plant of *Astilbe microphylla* 'Sarsuensis' also added to the bright display.

Autumn flowering species of *Calluna*, Gentians, *Romulea*, and *Crocus* certainly were conspicuous and we normally expect these, but due to the atrocious weather during the summer, like winter at times, many plants which flower in the spring or early summer were again flowering so well and taking prizes. *Aquilegia jonesii*, *Lewisia cotyledon*, *Origanum dictamnus*, *Phyllodoce breweri*, *Primula capitata*, *P. caveana*, and *P. halleri* were some which provided a welcome splash of colour to brighten the dull September days.

It was good to see the Himalayan *Gentiana depressa* with its tubby pale blue flowers, and *Tchaihatchewia isatidea*, that rare Turkish endemic, a well grown plant from John Watson's seed collection in Turkey. *Sagina boydii*, reputedly collected by Boyd near Braemar in 1878, is not often shown and it was good to see a well grown plant.

Crowea exaltata provided a lot of interest since few had seen this plant before. It is a shrubby plant from Australia belonging to the family Rutaceae. It is a tender, erect, shrub with pale pink to deep pink flowers. This particular plant, about 15 ins. tall, had about 15-20 large flowers which made it quite conspicuous on the show bench.

The Discussion Weekend Committee thank all exhibitors who brought plants for the show bench; Eric Watson for his most interesting display of his large cushion plants; Plus Trees for their display of conifers and unusual trees; and particularly all those who brought contributions for the plant stall which was an outstanding success.

R. J. MITCHELL

Hellebores

by JOHN and CHRISTINE GOSDEN

THIS genus has been something of a passion with us for several years, but our real involvement probably began when Jim Archibald sent us an assortment of the clones and seedling strains which he and Eric Smith (then The Plantsmen) had selected. Most people know *Helleborus niger*, the Christmas Rose, with its waxy white flowers produced from Christmas to Easter, but perhaps less familiar are the rest of the range of species and hybrids with flowers in shades of white, cream, green, pink and purple, plain or variously marked and decorated with dots and speckles.

Their rich and subtle colours are reminiscent of fritillaries, and they have something of the same mysterious and exotic appeal, but the hellebores are flowers for every garden and they are the most splendid, as well as one of the easiest, of all hardy winter and spring flowering genera. As well as their fine flowers, they have magnificent foliage; most of the species are truly herbaceous, but some produce a leafy shoot one year which flowers the next, before dying to make way for the current year's shoots, and even the herbaceous species are nearly evergreen, only being leafless for a short space of time. And what leaves they are—great palmate or pedate structures, some with toothed margins, some smooth, some dark green, some light, others marbled light and dark, all forming a splendid architectural base for the many flowered stems that rise from them.

The flowers themselves are usually cup- or shallow bowl-shaped, with a central boss of stamens, often surrounded by a ring of nectaries in a darkly contrasting colour. Their perfection of form and solid texture, together with the freedom with which they are produced and their sumptuous colours, put the hellebores among the finest genera of hardy herbaceous plants.

Almost all the species are perfectly hardy (*H. lividus* being probably the only exception) and tolerate a great range of conditions. They are all slow to establish, and resent disturbance, taking a year or so to show their true form after transplanting. Ideally they prefer fairly rich soil in some shade, and should not get too dry in summer. They do well in limy soils and appreciate some feeding (mulch in spring, bone meal in autumn). Having said that, we should mention that part of

our collection is doing very well in a narrow north-west facing border at the foot of an enormous privet hedge, where the impoverished soil becomes dust dry and the privet roots provide fierce competition for any available nourishment, and the only mulch is from any grass clippings that fall on the border. In this far from ideal situation several of the *H. orientalis* forms and hybrids, together with *Hh. x stearnii*, 'Nigristern' and 'Nigriliv' all grow and flower freely and are as unstinting of their beauty as in other, more suitable sites in the garden. Only *H. niger* was less than happy in this border, growing well, but unable to lift its flowers high enough for proper display. After moving it to a better site it has responded with a fine show.

Vegetative propagation of hellebores is very slow. The only method is division of the clumps after flowering, and the divided plants take time to re-establish themselves. For this reason named clones will always be relatively expensive. Seedlings establish much more quickly, although germination and initial growth may be slow, and they provide the best source of plants in quantity. Several seedling strains have been selected, particularly from the *H. orientalis* hybrids, and these come fairly true, within limits. One should be aware, however, that many plants offered under clonal names are, in fact, seedlings, and there is no guarantee that they will resemble their clonal namesake. The famous form of *H. niger* 'Potter's Wheel' is probably the most sinned against in this respect. We do not know whether there are any scions of the original plant alive, but certainly most of the plants offered under this name are seedlings, and though many are fine plants, as good as or better than the original, not all are equally good, and none is entitled to the clonal name.

We are rather confused about the nomenclature of this genus. Some of the species are obviously distinct, about others there is some uncertainty, and several are subsumed under *H. orientalis* by many writers. We will do our best to make gardener's sense of them, but can only apologise in advance for the taxonomic pitfalls in which we may find ourselves. Let us at least start with an easy one, the evergreen *H. niger*, with large, leathery dark green glossy leaves of seven to nine lobes. The Christmas Rose has large solid white flowers (pink tinged in some forms) with a central crown of golden stamens. Like all hellebore flowers they are extremely long lasting and, as they open two or three at a time, from December to the end of April, and last, fading from white to green, well into the summer, this plant makes a year round contribution to the garden. The flowers are generally

shallow saucers when fully open, up to four inches across in good forms. Apart from 'Potter's Wheel', other forms have been named, and Graham Stuart Thomas, in his "Perennial Garden Plants" describes a marvellous form called 'Lewis Cobbett'. We have been unable to locate it, despite all our efforts, and if anyone knows where it can be found, we put in a plea for a piece now.

Another evergreen species, which has an even longer flowering period than *H. niger*, is the one variously known as *H. lividus* ssp. *corsicus*, *H. argutifolius*, and *H. corsicus*. We call it the last, as the shortest, and, whatever the right name, it is the most vigorous of all, making a plant up to 3 feet high and as much or more across. The leaves are tripartite, strongly toothed and grey-green, and make a fine feature on their own, but its beauty is supreme when it unfolds its clusters of apple-green cups with green stamens. Occasionally, as in last winter, the top bud of a cluster may be damaged by cold, but the remainder open quite freely and unharmed, and the plant as a whole is completely hardy. This species is one parent of the lovely hybrid *H. x sternii*, raised by Sir Frederick Stern (author of "A Chalk Garden") at Highdown in Sussex, the other parent being the trickiest of the species, *H. lividus*. It is not really surprising that *H. lividus* is a little reluctant in this climate, as it is a native of Majorca. It too is evergreen, with tripartite leaves, but in this species the leaves have entire margins, and their fresh green is laced with grey, rather like a cyclamen. The flowers are green, overlaid with pinkish buff, and sometimes a delicate scent can be detected. Growing only a foot or so high, it is easy to give *H. lividus* the protection of a cloche in the worst of winter, but above this it needs and deserves the most sheltered part of the garden. It is recommended for pot culture, but we have not tried this. It flowers later than *H. corsicus*, in March and April.

H. x sternii, however, combines the beauty of both its parents with the toughness of *H. corsicus*. The best forms are exactly intermediate between the parents, but many plants under this name are not really distinct from *H. corsicus*, having been raised from seed. Hybrids between *H. niger* and *H. x sternii* as well as both its parents have been raised, the first being *H. 'Nigricors'* (*H. niger* x *H. corsicus*) in the 1930s. They vary considerably but generally have dark foliage and wide open greenish-white flowers in clusters at the ends of the stems. *H. 'Nigristern'* (*H. niger* x *H. x sternii*) was developed by the Plantmen and has large rather starry flowers, usually of an almost indescribable colour—a sort of rosy buff greenish-white—which are as long

lasting as those of *H. niger*. *H.* 'Nigriliv' (*H. niger* x *H. lividus*) is a newer development and our plant has not been with us long enough to see how well it will settle down, but the flowers are open saucers of a lovely pale biscuit colour, over tough grey-green evergreen foliage.

H. foetidus is a British native, and is a sub-shrubby evergreen, with nearly black mature leaves, deeply dissected like those of a Japanese maple. It is an upright plant, 2-3 feet high, with many small, bright green cup-shaped flowers, usually with a purple to crimson edge. This is one of the easiest and hardiest of a generally easy and hardy genus. *H. foetidus* is equally happy in sun or shade; in sun it makes a superb contrast with silver or golden foliage plants, and in shade its pale flowers are almost luminous. Its only fault, if it can be said to be a fault, is the freedom with which it seeds itself, but since the young plants are easily moved, few gardeners would grumble about a surplus of this hellebore.

All the species and hybrids described so far are evergreen, but the remainder are at least partly deciduous. This group causes us the greatest confusion, as many of the so-called species are now included in *H. orientalis* and considered to be merely forms or clones of this species. In addition the majority of the named varieties are hybrids between these forms or subspecies of *H. orientalis* and its relatives, so the whole situation is fraught with taxonomic problems and is something of a minefield for the gardener. However, we will try to tread warily and dodge the explosions.

Quite distinct are three green-flowered species, *H. multifidus*, *H. odoratus* and *H. cyclophyllus*. All have fragrant flowers and large leaves with 7-11 segments, though those of *H. multifidus* are very deeply divided, with very narrow lobes. Of the three, we only grow *H. cyclophyllus*, as this has the best flowers, saucer-shaped, creamy-green, held nearly horizontal and very sweet-scented.

But we can put off the moment no longer, and must embark on the *H. orientalis* group, which are probably those best known to our readers after *H. niger*. This group has leaves rather like those of a large horse-chestnut (*Aesculus*), but altogether tougher and more leathery, and varying in colour from pale grey-green to nearly black. The flowers are shallow saucers or even flat, and their colours encompass the whole range of the genus, from white, through cream to near yellow (*H. kochii*), flushed with pink through crimson to wine purple (*H. atrorubens*), to a dusky slaty purple like a grape or a fritillary (*H. purpurascens*). Many are a different colour outside from inside;

the outside may be greenish or slaty purple, while the inside is often decorated with dots and speckles of scarlet, crimson or purple, either in a central zone (*H. guttatus*) or on only one or three out of five sepals (no petals in this genus, only coloured sepals). Other specific names that may be encountered are: *H. abchasicus* (purple, often green inside, covered with maroon speckles), *H. antiquorum* (cream, flushed pink), and *H. olympicus* (green outside, white inside).

In addition to all these forms there are the many hybrid clones and seedling strains. Most famous of the hybrids is the legendary *H. 'Torquatus'* (and about this there is some dispute as to whether it is a hybrid or a form of *H. purpurascens*) now weakened by years of division. Eric Smith selected seedlings from *H. 'Torquatus'*, of which '*Pluto*' is one of the best. It has the same cup-shaped slate-purple flowers, with a blue bloom, but the cream anthers are surrounded by a ring of metallic brown nectaries. We find this very vigorous and free-flowering, and it holds its many flowers well, on upright stems. '*Antares*' is a lovely wine-crimson hybrid, with flattish saucers, while '*Mars*' is a similar colour with less solid, more starry flowers. Others are '*Hercules*' (very large deep pink), '*Vega*', '*Miranda*' (greeny-purple), '*Mercury*' (creamy white, lightly spotted red), '*Taurus*' (pink, crimson spots) and '*Sirius*' (huge, nearly yellow).

That concludes our survey of this most satisfying group of plants. As we have said, they are slow to establish, but once settled in they are with you permanently, each year making a greater display of long-lasting beauty than the year before. At the time of writing (June), *H. x sternii*, *H. corsicus* and many of the *H. orientalis* hybrids are still displaying their flowers, which look as fresh as ever, apart from the loss of their stamens—not many herbaceous plants give you flowers for six months, starting in the depths of winter!

Primulas: A Miscellany

by DAVID LIVINGSTONE

UNTIL recently the arch enemy of my Asiatic Primulas in pots has been the larvae of the vine weevil which are little white grubs that live in the soil eating away at the roots. They also attack such other genera as *Cyclamen* and *Saxifraga* as I saw demonstrated at Wisley many years ago. Fortunately, so far as I am concerned, they seem to have settled only for my Asiatic Primulas—touch wood! I have never found

these pests at any other plants and that includes European Primulas. This I find rather strange but nevertheless a fact which I gratefully accept. The vine weevil itself is somewhat like a beetle, dark in colour, nocturnal in habit and, therefore, difficult to find. It is even difficult to spot by torchlight as it stops dead in its tracks as the light shines on it. If you find *Rhododendron* leaves, a favourite, and also leaves of many other plants which look as though a ticket inspector had punched pieces out of the edges, then vine weevils have had a picnic. The weevil lives by day in such debris as old leaves and old sacking or similar material where it can hide. Deny them squatters' quarters and that will help! So too will a sprinkling of Lindex dust in likely hiding places. The weevils reproduce parthenogenetically, that is, the female is capable of producing fertile eggs in considerable quantities without male assistance, and one killed, sure to be a female, can save you an awful lot of larvae. They have a hard case and when the foot is put on one to kill it there is a horrible crunching sound such as makes my blood run cold.

The larvae, white in colour with a brownish head, are about one-third of an inch long and lie in the soil in a half curled-up position which I have seen described as C-shaped, or like a comma. Their presence is normally unsuspected until the warmer days of spring and the host plant collapses, having lost most of its roots and when it may be too late to do anything to save it. Exact retribution by killing the culprits which, unlike the parents, are soft and easily squashed.

I have seen various remedies suggested such as arsenate of lead in the compost, paradichlorobenzine—a sure cure for toot aphids—in the vents of pots or on the surface of the soil, and watering with a very dilute solution of gamma-HCH. My own method of control over the last two years in respect of my Asiatic Primulas has been to water the pots with a spray strength solution of Lindex, which contains gamma-HCH, in the latter part of July and again in August. This I believe to be effective against young larvae. To deter the weevils from egg laying I sprinkle the surface of the Tay river sand, in which the pots are plunged, with 'Lindex' dust. Whether this treatment has been the factor which has reduced considerably the population of larvae in the pots I cannot say for sure as I did not, for obvious reasons, use any plants as control. But the facts as they emerged during May this year speak for themselves. I re-potted about thirty plants and, as always, sifted through the old compost by hand. In total I found sixteen larvae, about half of which were beginning to change to the

adult stage. The most I found in any one pot was three, in many none at all. Prior to following this treatment I have found nine, yes nine, in one five-inch pot. The damage done by such an infestation was catastrophic. No plants were lost this year although there was some root damage where larvae were present. I have not included in this account plants which were not potted up until late September or early October. A late shift to new compost could provide a bonus in that it may be possible to spot and destroy any larvae still alive. I think there is evidence enough to warrant my continuing with the 'Lindex' treatment.

Over many years I have occasionally come across another pest which seems to confine its activities to European Primulas. I have never read about it or heard it discussed by other growers and therefore do not know what it is. Perhaps one of our members can enlighten my ignorance. It is a grub, one-third of an inch or less in length, as thin as a button thread and yellow green in colour which burrows straight down inside the leaf into the crown and eats it away, leaving only brown remains of the young centre leaves. It is not the leaf mining maggot of the chrysanthemum. The first sign of trouble is a yellowing of the leaf, usually mainly down one side, and a careful look will reveal a brownish track down which the grub travelled. I know from experience that a grub with similar habits attacks border carnations but it ends up by eating through the main stem, not the young growing point. I do not think they are one and the same. The primula crown attacked of course dies, but usually new growths will appear below the affected part but a year's flowering has been lost. I use Murphy's Systemic Insecticide to control this pest but to be effective it should be applied no later than the end of April and again in two or three weeks time. For one reason or another I failed to follow my own advice this year and in consequence lost several crowns, fortunately not of those primulas that are rather rare. I hope to practice what I preach in future!

I detect a resurgence of interest in both Asiatic and European Primulas which delights me because these rock garden plants, with few exceptions, are most rewarding with their flowers. Much care and attention are demanded by some but there are others, particularly among the Europeans, which are suitable for the limited skills of beginners who, having had success with such as *P. pubescens* 'Mrs. J. H. Wilson' and *P. marginata* 'Prichard's variety', can pass on to the slightly more difficult *Pp.* 'Linda Pope' and x *bileckii* for example.

Having mastered these they can then turn their attention to the easier of the Petiolares Primulas, say *P. gracilipes* and *P. x scapeosa*. Their apprenticeship now served, beginners—if we can still call them that—should be ready to tackle any members of the genus *Primula*, and if the bug has bitten, they will. It was 'Mrs. J. H. Wilson' that stimulated my interest in Primulas nearly fifty years ago: I still grow it and many more besides.

Two very good European hybrids freely available from specialised nurserymen are *Pp.* 'Beatrice Worster' and 'Barbara Barker', for both of which there is a growing demand from members. This demand has been stimulated by their appearance at the Edinburgh Show in late March both in competitive classes and on John Ponton's trade stand. Neither demands great skill in cultivation and both are free with their pink flowers; the shade of pink and the formation of the flowers being different, they should both command a place in even a small collection.

It may be of interest to note here that a member recently told me that he had followed, with success, advice he had heard me give in a talk on European Primulas. The advice was "feed the brutes". By that I meant give them a rich vegetable soil or John Innes No. 3 with some old cow dung in it.

Primula lovers owe a debt of gratitude to Mrs. Molly Harbord, Pitlochry, for putting into circulation again that very fine form of the European *P. clusiana* which the late General Murray-Lyon and I grew many years ago. He thought he had lost it and I certainly had, but on the General's death Mrs. Harbord found a much neglected plant in his garden. Unselfishly she gave me and several other members small pieces of it and it now thrives in four or five gardens. Perhaps one day soon it will be available in commerce. I hope so. It is a strong growing plant which produces in late March or early April up to six rose-coloured flowers on five-inch scapes. Each flower is as large as an old five shilling piece. My young plant with eight flowers on it caused quite a sensation at the last Edinburgh Show when I put it on the Secretary's table for decoration. In the Styrian Alps where *Pp. clusiana* and *minima* meet, the natural hybrid *P. x intermedia* has resulted with *P. minima* as the pollen parent. The hybrid is smaller in its growth than *P. clusiana* but its pale pink flowers borne up to three on a scape are large and handsome too. I mention this hybrid because I had not seen it for years until I saw it in flower last April in two establishments. This is certainly one to note for future purchase when it appears for sale.

Our Seaside Garden

by JOAN STEAD

IT WAS a matter of trial and error when we began trying to make a garden at Sanna: many trials and many errors. The extreme exposure of the plot to all the winds was obvious. To the west, a clear run to northern Labrador, and in every other direction a gentle slope leading winds from every airt, directly to us. We still had to learn of the destructive powers of salt spray, and the abrasive powers of sand, both carried by gale force winds. We were to learn that a dry gale packed so much more destructive power than a gale Force 10 accompanied by rain; the latter could bend and break, but the former blackens and kills. We believed blithely in the ameliorating effects of the Gulf Stream, but failed to realise the extent to which a mild winter could encourage a precocious growth, and lay it out like a sacrifice for the cutting force of a March north-easter. We realised that sand is a hungry growing medium, needing constant fertilizing, but we still had to learn the extent to which blown shell sand penetrates everywhere, and converts acid peat, washed down to the garden straight from the bog, to become a highly calcareous soil. We could net the perimeter so that only the occasional rabbit could penetrate the defences, but voles are ineradicable, prolific, and as destructive as rabbits. For slug and snail control we had the thrushes, but against destructive and acquisitive humans we had, in our absence, no defence. We learned to take advantage of any shelter, however minimal; to create shelter by any means, likely or unlikely; and to reinforce the holding and stabilizing power of roots in every possible way.

So our plants had to be tough, able to look after themselves, ascetic in their appetites, and tolerant of lime.

Few Ericaceae are possible. *Erica carnea* and *Erica erigena* (syn. *mediterranea*) form compact, neat clumps. *Erica stricta* needs some shelter and firm staking to avoid being blown out of the ground.

In spring the lime-tolerant bulbs are a great standby. *Crocus* in the mass fall victim to the voles, but odd clumps, scattered in the grass, manage to survive. Snowdrops, *Muscari* and *Scilla* spread willingly. *Anemone blanda* did well until submerged by a vigorous shrub; *Tulipa chrysantha*, away from recognized vole runs, was a delight for many years in a sunny, sheltered corner; *Allium moly* is bright and irrepresible; but the real show in spring comes from the narcissi which, with

the exception of *N. cyclamineus*, and some of its hybrids like 'Dove Wings', revel in the light limy soil. *N. asturiensis* has flowered for us at New Year; 'February Gold' really blooms in February; *N. 'Hawera'*, *N. nanus*, "Queen Anne's Double", and, in a damp spot, *N. bulbocodium*, all thrive, as do the larger, but short-stemmed, hybrids, which are tough enough to grow through grass, whilst *N. poeticus* is a positive weed.

Fritillaria meleagris grew and increased a little for some years, but is now going back, presumably because it has exhausted some vital element in the soil. *Erythronium 'White Beauty'*, in peaty shade, and shelter from the south-west, has formed a large clump which is sheer delight in April. If predators can be kept at bay for long enough for the corms to reach maturity, and develop a corky bark, *Cyclamen hederifolium* and *C. coum* will establish in a reasonably sheltered and slightly shady spot, even producing the occasional self-sown seedling.

Many saxifrages are confirmed lime lovers, and in these hard conditions even the Mossies look like true alpiners, forming hard hemispheres, without brown patches, and that in full exposure. *S. cochlearis minor* is the only *Aizoon* that we have tried. It is not too free with its flowers, but it forms iron-hard cushions, almost as hard as the rocks it grows on. With the exception of *S. apiculata*, we have not risked any of the kabschias, but I suspect that, calciphile as they are, they would be just as much at home as is *S. apiculata*.

Primulas have not been generally successful, but with some exceptions. *P. scotica* vanished after three years; *P. 'Wanda'* persists in damp shelter, but does not increase much; and *P. denticulata*, particularly the pale lavender form, has done well. The native Primrose self sows, and is of unmatched beauty in May. It rarely fails to produce a few stemless flowers at New Year. Cowslip and *P. uralensis* naturalise and cross with the rather wishy-washy survivors of a batch of Polyanthus.

A surprise has been the success of some of the candelabra primulas, which were planted in damp peaty soil alongside a little runnel. *P. japonica* some orange hybrids, and *P. 'Inverewe'*, despite rather chlorotic looking leaves, have made a brave show for many years. The early plantings are now beginning to exhaust their soil, but are self-sowing down stream, and even in the stream. *P. florindae* makes fragrant clumps in summer. Dwarf astilbes, too, rejoice in this damp soil. A herbaceous habit is a great help to survive the winter storms.

In difficult conditions one is often advised to note the native plants, and copy nature; sometimes this is successful. *Polygala vulgaris* occurs

naturally in the turf, and looks after itself. We have a strong-growing form of Self-heal, *Prunella vulgaris*, but all attempts to establish the garden varieties have failed. *Trollius europeaus*, which occurs nearby in a particularly neat, dwarf form, survives without increase, but *Dactylorhiza purpurella*, the Northern Marsh Orchid, self-sows abundantly by the stream. The native thyme and *Armeria* soon become weed problems, but make such a show that they are worth while; but Thyme variants and the choicer armerias do not persist for long.

Alyssum saxatile and *Aubrieta* self-sow all too freely, and the *Aubrieta* shows a distressing tendency to revert to small-flowered forms, but makes amends by flowering for 8 or 9 months of the year. *Dryas octopetala* has so far failed to establish, and *Geranium sanguineum* and *G. s. lancastriense* failed until given appreciable shelter. *Mertensia maritima* survives, but does not ramp; perhaps it would prefer more stones and less sand.

Gentianella amarella occurs naturally, as does a beautiful form of *Centaureum erythraea* (or could it be *C. littorale*?), but the alpine Gentians, *verna* and *acaulis* agg., lingered for all too short a time, although they flowered beautifully while they were there.

Helianthemums have never over-wintered, but *Cistus laurifolius* and *C.* 'Silver Pink' have stayed for some years, flowering freely. I wonder what this bitter spell in January 1979 is doing to them! Other small shrubs which have pleased with their performance have been *Salix lanata*, *Convolvulus cneorum*, *Parahebe decora* and *Cytisus* 'Praecox'. *Lithospermum oleifolium* has proved impeccably hardy.

Peonies, both herbaceous and tree, thrive on a diet of lime and seaweed, but of the smaller Ranunculaceae tried, only *Anemone blanda*, *A. hupehensis* and *Hepatica triloba* have done well. *Campanula porscharkskyana* and *C. portenschlagiana* have established, but do not always flower as well as one might expect. *Phlox douglasi* forms do better than *P. subulata*.

Sempervivums and sedums both perform well, but mat forming sedums like 'Capa Blanca' are just as liable to fall victim to excavating blackbirds at Sanna as elsewhere.

Dianthus should, on the face of it, be ideal, but, with the exception of *D. deltoides* and *D. freynii*, which stayed for several years, only a hybrid pink lasted long enough to be invaded by a vicious stoloniferous grass.

Other alpinines which have faced the elements with equanimity, when given a little shelter, have included *Erinacea anthyllis* and *Asperula*

suberosa, which although it does not ramp, does flower; an A.C.W. collected *Onosma* (I never had a name for it) graces a rock wall. *Helichrysum marginatum* grows, and flowers well, in a crevice with minimum soil; *Doronicum cordatum* forms sturdy clumps, and *Iris unguicularis* (syn. *stylosa*) manages to produce winter flowers in spite of the depredations of the voles, which seem to regard it as bed and breakfast. *Oxalis magellanica* spreads, but not enough to be a nuisance, and it flowers beautifully.

The B.C.W. collection of *Calceolaria arachnoidea* is anathema to some, but I like it, with its frostily silvered leaves and velvet purple pouches. Photographic emulsion always renders the colour as a dirty brown, so it is impossible to photograph. It has spread and flowered well at Sanna since 1974, but again I wonder what this winter will do to it.

Many New Zealanders are stalwart wind resisters. I have already mentioned *Parahebe*; some hebes will stand these conditions, but others, which are regarded as hardy, cannot face them. *Acaena microphylla* var. *inermis* is ready for a take-over bid at any time, but is easily kept in check and is a useful binder of an unstable surface. The unshowy but "different" *Olearia nummularifolia* is fairly dwarf, slow growing, comes readily from cuttings, and is very hardy. Other olearias "do" too, but like the senecios and fuchsias they are too big for the scope of this article. *Wahlenbergia albo-marginata* has persisted and flowered well for several years. One of these days I shall take my courage, and my trowel, in my hands and try some of the other choice New Zealanders like *Raoulia*, *Leucogenes* and *Celmisia*. I think they will stand the weather well enough, but will they stand the lime?

If we lived at Sanna permanently, a herbaceous border (omitting autumn flowers like Michaelmas daisies, which are inevitably flattened by the equinoctial gales), would be worth while; but with our intermittent residence, the invasion of perennial weeds, by seeding as well as by stolons, makes this impractical, and the garden has evolved as a combination of rock garden and a sort of maquis (or should it be garigue?) of shrubs, planted for mutual support and shelter. It has meant a great deal of hard work, and frustration, and been a source of quite disproportionate pleasure. I am quite sure that five years after we cease to work it, the only trace of a garden will be a few gaunt, wind-bitten shrubs and a mass of hybrid narcissi.

More About Hyper-Tufa Troughs

by M. I. C. HARBORD

TROUGH-MAKING, like cooking, requires imagination and different people achieve different results.

Everyone will agree that the stone trough is the classic, aesthetically and practically, because of its moisture-retaining characteristic and for its ability to withstand hard knocks, but, if you want a trough today, you must be prepared to make it.

According to instructions, I experimented with hypertufa, using one box inside another and wooden pegs to pre-form drainage holes. The ensuing trough was successful but angular and also, in knocking out the wooden pegs, damage to the base was all too possible. So I tried again, using a large square hole in a sand-pit, rounding the corners well, with an inner box only to keep the hypertufa smooth inside and, instead of wooden pegs, plugs of raw potato. The end product was pleasing—sharing a sand-pit was not!

Eventually the method I have used, with very satisfactory results, for over twenty years, was evolved. Troughs of any size or shape can be turned out and, because of their comparative lightness, are readily movable by the female of the species—quite a factor these days! For many years I have had what amounts to a “Mobile Garden” of about fifty troughs, which has been moved all round Scotland and the plants grow on undisturbed. (1976, unfortunately, got the better of some of them during five of the hottest and driest weeks, when I had to be away from home.) It must be accepted that hypertufa dries out in hot weather, like the peat comprising half its bulk and, once dry, takes a lot of wetting again. But if you remember that, and are prepared to water regularly in summer, then go ahead and enjoy yourself!

This is how to set about it. Assemble everything needed, preferably in a shady corner where the unfinished trough is not likely to be knocked. You will need:—

1. Coarse sand of good colour
2. Peat
3. Fresh cement
4. 2 in. wire-netting
5. Large plastic bucket
6. Small plastic bucket
7. Measure—old 5 in. pot
8. Watering-can half-full of water
9. Poker
10. Lightweight sacking, wet, or polythene sheeting
11. Rubber gloves

Of all the different types of peat available, including sieved moor peat, I like processed sphagnum best. The cement used should be out of a newly-opened bag, for if it is not really fresh your trough will not stand up to hard frost. Unless you have very tough hands, use rubber gloves. Cement is *vicious*.

Make a shape with the wire-netting, pull it about till you get what you want—square, round, kidney-shaped or whatever you like—then turn the cut ends over each other firmly to hold it together and turn down all the sharp ends on the top. Make the base really flat, pulling the sides, (which should not be less than 5 ins. high), up at right-angles to it. On your working surface spread a layer of sand two or three inches deep and place the wire-netting shape on it to leave an impression of the base. In the proportions of *two peat, one sand, one cement*, mix the dry ingredients thoroughly in the larger bucket, (with a 5 in. pot as measure, three times the recipe will be enough for a start). Transfer some of this to the smaller bucket and gradually add water till it is thick and porridgey or what the cookery books call a “soft dropping consistency”. Lift away the wire frame and cover the marked area with the wet mixture to a depth of about 1½ ins., patting it level; place the wire frame on top and pat on a second layer, sandwiching the netting, centrally, to make the whole base approximately 3 inches thick. If you have difficulty in controlling the mixture then it is too wet and you should add a sprinkle of dry-mix. Now make up some more, a little firmer this time, and raise the outer edge so that it begins to turn up like a saucer; use both hands to press the material into the netting from either side, to a height of about one fistful. Draw in loose sand all round the outer wall to support this first stage. A thin film will be left on the outer surface, so colour and texture should be interesting. Form drainage holes with the poker, twizzle it round and well through the base; you will not do any damage at this stage. Smooth the inside surface, being particular that no little ridges build up to obstruct a free flow of moisture through the holes. Cover the work with wet sacking or thin polythene sheeting to prevent too-rapid drying and leave for twenty-four hours. Don’t forget to wash all cement off tools before it sets.

2nd Day. Remove covering and prepare more mixture. Immediately before applying the second stage, dribble a trickle of water round the top of the “saucer” to help the bond. Take fistfuls of mixture in each hand and firmly press on to the netting all round, working evenly, hands opposite each other, keeping the netting sandwiched within the

walls, which should be about 3 inches thick. Two rounds will suffice; if you try to build too much at a time the walls are apt to collapse. Very gently pat some dry sand on the outside, holding the wall steady inside. Clear the drainage holes of any bits which may have blocked them and smooth inside again. Cover as before.

3rd Day. Build on two more fist-high rounds and this may bring the wall to the right height. If you need more, wait another twenty-four hours before adding it. Finish off the top surface, making sure no wire is sticking through. Lightly pat all over the top and outside with dry sand, check drainage holes and cover.

Final Day. Again look for protruding wire and correct if necessary with a dab of wet mixture, dust with sand and cover again with wet sacking. Leave for two or three days. Too-rapid drying can cause cracking, so try to keep the trough shaded at this stage. In about three days, take off the covering and let the air circulate, and the following day gently turn the trough upside down or on to its side to dry off the base and, at the same time, remove any little flange which may have formed round the bottom of the wall. Chip it very gently with an old sharp knife; the hypertufa is still "green" at this stage and can be pared quite readily if you are careful. In a week it should be hard enough to "cure" by immersion in a bath of permanganate of potash or, if too big to plunge, then give it several waterings with a strong solution, letting each dry before applying the next. Hasten the "mature" look by rubbing the outside with manure-water or milk.

Now your trough is ready to place in position and to plant-up. I like to cover the drainage holes with perforated zinc and then infill with one or two inches of broken crocks or granite chippings, a few pieces of charcoal and a sprinkle of soil fumigant. Fill with your chosen compost to which has been added a quarter of its bulk in chippings; this is extra to any chippings or grit in the basic recipe and helps to keep the texture open and to retain moisture. Thin flat stones, placed vertically, are also good and provide cool root run. Thick slates, too, are excellent and need not protrude above the surface soil.

Once a trough fills up with roots, water tends to run *off* instead of *into* the soil so, to help matters, tubes of perforated zinc, (a piece 5 ins. \times 2 ins. rolled lengthwise), can be inserted vertically at planting time which will allow water to percolate readily to the roots. A small long-tom pot filled with gravel, arranged with its top just below the surface, acts in much the same way.

When planting is completed the soil level should be below the top

to allow for a generous finish of gravel. Not only does this look good, but it conserves moisture. Later, when top-dressing is needed, (and it will be needed with such a high proportion of drainage in the compost), brush off this gravel, apply the nutrient and replace with fresh gravel-topping.

Book Reviews

Miniature Shrubs, by Royton Heath. 181 pages, 1978. Barrie & Jenkins, £4.25.

The author of this book is well known to rock gardeners for he has written authoritatively on the subject of dwarf plants in previous publications. "Collector's Alpines", "Shrubs for the Rock Garden and Alpine House" and "Rock Plants for Small Gardens" are examples. More importantly, he has not only written about them but he has grown them too—very successfully—as the numerous awards he has won bear witness.

This, his most recent publication, deals solely with miniature shrubs. It is a subject he has tackled enthusiastically which has resulted in a selection which is almost exhaustive. Certainly there are far more first class plants mentioned here than any modern gardener could hope to accommodate, but there is a slight snag, in that some he mentions are virtually impossible to obtain in the trade. We who are members of the Scottish Rock Garden Club are familiar with this type of list, however, and find it more of a challenge than a deterrent.

The first 17 pages are devoted to general comments, these being arranged in four grouping chapters, namely: Types of Garden, Propagation, Transplanting, Pests and Diseases. These are helpful and instructive but the main value of this work is in the assembled lists in chapter 5 on Dwarf Conifers and chapter 6, Small and Dwarf Shrubs. A scant descriptive note follows the generic name and this includes advice on cultivation and propagation as applied to particular species. It certainly is a comprehensive guide to dwarf shrubs, for it will be helpful to beginners who are at a loss to know which plants will do best in a garden and it will also serve as a reminder to the more experienced growers of what has been lost and probably forgotten. What a pity the monochrome photographs are so poorly reproduced; they do little to help the descriptions!

It is easy to fault publications these days but very little can be said about the text which is not complimentary in this instance. The mis-spelling of plant names and the mis-use of capital letters in specific epithets always come under fire but there are a few here which ought not to have slipped through. Among the black and white photographs alone, the captions to *Picea abies* 'Pygmaea', *Chamaespartium delphinensis*, *Lavandula latifolia* 'Nana' and *Pimelea prostrata* suffer from these defects, while on page 166 the illustration of *Spiraea bullata* 'Nana' is doubtfully correct. In the colour section *Abies balsamea* var. *hudsonia*, *Aethionema armenun* 'Wartley Rose', *Berberis x stenophylla* 'Coccinea', *Daphne cneorum* 'Eximia', *Juniperus chinensis* 'Echiniformis', *Penstemon newberryi* and *Salix serpyllifolia* are in the same categories, while the photograph of *Dryas drummondii*, a plant which is recorded as having yellow, drooping flowers, resembles more the typical *Dryas octopetala*. These may appear to be small points which would hardly be noticeable in the volume of text, but they are inexcusable as captions to photographs which are certain to receive closer scrutiny.

Despite these criticisms this is a worth-while book and one to be recommended to serious-minded rock gardeners.

A. E.

The Larger Bulbs, by Brian Mathew. 156 pp. Illustrated. 1978 (Batsford & R.H.S.). £6.50.

At first sight members might not think that this was a book for rock gardeners, but they would be wrong.

When Mr. Mathew wrote "Dwarf Bulbs" five years ago he inevitably found himself in the quandary of not knowing exactly what a dwarf bulb (corm or tuber) was. This book successfully fills any gaps that his readers may have noticed and the two books complement each other perfectly.

The author has sought advice from botanists, plant collectors and growers all over the world as his acknowledgement list testifies. He is, himself, a distinguished botanist but he tells us that it is not easy to interpret from the flattened remains of herbarium specimens—bulbs are notoriously difficult subjects—into three-dimensional shapes. Nevertheless this book contains a wealth of botanical detail. Mr. Mathew is a distinguished grower, too, and has studied many of the plants in the wild so his notes on habitats are illuminating and his thoughtful approach to methods of cultivation will inspire many to attempt to experiment in this exciting field. Finally, the author is a conservationist and his advice to all collectors is wise—don't, unless you really have to. There is a case, he says, for bringing in new wild source material to encourage seed production in order to give a species "variation potential" again—to replace plants which have lost vigour through over propagation, but in most other instances he recommends collecting seed only.

The first part of the book deals with cultivation methods, with particularly helpful advice on the treatment of bulbs during dormancy, some bulbs only being in active growth for two or three months in the year. The author deals with bulbs growing in the border, raised beds, rock garden, bulb frame, pots, and he recommends a wide range of bulbs to grow in grass.

The bulk of the book is given over to detailed descriptions of over 60 genera and the letterpress is enhanced by very beautiful line drawings by Pat Halliday. I particularly liked her little diagrams showing details of plant form. If I may be allowed two small grumbles about this very readable and informative book it is that there was a need for more line drawings, particularly of the lesser known genera, and reference to the plates and drawings in the descriptions.

"The Larger Bulbs" will occupy an honoured place on the bookshelves of expert and amateur alike and will be happiest beside its companion "Dwarf Bulbs" where they will be used as reference books for many years to come.

ISOBEL J. SIMPSON

Basic Book of Garden Pests and Diseases, by Dr. W. E. Shewell-Cooper. 176 pages, 1978. Barrie & Jenkins, £3.95.

This is one of a series of titles about gardening written by this well known author. This book is certainly not directed towards the rock gardener in particular, but the information included in it is relevant to the maintenance of pest-free, healthy plants. The principles outlined apply, in a general way, to all gardeners.

A. E.

Pocket Guide to Heather Gardening is a small colourful booklet available from Tabramhill Gardens, Ash Landing, Far Sawrey, Ambleside, Cumbria. Its aims are to encourage the growing of heathers and to this end it describes Heath Gardens, their layout, types of soil, planting distances, etc. In addition there is a useful calendar in which certain popular cultivars are listed indicating the period when they are at their most attractive stage. Also included is a long list of commercially available cultivars, each one attended by a description. These are the names published by the Heather Society as being the authentic ones. Following this there is a further catalogue of names indicating the synonymy of some well known varieties and suggesting their correct epithets.

A.E.

The American Rock Garden Society

Probably most members are aware of the existence in the U.S.A. of a Society comparable with our own. Some members may have wished to join this Society, but have been deterred by the apparent difficulty of transmitting their subscription. We understand that this difficulty is not insuperable. Permission has to be obtained from the Exchange Control in the first place, and evidence has to be supplied of the existence of the Society and its membership fees. Having secured sanction, the member obtains a draft from his Bank and forwards it to the Society. In practice it would probably be best first to consult one's Bank, which could supply advice and the appropriate forms.

The annual subscription is 5 dollars, and the Secretary, who will send further particulars, is William T. Hirsch, 3 Salisbury Lane, Malvern, Pa. 19355, U.S.A.

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

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