Editorial Copy

The JOURNAL of THE SCOTTISH ROCK GARDEN CLUB

VOLUME XIII Part 4
No. 53

SEPTEMBER 1973

Editor P. J. W. KILPATRICK • 10 Eglinton Crescent • Edinburgh • EH12 5DD

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SRGC PUBLICATIONS

MEMBERS will find much of interest in the back numbers of the Club's *Journals*. The availability and prices are as follows:

	Price per copy, post free to members	
Journal No.	*New pence*	*U.S. dollars*
1 to 6	Not available	—
7	35p	0.91
8 to 10	20p	0.52
11	35p	0.91
12, 13	20p	0.52
14	35p	0.91
15 to 17	Not available	—
18	25p	0.65
19, 20	20p	0.52
21	Not available	—
22 to 26	20p	0.52
27	55p	1.44
28	20p	0.52
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30 to 33	20p	0.52
34 to 47	25p	0.65
48 onwards	30p	0.78
George Forrest Book	£1.25	3.25

The Club will welcome the opportunity to make an offer to buy (or be gifted) certain of the old *Journals* in the number range 1 to 35, provided they are in good condition.

Waiting lists for the "Not available" *Journals* are maintained.

All correspondence regarding publications should be addressed to the Hon. Publications Manager.

The present Publications Manager is Mr. J. B. Duff, Langfauld, Glenfarg, Perthshire, PH2 9PA. Mr. Duff is resigning from this post at the Annual General Meeting. From the notice calling that meeting you will see that Dr. D. M. Stead, Esk Hause, Bishop's Park, Thorntonhall, Glasgow, has been nominated for this position.

P3+3, A3+3, G(3) (Liliaceae)

by A. EVANS

The W. C. Buchanan Memorial Lecture given at West Kilbride on 21st October 1972

THE ABOVE is the flower formula which describes the flowers of Liliaceae. At least it was up until fairly recent times, as now some authorities split the family into six smaller ones. This set of bare letters and figures may appear cold and clinical but in point of fact it does decide whether or not the plant we are looking at belongs to the plant family Liliaceae. Once this is determined many other characters are then used to divide the family into its various genera, species and wild occurring varieties. When one considers that there are in the region of 200 genera involved with at least 10 times as many species, one cannot be blamed for wondering how it is possible to isolate sufficient characters to bring order to this large family and so describe clearly and accurately the many variations. Furthermore, when one stops to consider the number of cultivars and man-made hybrids which are now listed in this family it is not surprising that some of us are over-awed.

The fact that sense and orderliness does exist, however, is evident to many and certainly, although he was not a botanically trained student, I know of no other man with an interest and perception of his plants, (and these included Liliaceae), that went deeper than those of Willie Buchanan.

Willie not only gathered together a unique collection of plants and cultivated them to a very high standard but he knew most of them intimately. He knew where a stigma was hairy when it shouldn't be; where petals were pointed when they should have been blunt; where leaves were glaucous when they ought to have been green and, when appropriate, whether his plants were male or female.

Willie's interest in plants was all-embracing, and so his garden at Bearsden included frames, troughs and screes which catered for a wide range of hardy plants, but his interest did not finish there. His limited environment may have restricted him in what he could grow, but Willie was interested in everything that grew.

By choosing a plant family with a view to illustrating how deeply a person can become absorbed in plant variations may appear, to many, a very narrow field, but I hope a glance into a book dealing solely with Liliaceae will illustrate the diversity of this plant family.

It is a long time now since I first met Willie Buchanan and why I have chosen Liliaceae as a title for this Memorial Lecture is because of a gift I got from him a few years after the war. In those early years everyone was plant hungry and I remember on one of his many visits to the Royal Botanic Garden he said "I have a spare bulb of *Lilium japonicum* you can have if you would like it". Needless to say I said yes to that and I have a slide which shows what happened to that bulb once it was established in the peat garden. This is all to stress how much Willie liked beautiful things.

However, *Lilium japonicum* is but one small member of a huge family, a family full of attractive plants, many of which, at a quick glance may not seem to be related in any way to this exquisite Japanese Lily.

My aim here is to examine a few genera in Liliaceae, a large plant family included in a bigger group of plants classed as monocotyledons. Not a few people have the impression that plants in this group are bulbous, but this is not entirely true. Some, certainly, do possess bulbs, others develop storage organs which are termed rhizomes or tubers, but not a few have ordinary roots and crowns which closely resemble the herbaceous rootstock of some dicotyledons.

This diversity of plant types makes the managing of Liliaceous species an exacting task. Rarely can one ignore the recognised dormant period when transplanting becomes necessary. Many other plants can be safely transplanted, even divided when in full growth, but not so the members of this family. One must wait until the leafy part of the plant has died down, or, if it is evergreen (and there are a few in this category), has ceased to grow. Only then is it safe to move them.

As the time for transplanting does not occur at the same season throughout the whole family, it becomes necessary to handle plants at different times, during the four seasons of the year. Many plants need careful transplanting and even so may sulk for a time before returning to full vigour. This often occurs where the species bear perennial roots or at least roots which remain alive and active for more than one season. This is particularly evident in Trillium and Lilium, although there are many more. Those spring flowering bulbous species, on the other hand, such as Muscari and Scilla, and even

autumn flowering ones, like Colchicum, have a dormant period in mid-summer, so may be lifted, divided and replanted without hazard. It all revolves around one's understanding of the plant's growing cycle, knowing how it will respond to being disturbed and being familiar with its type of root system. This is especially important when the selection of a site is being made, for certain plants should be provided with a home where they remain undisturbed for as much as 20 years. Sites, too, vary and certain species demand an open position such as those native to the Mediterranean, South Africa and New Zealand, for example. In some instances, however, the selecting of a sheltered corner can provide the conditions which will make a plant flower, whereas in any other spot it may be weak and uninteresting. On the other hand, a large number of Liliaceous plants will tolerate partial shade; some, in fact, with large leaves are vigorous and healthy only in a partially shaded and cool site. The broad foliage of some species is often an indication that these will tolerate moist, shady conditions. This tolerance is extremely useful in dry gardens where the soil is sandy and the rainfall light, as the selection of a shaded site can be a possible alternative to supplying water. The root systems, too, are extremely variable, for some which are bulbous, as in some Alliums and Scillas, bear little resemblance to the running colonising roots of Uvularia and Maianthemum. For the first group, a firm mineral type soil will provide the best conditions whilst the searching rhizomes of the latter much prefer an open soil rich in humus.

This means, of course, that Liliaceous plants form an important part of our garden flora—a very much larger part than many of us realise. To list the popular kinds would be superfluous, except perhaps to indicate that they are members of this family, and to tabulate the hardy species would simply repeat what could be found in many books of bulbous plants. Much pleasure is gleaned from trying plants which are new to our gardens and a great deal of interest and enjoyment is to be had from a collection which includes the Chinese Paris, the Tasmanian Dianella, the New Zealand Astelia, the Chilean Lapageria and the North American Clintonia. On the other hand what can be more satisfying than growing a collection of one genus, which would illustrate the wide range of flower types found, say, in Lilium. If one is interested in floral art much pleasure can be had from assessing the decorative values of the myriad leaves of Hosta. And, finally, for the connoisseur, what can give more enjoyment in spring than the beautiful yet unusual flowers produced in the genus Trillium.

Wild flowers in Ontario

by LAWRENCE J. JOHNSON

IN JUNE of last year (1972) I was in Northern Ontario, a few miles from the shore of Lake Superior. It was a fishing trip, but in the long daylight there was ample time to explore the country around. Walking was made easy by the existence of a number of paths into the bush from our fishing camp and we followed them to their ends.

The boreal forest was mostly untouched by man, and no fire had passed that way. It was monotonous to look at, and the thought of its vast extent somehow stifling and even sinister. The trees were frequently immense, and consisted principally of spruce, fir, larch, and birch.

But the wildflowers were glorious, and were so numerous one hesitated to take a step. Most plentiful and conspicuous were Canada dogwood (*Cornus canadensis* (fig. 83)), and next *Clintonia borealis*, my first sight of this flower. *Cypripedium acaule* was to be found in clumps here and there, growing in pure mould, as did also *Polygala paucifolia*, very orchid like, and *Maianthemum canadense* or Canada mayflower. I hoped to see that most delicious of flowers, pyrola, not seen since I was a child, but didn't. *Epigaea repens* (fig. 84) crawled over every decayed log and stump, and that not seen in the wild by me for more years than I like to think of. There was bracken here and there, and mosses, and what I took to be reindeer moss. The mould was at least the depth of my whole hand, wherever I tested it, and, although it had rained before we came, and heavily once while there, it didn't take long to dry out. We saw immense quantities of *Cypripedium pubescens* on our way home, at a site open to the public in Michigan, and fortunately the flowers were separated from the public by a sturdy fence.

I wasn't tempted to collect any of the plants I saw. The best reason was the heavy fine and confiscation I would have been subject to had I been caught. And, also, I have most of the plants thriving in my garden, and obtained from legitimate sources. However, there is an aspect of wild flower collecting best illustrated by a story of an old friend who offered me a portion of a clump of *Cypripedium acaule* she had brought home to Indiana from Minnesota the year before. A man on a bulldozer was breaking a track to a lake and destroying

countless orchids in the process, and she rescued a clump. As she reminded me, she was subject to a fine for taking the plant, but the man on the bulldozer was liable to no penalty whatever!

"Apprenticed to the Club"

by MRS. ELISABETH IVEY

The Clark Memorial Lecture given at West Kilbride on 22nd October 1972

AN APPRENTICESHIP is a period of years spent learning a trade of your choice. Finding out the best method of using the tools you will need, and gaining as much experience as possible in the time allowed. Like all apprentices, the five years had to be done on a pretty lean budget. £.s.d., or whatever they're called nowadays, had to be watched at every stage.

Now an apprentice isn't expected to steal the Managing Director's thunder, so I don't intend to talk knowingly on any of the Directors' specialities—there are too many Directors here today!

But an apprentice can pass on to future apprentices many hints he has found helpful to himself. That's what I intend to do.

When I started out along the alpine path, I quickly came to enjoy the idea of pot cultivation, and as my rock garden is fairly typical and hardly worthy of comment, it is the pot cultivation side on which I would like to concentrate.

Are the plants prisoners, disliking their restrictions? What is the argument for growing rock plants in such an unnatural manner? My answer is that it simplifies the process of producing plants in first class condition for the show bench. We can enjoy in conditions more amenable to us the ephemeral beauty of many plants which would otherwise pass us by unseen. It increases the range of cultivated plants and brings the whole world's endemic rock plants around our doorstep. We can, with at least a chance of success, struggle with the accepted difficult plants, and once you have overcome your struggle, you can then start over again by reproducing your problem plant and attempting the impossible in the open garden. A larger selection of plants can be contained in the smallest possible space, thus aiding the

small garden. And here I'm maybe sticking my neck out, but Nurserymen are more than ever having to sell mainly the bread and butter plants, the rare and difficult are sold by the faraway few and amateurs are more and more playing a greater part in the existence and spread of these rarer plants. Then there's the sheer enjoyment in finding plants most suitable to pot culture.

The thrill of "showing" is certainly one of the top reasons for growing in pots, but it has created, in my humble opinion, two restrictions:—

(1) The natural tendency to look more favourably on neat growing plants.

(2) The exaggeration of cultural difficulties, in certain cases.

Here I must confess to preferring the neat plants, but my husband has a predilection towards the misfit.

At the beginning my few potted plants were housed in a section of the old greenhouse I had appropriated—and the results were disastrous, the death rate was astronomical, so was the cost. Conditions were all wrong, there was not enough ventilation, it was too sunny and it was too warm. I'm afraid the tomatoes and the alpines were incompatible and a divorce was inevitable. As part of the settlement my husband built me my first frame, and the death rate *started* to drop.

It was just a span roofed cold frame, fashioned from what was left of my neighbour's old greenhouse, sitting on the deck, glass on four sides, and the two glass roof frames hinged upwards. The faults? It was too damp, not only for the plants but for me, it was too low, and it was slug and mice ridden.

So let's have an Alpine House, but a cheap one. None of the £200 houses for me—that would have been divorce No. 2. In any case I preferred Dutch barn style, to catch the maximum amount of light in a garden which is slightly sunshine restricted. At that time I implicitly believed that an Alpine House with a brick or solid base to plunge level was the superior house and you just can't buy a solid based Dutch barn style of Alpine House anyway. So all things considered, it was obvious we had to build our own.

We found that the cheapest horticultural glass was a crate of 18 sheets approximately 56 ins. × 28¼ ins. and when you put 4 sheets of this size end to end Dutch barn style, you get a width of about 12 ft. Now for the sides, put 5 sheets side by side and with the wooden astragals in between you get a length of about 12 ft. 6 ins. This determined the size of the Alpine House, roughly 12 ft. 6 ins. × 12 ft. 6 ins. (figs. 60 and 61).

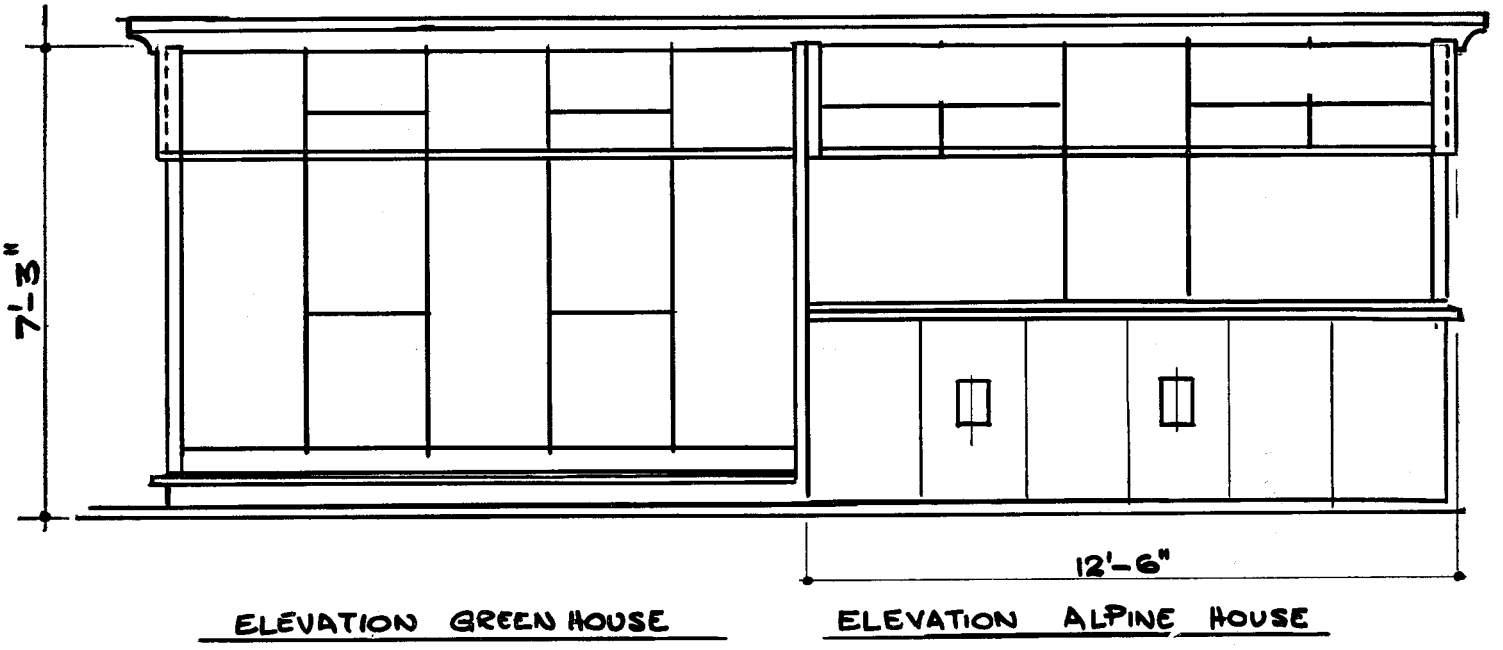

Fig. 60

For the sides of the house we decided the easiest and most permanent method of construction was to use 3 ft. × 2 ft. paving slabs leaning lengthwise at the required angle on a brick base and supported by specially cast slabs which would also support the bench which would again be paving slabs. The timber used was secondhand, to cut the cost, of course.

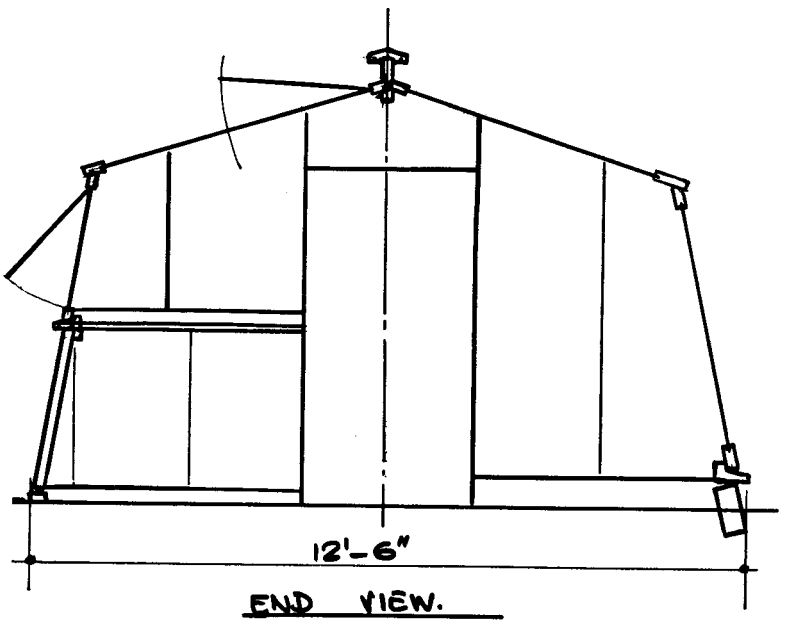

Fig. 61

Now this type of construction is of course not necessary. A standard greenhouse can be bought and adapted by increasing the side and top vents to a maximum. A bench to your own liking, whether a 9 in. plunge or just 1 in. of standing material is up to you, *but* remember that 20 sq. ft. of bench can hold up to 160 pots of sizes 3 ins. to 6 ins. and complete with their plunge weighs ½ a ton, so make the supports substantial.

The bench area in my house is approx. 100 sq. ft. and I prefer the deep plunge as it reduces watering, especially in the winter. It gives

the plants a cooler and deeper root run, and in between the pots I can propagate cuttings during the summer.

Well, the house was built over a period of 12 months and it stayed up. The bench was filled with No. 4 sand from the Loudon Quarry and the tenants moved in. I then began to experience a new kind of death rate. The cold dry-loving plants withered with too much sunshine, the moisture lovers died of drought and the ones which did grow, grew out of character. Believe me, I had the tallest dwarf tulips in the business!

And so came the frame. Although I enjoy the comforts of the Alpine House, it is the frame which is of more value by far.

From my experience of the original frame, the new one had to be raised off the ground, but when you do this by brick or solid in-fill,

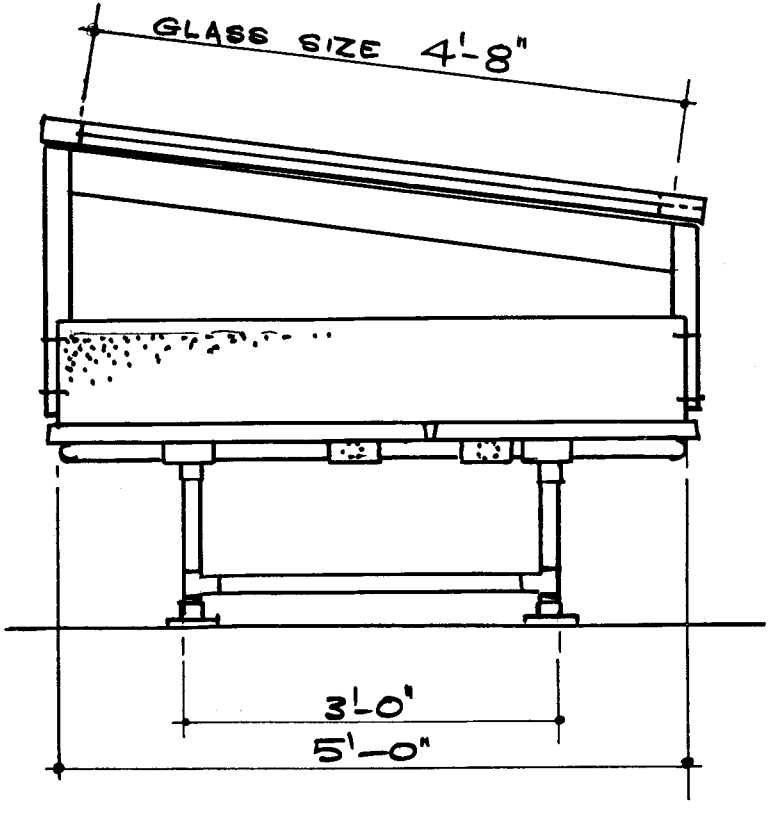

Fig. 62

you waste a lot of storage space, valuable space in a small garden. So we built the frame of an open structure formed by second-hand scaffolding tubes. The table consisted of garden slabs again, and the sides were made of 11 in. wide lengths of wood covered by roofing felt. The size of the frame was again determined by the dimensions of the cheapest horticultural glass (fig. 62).

Now this structure has its disadvantages. The easy tendency to erect the frame too high, the hardship to reach the centre of the frame to plunge or remove pots if you're a wee person like me, and the very fast drainage. Of these three, the last point is the important one, and we had to try to get a grit as fine as possible to allow for water retention. The advantages, however, outweigh the disadvantages, namely—the dispersion of water through the table, easier access and handling of plants, the storage space underneath for deep shade lovers, unused pots, sieves, bags of sand, peat, etc., minimal slug trouble and no mouse bothers, more sunshine and lastly and by far the most important, the sheer delight on a warm lazy day of leaning on the top rail of the frame!

So I have my Alpine House and frames and of course time is passing and experience is increasing. The lay-out of frames and house is important. Frames should be close to but not completely overshadowed by the Alpine House, and in most gardens the ideal conditions are just not possible. To increase the scope of the frames, they were constructed in three sections—first section glazed on the sides and ends with a removable cover, second section open at the sides and ends but with a removable cover, and the third section completely open and no cover. I think it is very worthwhile explaining here that if the frame covers had been glazed, they would have been so heavy and vulnerable to breakage that I certainly could not have lifted them. To get over this difficulty we used 'Melinex' instead of glass. It comes in clouded as well as clear versions, so that the shading of the frames may be made easier. (fig. 63).

Now I will move on to the potting materials.

Mrs. Greenfield last year told us how she gathered the generous mounds left by mole activity for her supply of loam. I doubt if this method can be bettered. It has the double advantage of being the best of stuff at the cheapest possible price, but it is time consuming. My source for loam is pinching—yes pinching the 3 cwt. top layer of my husband's tomato run after the plants have been cleaned out. This is stored for at least six months in the open, then it is ready for use.

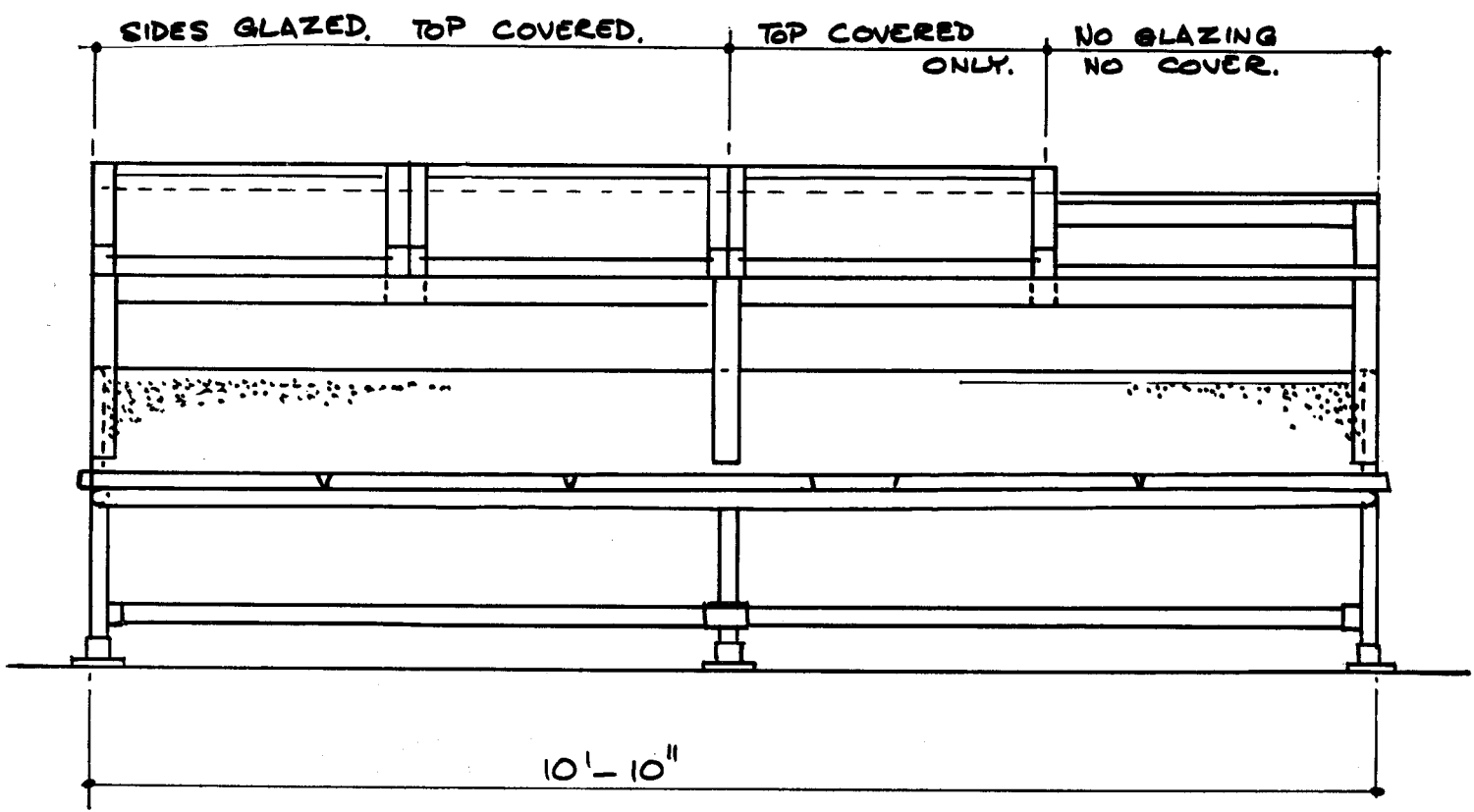
SIDES GLAZED. TOP COVERED.
TOP COVERED ONLY.
NO GLAZING NO COVER.
10'-10"

Fig. 63

My peat is gathered from the peat fields above Dalry. I had to cultivate the friendship of the farmer, and so long as I don't get greedy he doesn't complain.

Now what do I know of leafmould? The condensed judgment of the authorities I have read says "Beech and oak moulds are best, they may be contaminated by either or both lime and disease, and that as there is little difference use peat anyway." But leafmould is much less moisture retentive than peat and is much more open in texture, so must suit many plants better. In any case, I have found a spot where deep beech mould lies and so far have no regrets in using it.

Now I come to sand and chippings. Up until I joined the S.R.G.C., sand was something you made castles with on the beach, or the builders used for cement. A new world was to open up and I was to discover that not only were there different types, but different sizes. I mainly use Quartzag which can be bought in Strathblane and No. 2 Granolithic available from any builder's yard. These are sieved into three grades and washed and stored in drums under the bench in the Alpine House.

Another source is the rich multi-coloured stores of top dressing material to be found around the myriad lochs of Scotland. I never go away without a plastic bag or two just in case I come across something which interests me. Perhaps the red jasper laden rocks of the Lochinver area, or the black basalts of Ardnamurchan and the far north or the pale pink and blue limestones of Faraidh Head. Crushed shells are abundant in several areas on the Solway Firth, at Balnakeil Bay and from a certain wee shop in the Borders. Then there's the crushed flint pebbles of the South of England, too.

Now Ayrshire used to have a thriving Iron Melting Industry. To feed the furnaces limestone was needed and so around here we have numerous limestone quarries, working and extinct, flooded and worked out. How to find the one which suits your purpose? Visit them, it is a geographical lesson finding them, then finding the one which suits you best. My final choice was Hessilhead Quarry which is still being worked. I take the foreman the odd rock plant, and as he is sick of limestone anyway, I get what I require.

There are numerous rivers and lochs whose shores offer ideal grit. My nearest source is the River Garnock at Dalgarven, where I compete with one of the local farmers for the grit washed down when the river is in spate. He uses it for his silo, I sieve out the large stones and use the rest for the plunge in the frames. As I have a large frame

area, my source has to be local and cheap.

In the Julian Alps this year I walked for miles along the bed of a river 100 ft. wide whose formation was perfect limestone grit. It was too far to carry a load, but I did bring a sample, and it is one of the selection I have set aside on the table.

I can't put into a few sparse paragraphs the fun and interest we've got and the friends and characters we've found from delving into the countryside looking for these materials which I always seem to need. Perhaps there is someone who has practised these pursuits for years longer than I have and who secretly smiles at my attempts, and could give a wonderful talk on this subject alone.

I would like to say a few words about some of the plants and some of their problems and my problems too.

In the easy plant category, can anyone deny that *Phlox* 'J. A. Hibberson', *Campanula* x *wockii* and *C. tommasinianus* and *Erica carnea* 'Eileen Porter' grow as happily and as healthily in a pot if not more so than in the open ground. They cover themselves in bloom and stay in bloom much longer. And although all popular European primulas look more natural in the rock garden, as Mr. Livingstone illustrated in his talk at North Berwick two years ago, they are also ideal subjects for pots. But *Primula allionii* will only grow happily under glass. Its sticky leaves resent any moisture at all and the crown is very vulnerable and subject to rot. It will take a lifetime of patience and care to produce a large pan of it, but all the pleasure is not in the end result. There are several forms and I have found *Primula allionii* 'Crowsley Var.' is possibly the easiest, but there again I'm not old enough really to pass judgment. But what of *Primula palinuri*? It's a European with a difference, from the South West coast of Italy, with a much more insignificant flower but none the less interesting. I have a rosette which year after year doesn't enlarge or flower, but doesn't die. Is this one European which resents being in a pot? Perhaps someone can give me the answer to this primula's problems.

Campanula excisa is lovely and easy in a pot, but it is a trailer and grows rapidly to the edge of its pot. If measures are not taken it seems to exhaust some necessary ingredient in the soil. My treatment is—take it from its pot, remove most of the soil from its empty centre, then open out the plant like a bandage; now roll it up like a swiss roll, give it fresh compost and off it goes merrily on its way to the edge of the bigger pot. It doesn't seem to resent this treatment. *Campanula piperi* looks as if it might fall into the same category, but

I have not yet dared try it with the swiss roll method; the plant as yet is too small and rather expensive to replace.

The plant which gave me my earliest headaches was a Lewisia. I spent a fortune buying them and killing them with regularity. To save future apprentices unnecessary expense, my advice is to get some Club seed and start from scratch with your own compost. Several years ago from a batch of white Lewisia seed I got one smasher with pure white flowers and prominent orange stamens. This plant was isolated, and I have since sown seed collected from it, the resulting seedlings are all white, and all different, but none of them have the brilliance of the parent. I cannot resist a new Lewisia. I now have *Lewisia* 'Carol Watson', *Ll.* 'Pinkie', x *Trevosiana*, 'Caribou Basin' and x *Phyllelia*, but the finest example I've seen is *L. Tweedyii* growing in the vertical wall in Mrs. Stuart's garden at Pitlochry.

In order to strike a good contrast in the frame or Alpine House a number of foliage plants are necessary and the big favourites are the 'silvers'. I have had success with the Helichrysum species but always take a few 1 in. long cuttings each year just in case they decide to turn up their toes. Three years ago my son bought me *Raoulia mammallaris* (fig. 85) for my birthday. It is growing into a nice hummock propped up with pieces of tufa. It gets copious watering during the spring and summer, and just enough to keep it ticking over in winter. I think Gilmour considers it an investment, as he checks up every so often on its progress, to see that I am giving it the necessary care and attention due to such an expensive purchase! This year I managed to strike a cutting in the propagator so that the successor is lined up should the fates decide to deal the parent the death blow. It is a desperately slow growing cushion, and I will strike some cuttings each year now that I have a decent sized plant.

I remember a few years ago reading in the *Gardener's Chronicle* that everyone should grow *Ptilotrichum reverchonii*; it was a marvellous foliage plant. The article told all except naturally where to get this beauty. I tried numerous sources without success, but two years ago one of our Club members sent my husband one or two slips off his plant for propagation. One was successful, and that same year I got some seed from our Seed Exchange and germinated two plants. They are not quite as felted as the cutting, but equally silver. So from first reading that little article, through several years of seeking and searching, in one season, by the direct help of the Club, I now have three small healthy plants.

Cyclamen make lovely subjects for pan culture, and with careful selection it is possible to have an almost all year round succession of flower. *Cyclamen neapolitanum*, *C. coum* and *C. europaeum* will grow happily out of doors, but a few of their unusual leaf forms are certainly worthy of pots. The unhardy ones like *C. africanum*, *C. rohlfsianum*, *C. graecum* and *C. persicum* certainly need the protection of the Alpine House even in summer when it seems necessary to give them a good baking to ripen the corms. But how do you pot up a cyclamen? Some say bury the corm deeply, others say just cover the corm and no more, then there's the third school of thought who recommend resting the corm on top of the compost and filling up the space left with chippings. I am trying different ones with each method and I use a leafy compost with $\frac{1}{3}$ part rough sand to assist drainage. While on holiday in Yugoslavia this year we found acres of *C. europaeum* growing in light shade. The corm was usually around 3ins. deep in a soft mould formed by deciduous leaf and pine decay and a good percentage of lime chips. The same material lasted for about 6 ins. under the corm then gave way to almost 100% limestone scree. The lesson was obvious. *C. europaeum* needs excellent drainage and its roots filtering through to limestone.

Anchusa caespitosa is generally classed as a rare and difficult plant. I spotted one in a Nurseryman's frame a few years ago and tentatively asked if it was for sale. "Certainly", was the reply, "£ notes don't damp off". My original purchase was duly potted up and kept in the Alpine House and like Topsy it grew and grew until it became an utter embarrassment. I didn't know what to do with it and it was suggested to me that I take a razor blade and split it up and pot singly the pieces with roots. I did just this, and the bits without roots were put into the propagator and in a few weeks were soon to produce their new roots. I was able to give away quite a few plants last year, and the three retained are plunged in the frame and have once more taken up their cabbage growth. I just don't understand why this plant should be rare—difficult perhaps, in so far as keeping it within bounds.

Having an Alpine House it was natural I would want to grow Androsaces. I started off with three all bought from a nursery and grown on in the pots they arrived in until the cushions reached the edge of the pot. What happens then? According to the books, you should on no account disturb the roots of an Androsace. The pot should be broken an inch or so right round the rim to expose the top roots and remainder of pot and plant repotted in fresh compost which

the roots will soon seek out. While in Austria last year, we found numerous *Androsace helvetica* and in our excitement broke one large plant clean off at the neck. We did not want to waste it, so brought it home in its polythene bag and rested it firmly on the plunge material of the Alpine House. To my surprise and delight it remained green and grew a fresh clump of new roots and earlier this year I lifted it out of the sand and potted it up. It is still alive and kicking and I've brought it along for you to see. From that experience I would not hesitate to knock an Androsace out of its pot to give it a bigger pot, as they seem to be much more amenable than I first realised.

The ericaceous plants and dwarf shrubs are a larger section which seems to respond well to being grown in pots, as the specimens exhibited at our Shows qualify, but this group spend the least time under glass. They are grown in half pots or wide pans to allow for the spread of the roots, and are plunged outside in the frame shaded from the midday sun and only appear in the Alpine House when in flower. There are plenty to choose from and the easier ones are the Cassiopes, species and hybrids, the Phyllodoces and the Dwarf Rhododendrons. But what about *Rhodothamnus chamaecistus*? It cannot easily be bought and isn't very often seen. But it's hardy and easy to propagate from cuttings or seed, but slow. Its only fault is that it hates root disturbance, and yet I seem to have successfully transplanted small plants from Yugoslavia where it grows like a beautiful weed. So why is it scarce? Why is such a lovely plant so rarely seen?

Shortias and Schizocodons figure high on my favourite list but again their biggest difficulty is in obtaining them, and from speaking to fellow Club members, there's a hungry band of us all chasing round looking for someone who'll propagate these plants for sale or exchange with us for something equally good. There's a bonus in growing them, not only do you get the beautiful flowers and new leaves in the spring, but the foliage turns the most brilliant colours in the autumn and if you have a good plant—there's at least one entry for the Autumn Show. The man who reckons he has the largest Shortia in Britain told me, "Never let the sun on them and let the bracken grow through them and die on them". But I don't know how you grow bracken in a pot!

I would like to take this opportunity to thank all my friends and Club members who have helped and encouraged me throughout my apprenticeship, and to my husband, especially, whose patience with a Tyro has been amazing.

Nepal 1971

by LEONARD W. BEER

THE University College of North Wales, Bangor, sent a five-man expedition to East Nepal in 1971. The main object of this expedition was to collect seed from plants worthy of being cultivated in a temperate climate. We chose East Nepal as this particular area had not been extensively botanised as much as other more popular parts of the country. It is also richer in species, many having affinity to neighbouring Sikkim and Tibet.

The plan was for me to do a solo reconnaissance of the area from June until September, during which time I would observe and mark desirable species which would then be in flower, and to return in the autumn with the other members to collect the seed. Although we were a five-man team, we split up in the field, with Dr. John Witcombe and Mr. Martin Mortimer collecting cereal crops in the villages of the foothills where they cultivate millet, maize, barley, etc. The rest of the expedition consisted of myself, Roy Lancaster of Hillier & Sons, Winchester, who was a great asset with his knowledge of trees and shrubs, and David Morris, a research student, who was also a competent climber, a valuable contribution to this type of expedition. We three concentrated on our collections from above 9,000 ft. right up to the snow-line, usually between 15,000-16,500 ft.

When I arrived in Kathmandu in June I found that the monsoon had already broken—not only had it arrived early but it was to be one of the worst experienced in Nepal for more than a decade! After sorting out an extension to my visa and obtaining permission for the main part of the expedition my first task was to hire sherpas. Dawa, my sherpa sirdar, who was responsible for the daily running of the expedition, was a typical smiling young man aged 23. He spoke good English, and also spoke and wrote Tibetan which would be valuable as we intended working near the Tibetan border—the tribes which inhabit this part of Nepal are of Tibetan origin. We chose Mingma as cook for he had good references although he only spoke a little English. To say he was a cook was an overstatement unless you consider fiery curries made with chillies, cooking! I also employed two other sherpas, Darouble and Anamgal; neither could speak English but were good strong lads; their duties were similar to those of the

porters in that they carried expedition equipment, but they also helped in setting up camp, collecting firewood, washing up, etc.

The sherpas and I flew to Biratnagar in East Nepal and were met by the British Gurkhas who have a base at nearby Dharan, which was to be my official starting point. I stayed at the camp for two days, during which time I had to buy food for the three months trek—items such as dal (a kind of lentil), potatoes, flour, rice, etc.

I left the Gurkha camp on June 20th in pouring rain, with my four sherpas and 16 porters, each of whom was carrying sixty pounds of expedition equipment and food. The porters were a mixed bunch of characters from the various ethnic groups of this part of Nepal, Rais, Limbus, Chetris and Bhotias; they were all bare-footed and very shoddily clad. It took us ten days to reach Topke Gola, a small Tibetan settlement at 12,500 ft., where I paid off the porters and set up a base camp with my sherpas. The track from Dharan up the side of the river Tamur to Topke Gola was through sub-tropical vegetation and cultivated hillsides of rice terraces; this at 9,000 ft. gave way to natural woodland. Forests of *Abies spectabilis* and *Tsuga dumosa* formed the main tree canopy, while underneath interesting shrubs grew—cotoneaster, viburnum, berberis and the like; it was in these woodlands that I first found the giant lily, *Cardiocrinum giganteum*, in full flower. Rhododendrons formed thickets; two large-leaved species, *R. grande* and *R. hodgsonii*, had just finished flowering, although *R. cinnabarinum* was still a picture. We followed the Mewa Khola, a tributary of the Tamur, up through a steep gorge which was heavily wooded, and in continuous rain a rather oppressive place to spend several days and nights of the journey. However, at Topke Gola, at the head of the Mewa Khola, we found open meadows and, although I couldn't see them at this time of the year, towering snow-clad peaks with extensive rock screes running down from them.

My camp-site at Topke Gola was beside a picturesque lake where a couple of ruddy shelducks proudly swam around with their brood of ducklings. The water in the lake was icy cold, having come off the nearby glaciers, and I didn't see any aquatic vegetation present, although the marshy margins contained many interesting plants. Three primulas were common; one was *Primula strumosa* (fig. 64) with its bright yellow flowers filling the air with their sweet scent. *P. sikkimensis* var. *hopeana* was also common, its nodding bell-shaped white flowers gently rustling in the slightest breeze; making up the trio was *P. macrophylla* var. *macrocarpa* which came in various pastel shades of pink,

mauve and blue. A dwarf shrub, *Myricaria rosea*, with terminal pink inflorescences typical of the tamarisk family to which it belongs, formed thickets of two feet high and as much as ten feet across.

A small blue-flowered anemone, *Anemone demissa*, was growing in the short yak-grazed turf around my camp, and so too was *Geranium nakaoanum*, a pink-flowering cranesbill. In rocky areas of the alpine meadows were shrubs of windswept junipers and berberis, amongst whose shelter grew some lovely herbaceous plants, the most spectacular being the genus Meconopsis. The blue *M. grandis* formed fine upright clumps with as many as a dozen flowering stems; equally common was the monocarpic species *M. paniculata*, which sends up a single stem sometimes up to 8 ft. high, but usually 5-6 ft. The yellow flowers open from the top downwards, each spike bearing dozens of single, wide-opening flowers. One-year old rosettes of this plant are attractive; they are covered with golden bristles which in the sun have an almost fluorescent appearance. The rather insignificant *M. simplicifolia* looked lost in this rocky terrain and is perhaps easily overlooked; it has a single pale blue flower on stems up to 18 ins. high. Another genus represented here was Anemone; *A. rivularis*, a white-flowering species, grew to three feet high, on rather stiffly branched stems. *A. polyanthes* was also abundant; I found it in two flowering forms, one white, the other a delicate pink; this plant is rather neat in its habit and grows to only a foot high.

Higher up from the alpine meadow in which I was camped there was an old glacial valley, into which many extensive rock screes ran down from the giant snow-clad peaks of the Lumbasumba Himal It was only natural that I should turn my attention to these; from a distance they looked very foreboding, and sparse in vegetation, but closer inspection proved otherwise. The altitude of these screes was between 13,000-14,000 ft., they were south and south-west facing so that they received the full brunt of the prevailing monsoon weather. At the bottom of these screes one finds large stones which have broken off from the rock faces higher up and rolled down; amongst these more stable stones I found large clumps of *Bergenia purpurascens* in full flower.

The screes were very steep and were obviously continually moving as no mature vegetation stood out on them. *Thalictrum elegans* was a common plant with its delicate cut foliage standing up between the stones. The nodding yellowish-green flowers of *Fritillaria cirrhosa* (fig. 65) were noted and marked as a must for seed collection later.

So too was *Aster himalaicus*, a dwarf plant forming small patches with blue ray florets on flowers an inch across; this plant grows only to three inches high. Here grew an unusual plant of thistle-like appearance, *Jurinea macrocephala*. The pinkish-mauve flower heads, which arise from a flat rosette of deeply pinnate leaves, are almost sessile, reminding me of our own Carline Thistle, *Carlina vulgaris*. It was first introduced into Britain in 1930 from Kashmir, but unfortunately it never really became established in cultivation. Primulas were well represented in these screes; the section Soldanelloideae was the most prolific with three species: *P. buryana*, *P. uniflora* and *P. soldanelloides*, all three very difficult plants in cultivation—I nearly said impossible! But here, although not forming large clumps, they grew well; the seed must germinate well judging by the abundance of the plants. *P. soldanelloides* was also common on the wet rock rock faces on the top of the scree, where it grew in dripping wet moss. It is a beautiful little plant, only 1½ inches tall, with charming white bells hanging singly from each stem; these are quite large in comparison with the size of the plant. Another species was *P. glabra*, a member of the Farinosae section, only this one is a little awkward in that it is efarinose. This plant has pinkish flowers on a four-inch scape, each having an orange eye.

From Topke Gola I planned to visit Thudam, another Tibetan settlement which lay to the north over a 16,000 ft. pass. I set up camp on the north side of the pass at 15,500 ft. Here I stayed for several days while yaks were employed to carry the expedition equipment over to Thudam. Once I had crossed the pass I was immediately aware of a change in vegetation; it was obviously much drier here. The Syamjung Khola, which runs down to Thudam, starts from a lake crowded in by bare rock faces on one side and extensive screes with large outcrops of rock on the other; it was on a grassy knoll amongst the latter that I pitched my tent.

This area was rich in alpines; in the short turf on which I camped, a delightful miniature potentilla was flowering. It was *P. microphylla* var. *achillifolia*, which has finely-cut leaves and small bright buttercup-yellow flowers. The blue *Swertia multicaulis* was scattered about the area, standing up only a foot or so with its stiff umbels of flowers. *Codonopsis thalictrifolia*, as its name implies, has a distinctive foliage and here it was flowering with its sky-blue flowers, growing upright to 9 inches in the more sheltered areas. Two saxifrages grew together on this knoll—*S. pseudopallida*, a white-flowered species which has two bright yellow spots on each of its petals, and the yellow *S. nakaoi*,

both only four inches high. Whilst crossing the level scree, I noticed running water just a few inches below the stones; this proved to be beneficial to some plants, for a lovely yellow corydalis with feathery foliage was common, as was *Cremanthodium decaisnei* which has yellow flowers borne singly on fleshy red stems. A plant one would expect to find here, *Trollius pumilis*, was present and also grew in the stream itself.

Climbing the outcrops to the top of the ridge at 16,600 ft. was far easier than trying to walk up the loose scree. On the rock ledges *Meconopsis horridula* grew (fig. 66); this little plant is well armed with stiff bristles on both leaves and stem. It has light blue flowers 1½ ins. across, three or four to each stem, and is no more than six inches in height. It was a fitting place to find an edelweiss (fig. 67) and what better than *Leontopodium himalayanum*, which is a larger species altogether than its European cousin. A couple of curious plants made their home on these high ledges; *Saussurea gossipiphora* was the first, looking like balls of cotton wool lying about, and growing to a height of some four inches. This plant is completely covered with greyish hairs which protect its composite sessile blue flowers, except for a small hole on top; presumably this is the entrance which insects must use to pollinate the plant. The other bizarre plant was a member of the rhubarb family, *Rheum nobile*, which produced a tall spike with large conspicuous creamy-white bracts up to four feet tall; I think this plant is monocarpic judging by the plants I saw. At the crest of the ridge at 16,600 ft., which was windswept with patches of snow in the sheltered spots, I didn't expect to find much growing. However, I was wrong; in the dark brown lichen *Potentilla microphylla* var. *depressa* grew, almost prostrate with very much reduced leaves; it clung to the almost bare ground and still flowered profusely. *Primula concinna*, a charming little plant an inch or so high, which also grew here, bore pretty pink flowers with a golden eye to them; these snuggled into the farinose-backed leaves.

Following the footsteps of my yak, who had by now overtaken me, I travelled down the broad U-shaped valley of the Syamjung Khola. Here two polygonums were common, both growing on and over rocks; *P. vaccinifolium* was very floriferous with its pink flower clusters; I even saw several dark red forms, but alas no seed. The other was a dark red form of *P. affine*, very similar to the variety 'Donald Lowndes' which was originally collected in Central Nepal. As we dropped down the valley to 14,000 ft. shrubby potentillas (fig. 68)

covered the hillsides; there were two species, the common *P. fruticosa*, and *P. arbuscula*, the latter having attractive brown stipules. Amongst the shelter provided by these plants I found *Cassiope fastigiata* (fig. 69) in full flower.

Thudam, which is situated on the confluence of the Syamjung and Lhesa Kholas (fig. 70), consists of a dozen crude wooden huts scattered over the rocky hillside; the only stone building was the Gompa, or local temple, which I was proudly shown around by the lama. He showed me the old Tibetan scripture books which he constantly read at night; it was no wonder he kept complaining that his eyes were sore, for he read in the dark with only a small butter lamp flickering. Two large, brightly coloured, wooden prayer wheels stood in the corner of the room. In the centre of one wall was a kind of altar with various rice offerings and butter models, moulded into animal shapes; there was also a photograph of the present Dalai Lama as a child. Dried plants of *Saussurea gossipiphora* were lying on a small table; these are used as incense, usually mixed with the more popular juniper which gives off a lovely fragrance.

My camp site was beside the river on a rather marshy piece of ground, not an ideal site, but the only available flat area near the village. *Primula strumosa* was again common; in the nearby woodland I found *P. reticulata* in flower. On the mossy boulders by the side of the stream grew the dainty *Saxifraga brunoniana* (fig. 71) with its yellow star-like flowers standing up from rosettes of narrow leaves; it produces masses of red slender stolons giving it the appearance of having had red cotton draped over it; the same effect is seen with dodder growing on gorse bushes. I also collected in some of the wooded rock gullies; one plant, *Thalictrum virgatum*, hung from wet rock faces; it has attractive white flowers on stems 12 inches long. Here also I found *Androsace hookeriana*, with its dainty small pink flowers borne on terminal umbels, but, typical of many rare plants, it grew prolifically in the most inaccessible places.

I was hoping to be able to follow the river, which had now become the Bagang Khola, down into the river Arun and to collect in the Barun and Iswa Kholas some twenty miles away, but I was informed that the swollen rivers made it impossible to go this way. So I planned to recross the Lumbasumba Himal and journey down the little-known Wabak Khola to the Arun river, cross it, and proceed up into the Barun and Iswa Kholas via Sedua.

Most of the men of Thudam were away in the high alpine meadows

minding the yak herds, so I was unable to hire porters; the problem soon resolved itself when Dawa persuaded the headman to hire us a herd of his yak, together with two of his sons to drive them. The track out of Thudam led up a steep hillside of *Rhododendron campanulatum* and *R. campylocarpum* thicket; this at 13,000 ft. gave way to the two smaller species *R. setosum* and *R. anthopogon*. Finally, at 14,000 ft., we were in alpine meadows, where primulas abounded; the small bright blue *Gentiana phyllocalyx* was also peeping up through the sward; this tiny plant is only one inch high and the stems are a bright red. Patches of *Euphorbia wallichii*, a plant just over a foot high with yellowish floral bracts, gave a rather pleasant effect to the meadows.

After crossing a high pass at 15,500 ft. we found ourselves in a rather stony terrain which lacked the green mantle of the meadows we had just passed through; even the sure-footed yak had difficulty in travelling along. Vegetation was very sparse; the white inflorescences of *Rheum nobile* stood out like sore thumbs in the otherwise depressing landscape. *Saussurea gossipiphora* was also tucked away amongst some of the rocks. A small primula grew in the lichen which covered the boulders; it was the tiny mauve *P. muscarioides*, completely sessile in this harsh climate. Eventually we came upon a stream which we followed down into more pleasant surroundings of alpine meadows where yak were grazing, then we dropped down into the Wabak Khola. We lost height rapidly and arrived at a small village at 8,000 ft.; here the inhabitants were Limbus. They are mainly farmers and cultivate maize on the steep slopes. In these sub-tropical conditions leeches became a problem and the yak had to be sent back to Thudam; I therefore had to engage local porters once again to continue the journey. We passed several small villages whose huts were made out of bamboo, which grows over the hillsides in great quantity.

Crossing the Arun river, which was in full flood, took us all day; we had to be hauled over one at a time on an aerial run-way made of twisted bamboo; this was a hair-raising experience to say the least! A further two days saw us at the sherpa village of Sedua, where I paid off the porters.

I desperately wanted to visit the unbotanized Iswa Khola and to undertake this journey I had first to enter the Barun Khola and then to cross over a snow ridge somewhere, if possible. Leaving the bulk of my equipment and collected herbarium specimens with the village headman, who kindly wrote me out a receipt in Tibetan, I ventured off with my four sherpas and two strong porters and a local

guide. We squelched through a very muddy forest in a continual downpour, with leeches sticking on to any exposed skin. Orchids and other interesting epiphytes festooned the trees, but these would have to wait until I returned; I had a more important mission in the hills.

Two days saw us at the head of the Kasuwa Khola (fig. 72), where I shared a temporary bamboo shelter with a family looking after their goats, which were grazing nearby. *Primula calderiana*, with its bright cherry-red flowers, was in full bloom. I never saw more than six plants together in any one place, although these small colonies always stood out with their distinctive colour, even in the mist, which still persisted in staying with us.

Crossing into the Barun Khola by a 13,000 ft. pass we branched off to the left from the main track which led down into the rhododendron zone and on up to Makalu, a favourite target for climbing expeditions. Our track, if track is indeed the right word, led along under some massive rock faces; after two days on this rough and stony trail our guide suggested we climb up over the ridge into the Iswa. He had apparently been into the Iswa this way before as a lad with his father, looking for new grazing pastures, but he said it was very steep and unsuitable for grazing.

The visibility was down to some twenty or thirty yards and I took the precaution of building small cairns of stones every couple of hundred yards to enable us to retrace our footsteps if necessary. The grassy slope up which we climbed soon turned into a rocky gully and in places we were crawling on all fours and making slow progress. Mid-day saw us on the ridge at 16,000 ft. on permanent snow, and the rain, which had been with us until now, had turned by this time to snow; undaunted, we dropped down the other side into the Iswa. I was surprised at how steep the valley was; even in the bad visibility it looked more like a gorge, with sheer rock faces soaring up into the mist. Occasionally we caught glimpses of menacing, overhanging glaciers way above us as we picked our way up the valley at the base of these cliffs.

The grassy banks at the base of the rock faces had a wide range of alpine plants growing in them. A lovely gentian with two-coloured flowers was an exciting find; it turned out to be *Gentiana elwesii*. The corolla is white at the base, and blue on the top half; it only grew up to three inches high. The creeping blue pea-flowered *Parochetus communis* was common on the wetter slopes, and so too was *Anemone rupestris*, which is normally white-flowered, but here it also grew in the pink form.

The steep faces of the igneous rock also had some interesting plants growing on them. Our old friend the cotton wool plant, *Saussurea gossipiphora*, grew in the slightest crevice and looked like sea anemones stuck fast to the stones of a rock pool. The delicate *Meconopsis bella* liked these crevices too—sometimes it hung from the roof of a large overhanging rock face; to see these light blue flowers fluttering in the breeze is a sight to take one's breath away. A small yellow-flowering succulent was at home here; it was *Sedum oreades* which in places proved to be the dominant species.

The journey with loaded porters was naturally slow; on the second night in the Iswa we couldn't find a flat area to pitch the tent, so we slept under a large rock overhang. On the third day we arrived in a steep meadow near the head glacier, so we made a base camp. We were at a height of 14,000 ft. above sea-level, and way above the tree line; our only form of cooking was over an open fire. The collection of scrub rhododendron and juniper proved an almost never-ending task for the porters, as it burned faster than it could be gathered. We missed the yak herds whose dung had provided valuable fuel in the past. Two meconopsis which I had not previously seen on my travels grew in this area; these were *Meconopsis lyrata* and *M. sinuata*. I was keen to see what vegetation grew in the debris on either side of the glacier so I ventured down the rocky banks where two aconites abounded; these were *Aconitum orochryseum*, which is a creamy yellow in colour, and the purple *A. spicatum*. The head glacier of the Iswa is a receding one and both the lateral moraines and the flanking ridges were devoid of plant life; they consisted of rubble and large amounts of ice, although on the edges where vegetation had crept in I found *Saussurea gossipiphora* and a very attractive large-flowered willow-herb which turned out to be *Epilobium conspersum*; the latter reached a height of one foot. Nearby two *Androsace* species formed large hassocks up to three feet across; these were *A. lehmanii* and *A. globifera*. It was a treat to see these plants forming such gigantic proportions and I wondered just how old some of these were.

My stay in the Iswa was cut short when one of my porters became seriously ill, and we had to get him back quickly to Sedua, where at a lower altitude he soon recovered. From Sedua I headed back to Dharan with my spoils of herbarium material and a note book full of sites to which I would later return to collect seed. The ten-day trek back took me along the banks of the river Arun, through sub-tropical vegetation, a far cry from that of the Iswa.

After three months working in monsoon conditions I took a well deserved week's break before the other members came out to join me; back in Kathmandu I arranged with the Food and Agricultural Organisation of the United Nations to fly the main party of the expedition into a small grass runway at Tumlingtar, about five days walk from Dharan, on the Arun river. I also relieved Mingma of his cooking duties and hired another sherpa by the name of Perma who certainly turned out to be an improvement on his predecessor.

Dave, John, Martin and Roy arrived on the 19th September, and after sorting out visas we flew off to Biratnagar and started to arrange for the main part of the expedition. By flying into Tumlingtar we saved a considerable amount of shoe leather and, perhaps more important, time. I was eager to get up into the temperate zones and this time intended to follow the Milke Danda, a long mountain ridge which led up towards Topke Gola. My previous trip to Topke Gola had been by way of the Tamur river. Dave, Roy and myself said farewell to John and Martin, who headed West collecting cereal crops in the villages of the foothills. The monsoon was still with us, even though it was now the end of September; however, the weather was improving daily. To get onto the Milke Danda ridge we had to climb up through forests of mixed deciduous trees; at 9,000 ft. we entered the rhododendron zone. First to appear was *R. arboreum*, followed by *R. thomsonii*, *R. cinnabarinum* and *R. barbatum*, while at 10,000 ft. *R. campanulatum* and *R. campylocarpum* dominated the hillsides. At 12,000 ft. we came upon open moorland and, covering the rocks, we found *Polygonum emodi*; this plant with its woody stems formed dense carpets and had red flower spikes. We camped in an alpine meadow which was studded with blue gentians; two species were present and both were equally abundant growing in the short turf. One was *Gentiana prolata*, a small plant 2-3 inches high with short prostrate stems, each bearing 2 or 3 blue flowers with darker blue stripes on the outside of the corolla. *G. sikkimensis* was the other plant, again only two inches in height, but having short upright stems with a terminal cluster of tubular blue flowers. Gentians quickly set seed after flowering and we were able to collect seed from both these species. The yellow bracted *Euphorbia wallichii*, which I had previously seen flowering on the Lumbasumba Himal, near Thudam, was plentiful here; the leaves had turned a wonderful autumnal orange colour, making it, to my mind, a very desirable plant.

The journey along this ridge took longer than I had anticipated.

as we ran into unexpected early snow falls at 14,000 ft.; this meant that we couldn't find the track and as none of the party had been this way before we had to wait until the snow melted each morning before starting off again.

Finally we arrived at Topke Gola and set up camp in the same spot which I had picked before; the whole area had by now changed colour; it was certainly autumn. The wooded valley below Topke Gola was alive with colour, yellows and browns, of countless numbers of birch, maple and sorbus. The alpine meadow where we camped was dry and brown; the formerly bold clumps of *Primula strumosa* were just a mass of withering leaves.

I revisited the alpine screes and saw that not all the plants had finished flowering, as we were soon to find out. In the loose shifting scree we found the delightful slate-blue *Delphinium glaciale*; it is a small, almost prostrate plant with rather large flowers; but unfortunately there was no ripe seed on it. A very unusual composite grew here, *Soroseris pumila*; its inflorescence consisted of a dome of yellow florets surrounded by a rosette of brownish leaves. It appeared to be resting on the ground but closer inspection revealed it to have a three-inch stem coming up through the stones. The fluffy *Saussurea gossipiphora* still looked the same as it had done three months ago, but on opening it up I found that it had set seed. A small campion, probably *Lychnis inflata*, was plentiful and we were able to gather a large quantity of seed from it. Unfortunately most of the primulas had already dropped their seed; the exceptions were *P. sikkimensis* var. *hopeana* and *P. macrophylla* var. *macrocarpa*.

From Topke Gola we again used yak to cross the pass to Thudam; on the pass Roy and I set up camp near to where I had previously spent several days collecting. This time the snow line was much lower and plants I had marked at over 15,000 ft. were covered with a white mantle. We did, however, collect *Meconopsis horridula*, and after picking off several capsules one realizes it is aptly named, for the tiny prickly bristles stick into one's fingers, setting up a slight irritation. A plant well protected from the harsh conditions was *Eriophytum wallichianum*, which is a dwarf plant of some four inches high, with white woolly stems and leaves, and conspicuous bracts; unfortunately only a little seed was procured. Amongst stones near the Syamjung Khola, which runs down into Thudam, we came across *Waldeima glabra*, a prostrate perennial with fleshy leaves; its composite inflorescence of yellow disc and purple ray florets made it stand out against

the grey stones.

We pitched tent on the campsite at Thudam that I had used before; instead of being wet as it had been in the summer, it was now bone dry. The weather was crystal clear and at night we had heavy frosts. The seed, which we had collected in cotton bags, was hung out every day in the sunshine to dry.

From Thudam we made an excursion up the Lhesa Khola towards the Tibetan border. The track led gently up through mixed woods of *Abies spectabilis* and *Betula utilis* with its lovely peeling bark, then levelled out into a broad U-shaped valley where we camped. The seed heads of *Fritillaria cirrhosa* were scattered around in between the boulders. On the hillsides the large Cambridge-Blue flowers of *Gentiana ornata* were a common sight. The Lhesa Khola, which at 15,000 ft. is a mere stream with icy cold water, meanders slowly through this glacial valley; in places small islands of scrub existed. Here *Myricaria rosea* formed low mounds and its plumose foliage had turned a deep red. *Hippophae tibetica* grew here also; although not in flower nor leaf its grey spiny branches were easily recognised. The dwarf rhododendrons, which grow like heather in the Scottish highlands, mainly consisted of *R. setosum* and *R. anthopon*, but here a third species was present, *R. nivale*. This only grew to six inches high and formed a neat mound of tangled stems; the leaves and shoots are reddish in colour and very scaly. We camped within a mile of the Tibetan border and next day, as we were returning to Thudam, we passed a caravan of yak crossing into Tibet.

From Thudam we were anxious to reach the Barun and Iswa Kholas before the onset of winter. This time we took the trail down the river, passing through thickly wooded areas and steep gorges, until we came to the village of Chyamtang at 8,000 ft. Here the whole hillsides are terraced with millet, maize and barley; only occasionally do stands of *Pinus wallichiana* break up the landscape. We travelled through this type of countryside for several days until we reached the village of Hatia, at 5,800 ft. Here we despatched several loads of seed and equipment down the Arun valley to Sedua, while we went into the Barun with the intention of visiting the Iswa, and then calling at Sedua on our way out.

Leaving the hot, dry, cultivated slopes of Hatia we walked up through a thick forest where orchids and epiphytic ferns hung from the trees; the vegetation under this thick canopy consisted mainly of a fleshy *Impatiens* species and a large leaved *Laportea sp.* with a green

 Fig. 66—*Meconopsis horridula* Photo—L. W. Beer ▷

Fig. 64—*Primula strumosa* Photo—L. W. Beer

Fig. 65—*Fritillaria cirrhosa* Photo—L. W. Beer

△ Fig. 67—*Leontopodium monocephalum* Photo—L. W. Beer

▽ Fig. 68—*Potentilla sp.* Photo—L. W. Beer

△ Fig. 69—*Cassiope fastiagata* Photo—L. W. Beer

▽ Fig. 70—At 16,000 ft. in the Lhesa Khola Photo—L. W. Beer

pendulous inflorescence and coarsely-toothed palmate leaves covered with stinging hairs. We traversed several small ridges and crossed fast-flowing rivers by precarious bamboo bridges, all the time gradually climbing higher; soon thickets of bamboo appeared, then the rhododendrons, and finally, after crossing a rocky crest, we found ourselves in the Barun Khola. At this point we could see some distance up the valley, which was very rocky and sloped steeply up towards the gigantic snow peaks of the Makalu Massif.

As we left the trees we found *Ilex intricata*, a small evergreen holly with bright red berries, forming dense low thickets; this could be a useful plant for ground cover in cultivation as it appears not to grow more than two feet high. On the rock outcrops *Gaultheria nummularia* sprawled and hung down over the faces, with its small black fruits hidden beneath the leaves. The red succulent fruits of *Rubus nepalensis* were abundant; this procumbent plant has trifoliate leaves and white nodding flowers borne singly on short stalks; we stopped to collect the seed. Frequently, if a plant was abundant in a particular area, as this rubus was, we got the sherpas and porters to help in collecting a large quantity of seed, but in the case of this species they were more content to eat the fruits than to put them in the bag. They were also partial to the rather nice berried *Gaultheria semi-infera* which formed dense low-growing thickets; this plant had dark glossy leaves and bore clusters of light blue fruits. Here again, *Myricaria rosea* was common in its reddish autumn hue.

It was now late November; snow had fallen and it was pretty obvious that an attempt to cross into the Iswa Khola was out of the question. Both Roy and Dave were upset, but I couldn't risk climbing the gully I had been up before or even traversing those treacherous cliff faces in the Iswa with the extra hazard of snow to contend with. It was also probable that once in the Iswa we may have been cut off. In addition to these factors it was also getting late in the season, and most plants, if not under snow, would have already shed their seed. This was a great disappointment to me as several plants I had marked in the Iswa would have been interesting introductions, including two yellow saxifrages which appear, from herbarium material, to be new species. So from the Barun we climbed, a little disheartened, up into the Kasuwa Khola where we made valuable collections of rhododendrons; two of interest to the alpine enthusiast were *R. pumilum* and the epiphytic *R. vaccinioides*.

The beginning of December saw us back at the sherpa village of

Sedua, where we were re-united with the rest of our material and expedition equipment. We took the opportunity to stay here for a couple of days to sort out and dry our seed harvest, then we started on the 'walk-out' down the Arun valley to Dharan, from where we flew back to Kathmandu, to be met by John and Martin who had gathered an equally rewarding seedharvest from the cereal crops in the foothills.

But our problems were not over; whilst we were in the hills India and Pakistan had gone to war and we had great difficulty in leaving Nepal by air. We were inevitably parted from our seed, which went air freight, but it eventually arrived safely at Heathrow in good condition. We ourselves just made it back to England in time for Christmas.

The Horticultural part of the expedition made 401 different seed collections from plants which we thought worthy of being cultivated. All our seed collections have the prefix B.L.M., Beer, Lancaster and Morris, and in the majority of cases a voucher herbarium specimen has been deposited in the British Natural History Museum, London. I would here like to record my thanks to Mr. L. H. J. Williams of the British Museum, for all the advice he has given us, and for identifying the specimens which we brought back.

Reports coming in suggest that germination of our seed was good, and I sincerely hope that we will see some of the plants on the show benches in the not too distant future.

A Lewisia native in Mexico and Guatemala

by BRUCE MACBRYDE, Ph.D.;
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THE CONTINUALLY popular genus *Lewisia* is not usually considered as extending as far to the south as Central America. Yet about one hundred years ago Osbert Salvin first collected a new species of this group from the subalpine of Volcán de Fuego in south-central Guatemala, about twelve miles to the southwest of the town of Antigua. However, from the original collection deposited in the Herbarium at Kew, in 1879 the English botanist William Botting Hemsley described

the plant as a new species of *Calandrinia.*

The circumscissile fruit of the species indicates that it is in fact a *Lewisia*; the official transfer and nomenclatural history of the species are provided below:

Lewisia megarhiza (Hemsley) MacBryde, comb. nov.

Calandrinia megarhiza Hemsley, Diagn. Pl. Nov. 23, 1879. Guatemala: (Sacatepéquez-Chimaltenango border): Volcán de Fuego, alt. 11,000-12,000 ft., *Salvin s.n.*; holotypus K, n.v.

Claytonia megarhiza (Hemsley) Kuntze, Rev. Gen. Pl. 1: 57, 1891; non eadem (Gray) Parry ex Watson, Bibliogr. Index N. Amer. Bot. 1: 118, 1878 [Smithsonian Misc. Collect. 15 (258)].

Oreobroma mexicanum Rydberg, N. Amer. Fl. 21: 326, 1932. México: (Puebla or Veracruz): Pico de Orizaba, 25-26 July 1901, *Rose & Hay 5769*; holotypus US 395556, n.v.

Calandrinia mexicana (Rydberg) Pax & K. Hoffmann in Engler & Prantl, Nat. Pflanzenfam. ed. 2, 16c: 251, 1934.

Lewisia mexicana (Rydberg) Clay, Present-Day Rock Garden, xx, 341, 1937.

Oreobroma megarhizum (Hemsley) Standley & Steyermark, Publ. Field Mus. Nat. Hist., Bot. Ser. 23: 49, 1944.

It is curious that the plants collected by Salvin should have to wait so long for proper classification. Paul C. Standley and Julian A. Steyermark recognized the botanical affinities of the species when they called it an *Oreobroma* in 1944, and they correctly listed *O. mexicanum* as a synonym. But they probably were not aware that Sampson Clay had already transferred Per Axel Rydberg's species to *Lewisia* seven years earlier. Or perhaps they wished to maintain the now obsolete genus *Oreobroma,* which had been described by Thomas J. Howell in 1893 and already thought to be not distinct from *Lewisia* by Katherine Brandegee in 1894.

To further complicate the picture, Rydberg appears to have been ignorant of Hemsley's species when he revised the Portulacaceae of North America in 1932, for he did not mention the Guatemalan species described fifty-three years previously, even though Hemsley had also included it in his volume *Botany* 1: 80, 1879 of the extensive zoological and botanical work edited by F. Ducane Godman and O. Salvin, the *Biologia Centrali-Americana.* Thus Standley and Steyermark were the first to recognize that *Calandrinia megarhiza* and *Oreobroma mexicanum* are the same species, and now ninety-four years after its discovery Hemsley's species is finally placed in *Lewisia* in accordance with the

International Code of Botanical Nomenclature.

Lewisia megarhiza is most similar to the *L. pygmaea* group. In addition to the localities of the type collections, it is also known from the mountains Nevado de Toluca, Ixtacihuatl and Volcán Popocatépetl in south-central México, at elevations above 10,000 feet. The following key (based on specimens in the Herbarium of the Missouri Botanical Garden), is provided as a tentative method for distinguishing the taxa.

Differential *Lewisia* Key

Taproot simple to little-branched, cylindrical to conical, often to 10 cm long, 5-15 mm thick; bracts narrowly linear, 10-25 mm long; sepals elliptic-lanceolate, never glandular, 6-7 mm long; stamens about 5 or 6; stigmas 3 . . . . . *L. megarhiza.*

Root simple to branched (sometimes fascicled), turnip-shaped to carrot-shaped, mostly 1.5-6 cm long, 5-20 mm thick; bracts lanceolate, 3-15(-18) mm long; sepals ovate, often glandular (2.5-)4-10 mm long; stamens 4-12; stigmas 3-6 . . . . . *L. pygmaea* group.

It can be seen that *Lewisia megarhiza* is rather close to the *L. pygmaea* group, which may be of value in improving the stock of cultivated material. The number of chromosomes is also similar: *L. megarhiza*, n=34 (Amer. J. Bot. 49: 42, 1962) and *L. pygmaea*, n=ca 33 (Bot. Not. 115: 462, 1962). As Roy C. Elliott has so aptly stated for *L. pygmaea*: "it is highly variable and therefore well worth growing and selecting" (Bull. Alpine Gard. Soc. Gr. Brit. 34: 74, 1966). *Lewisia megarhiza* is the most southern *Lewisia* now known, and appears to be a disjunct which has retreated to the cooler environment of the high mountains in the subtropics, but retains a close relationship to the widespread *L. pygmaea* of western North America, which seems not to extend south beyond northern Arizona and New Mexico U.S.A.

It is to be hoped that this article, which adds another species to Roy Elliott's informative horticultural monograph on *The Genus Lewisia*, will whet some reader's interest to the extent that he will make some of the studies needed to further our inadequate knowledge of this botanically complex and horticulturally rich group. We may readily agree with A. W. Anderson (*The Coming of the Flowers*, p. 177, 1950), that indeed the lewisias are "a race of hardy mountaineers from the alpine heights . . . [and] have been hailed as America's greatest gift to the rock garden."

Automatic Watering

by Dr. HENRY TOD, F.R.S.E., S.H.M.

(i) SEED RAISING

WATERING is one of the principal troubles which beset gardeners who are "in jobs", and especially those whose hours and length of days are erratic. This problem is perhaps at its worst in seed-raising where a few hours of dryness may—and generally does—mean the loss of a whole crop of seedlings.

Accordingly when the National Institute of Agricultural Engineering published (1) its method for capillary watering, it seemed worth while to try it out in seed-raising in a suitably modified form. The writer has in past years advocated the use of perspex boxes for seed-raising as a development of the "closed-box" described by Hanger (2). The writer's method has, however, differed in using a box with a hinged lid, John Innes Seed Compost and drainage holes in the box.

The technique proposed here adds to this the use of a modified N.I.A.E. Capillary Watering Bench consisting basically of a tray two inches deep, three-quarters filled with sand. A constant-level cistern was fitted to the tray and this, coupled to the mains water supply, kept a constant level of half an inch of water in the tray and hence in the sand (see fig. 73).

The boxes, about $4\frac{1}{2}$ ins. $\times$ 3 ins. $\times$ $1\frac{1}{2}$ ins. deep, had either three or five holes of $\frac{1}{4}$ in. diameter bored in the bottom. A pad of fibre-glass ("Cosywrap" pipe lagging 3 ins. wide split in half longitudinally* is suitable; this gives two thin pads, 3 ins. $\times$ 4 ins. by half-thickness) was placed over the drainage holes, the box was filled to about 1 in. depth with J.I.S.C. pressed firmly down, and the seed sown on the surface, with a very fine film of fungicidal seed-dressing blown over it. This may not have been necessary, but as it was mostly wild-collected seed in this trial it seemed advisable. It was then covered with a thin layer of $\frac{1}{8}$ in. fine gravel (No. 8 Tay Sand) to discourage moss growth, and the bases of the boxes worked hard down into the sand in the trays.

When all the boxes were in position, the lids were opened fully and the surface was thoroughly sprayed twice at a two-hourly interval with the finest of mist-sprays to establish capillary contact between the J.I.S.C. in the boxes and the damp sand in the tray below.

*See note on p. 299 on the use of sphagnum instead of fibre-glass.

In practice it was found that in the dull, damp weather at the time of the trial conditions were too close and wet with the lids of the boxes closed down tightly. To avoid this, wires were laid across the boxes to keep the lids open in a crack. This meant that the surface of the fine gravel was just dry, while the compost below was suitably moist. The trays were housed in a loosely-constructed "frame" which allowed free circulation of air and access of light, but prevented the trays being flooded by rain (see fig. 74).

As soon as free germination occurred the lids were lifted to a vertical position so that the seedlings were not drawn in any way. Subsequently, the lids were actually detached (which was possible in the boxes used without moving the box and breaking capillary contact) so that there was no possibility of a shadow being thrown by the raised lids. The seedlings were pricked out in the normal way and treated as usual. A very wide range of seeds were germinated by this method, ranging from wet-temperate zone seeds (Europe) to arid-hot material from the Nevada desert, and all seem to have responded equally satisfactorily.

The trays were obtained from Messrs. Young & Wild (Shaw) Ltd., Shaw, Lancs., and the constant-level cisterns were fitted by Messrs. Findlay Irvine, Ltd., of Penicuik. The sand used was Grant's Levenseat No. 13 sand, which complies with the N.I.A.E. specification.

References:

(1) M.A.F.F. Leaflet STL/16, Jour. Agric. Eng. Res. 1962 : 7 : 42 (D. A. Wells).

(2) Hanger, F. W. Rhodo. Year Book 1953 : 7 : 97.

(ii) THE ALPINE FRAME

IN THE first part of this investigation, the method used was based on the N.I.A.E. capillary watering bench and it was employed in seed-raising (1). At about the same time as the N.I.A.E. method was introduced, or slightly later, an alternative method was introduced by L. C. Chilcott, Parks Manager for the Borough of Wembley, and produced commercially by the Key-Lutor Company, Ltd. This equipment depends on the use of control valves which regulate the water flow into sand held in trays or on benches, using capillary contact between the sand on the bench, sand in the outside sleeve of the valve, and the water in the inner sleeve. The water-level is controlled by a float, the position of which can be adjusted by a screw which can be seen in

fig. 75. The water is supplied at a constant head by a small cistern situated above the level of the sand-tray (fig. 76).

The trial was carried out first in a Pluie Major frame, one end of which was left permanently open. The frame was supported on a brick base for convenience, the trays resting on angle iron set into the brickwork. A small supporting "tower" was added to hold the cistern, the feed to the latter being from the mains through a ball-cock. Subsequently a similar set of equipment was installed in a small greenhouse and used as an alpine house, Humex "Ventmaster" controls being fitted to the ventilators (top and side).

The sand used was the same, Grant's Levenseat No. 13, as described in the first part of this study. The plants were grown in plastic "Polypots." The use of plastic pots was recommended by Chilcott (2) in his circular issued at the 1963 Chelsea Show, where the writer first saw this technique and had the opportunity of discussing it with Mr. Chilcott. The pots used in the demonstration and recommended in the circular were "Leda" pots, but as the writer was already using Polypots these were used instead. As the trial in the alpine house has only been running for several months, this report is confined to the results obtained in the frame. The findings for the alpine house will be given in a later communication.

In the first part (i) of this study mention was made of the use of fibre-glass pads over the drainage holes of the boxes; this turned out to be rather unsatisfactory as the roots of the seedlings penetrated the fibre-glass pad and tended to be torn on pricking out. The modification recommended is to use a pad of chopped sphagnum moss, made by placing the damp chopped sphagnum on perforated zinc under a light weight and allowing it to dry. This gives a thin, compact pad of sphagnum which can then be cut with scissors to the required size to prevent the compost from blocking the drainage holes. This has proved to be much more satisfactory for the seed-boxes and will be used in future for potting—the initial potting done for this study was with fibre-glass pads, which may well lead to difficulties when potting-on is required.

The plants were potted up in the plastic pots using John Innes composts, in some cases with the addition of coarse sand to improve aeration. The pots were then "screwed down" into the sand so that the base was about half-an-inch below the level of the sand surface. The pots were then watered freely from the top to establish capillary contact with the damp sand, and thereafter the moisture required to

keep the compost suitably moist (at approximately field-capacity) was absorbed from the sand by the capillary fringe.

All the bulbs, corms and tubers from the Bowles Expedition were potted up in J.I. No. 1 with added sand as recommended by Matthew, and kept in the frame. They grew on well and many of them flowered freely very early in the spring. On a number of occasions the pots were frozen hard onto the sand.

The remaining plants of the writer's own collecting in the Rocky Mountains were potted up and grown on in the frames. These ranged from *Aquilegia jonesii* through Saxifrages and bulbs to a shrubby Potentilla and all have grown well. Some young plants of *Anarthrophyllum desideratum* have formed tough, extremely spiny bushes and are growing beside *Sisyrinchium depauperatum* (which is flowering freely at the time of writing) and *Perezia megalantha*. These plants were raised from seed collected by Mrs. Tweedie in Patagonia. Seedling Dionysias and Primulas from the Furse Expedition are also growing strongly and looking very healthy.

The only serious problem seems to be the very free growth of mosses on the soil surface, this being a major problem with any plants in pots in this garden, under whatever regime they are grown. A heavy dressing of fine, sharp gravel on the surface of the compost seems to minimise this, however.

To summarise, the method of sub-irrigation or capillary watering has proved, so far, to be successful in seed-raising and growing a fairly wide range of rock-garden plants in pots in the alpine frame.

The valve equipment, cisterns, etc., were obtained from the Key-Lutor Co., Ltd., the trays from Young & Wild, Ltd., the sand from Grant of West Calder, and the Polypots from Horticultural Research, Ltd.

References:

(1) Tod, Henry. Journal, S.R.G. Club.
(2) Chilcott, L. C. Borough of Wembley Parks Department Circular, Chelsea Show, 1963, and personal communication.

(iii) The Alpine House

In the second section of these notes it was stated that automatic watering had been installed in the Alpine House and that the results would be given later—this, nine years later, is the report. As stated, the installation was completed using trays from Messrs. Young & Wild

(Shaw) Ltd., water-control equipment from the Key-Lutor Co. Ltd., and Levenseat sand from Grant of West Calder.

After some years various troubles developed. First the sand began to break down and to develop copious growths of algae and mosses. It was replaced with coarse Tay sand, the surface being treated with Panasand to control such growths. Next the water-level control began to behave erratically, sometimes flooding and sometimes going dry. On stripping down the benches to check the valves it was found that the floats were embedded in a mesh of roots from adjacent plants; after several such occurrences the control equipment was replaced with Nethergreen controls, which are located *outside* the bench and not in the middle of it. (It appears from the drawings in the Press that in more recent Key-Lutor equipment the control unit is likewise outside the bench). With the Nethergreen set a tube passes from the control valve through the side of the tray into a layer of gravel underlying the sand layer and, as yet, after two years or so of use, no trouble has developed. A useful point is that it is easy to adjust the water level by moving the control unit up or down on the slide adjustment fastened to the bench beside the tray.

There is one critically important point which must be stressed. All the tubing involved in the water supply MUST be black and totally opaque and the cistern similarly must have a light-tight lid. If these points are not attended to, algae will grow in the water and will ultimately choke the valves and floats.

As a footnote to the first section of these notes, on seed-raising, it should be mentioned that the perspex boxes are no longer available. They have been replaced by "disposable" polystyrene drinking cups with a drainage hole through the base as seen in fig. 77, where the Nethergreen control is seen also.

Results have been satisfactory, plants ranging from Pleiones through Cyclamen and dwarf shrubs to desert Oenotheras having grown well and flowered freely (fig. 78). The automation is completed with roof and side ventilators controlled by Humex Ventmasters (non-electric) which have proved to be satisfactory in operation.

Editorial Note: The parts of this article on Seed Raising and the Alpine Frame are reprinted from the *Journals* of September 1963 and September 1964.

Plants of the Alpine Woods

by HELEN DALES

SOME of the loveliest plants in our gardens have their origin in the alpine woods and when we are about to plant them in our British gardens we ask ourselves how we can provide conditions to suit them, for it is our aim to site them so as to keep them "in character" and make them look at home. As in the case of true alpines, we may learn much about them from books—better, we may see them growing in Botanic Gardens, but best of all, we may study them in their native habitats and find out at first hand just what makes them what they are.

Apart from what animals, especially Man, have done to influence vegetation, the main factors which determine the habit of these plants are climatic and edaphic, that is, the combined effects of temperature, light, water supply, drainage and wind, together with the nature of the soil.

As regards temperature, the further one is away from the Equator the lower the temperature. Similarly, the higher one is on a mountain the further the temperature drops. A diagram (fig. 79) makes, no doubt, simplification, but presents the basic idea.

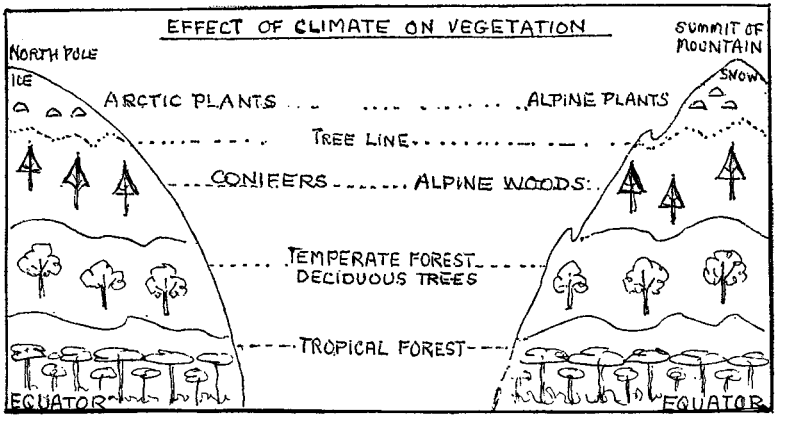


Fig 79

At the Equator the temperature is high more or less the year round, producing the lush vegetation of the tropics. Further north and further up the mountain is the temperate zone. As the latitude on the one hand, and the height on the other, increases, one comes to conifers and alpine woods, then to the limit beyond which trees will not grow and there plants are dwarfed by the combined effects of low temperature, exposure to light and to the drying and cooling action of the wind. These conditions obtain in both arctic and alpine regions. There the growing season is short. Plants in winter are covered with snow but they are thereby protected—light can penetrate and when the snow recedes, the flower buds are ready to open.

Plants in the alpine woods though at a lower level, below the tree line, also have a short season. They too are under snow in winter, but they have more shade and are often in damper soil, where water from snow melting in the higher reaches makes its way down the mountainside. Even those which grow in open clearings like Trollius, have some protection from wind and have more moisture than the plants of the bare mountain. So these plants of the alpine woods are generally taller and more lax in habit and when grown in our British gardens suit the damper and less sunny parts of the rock garden or border, whereas the true alpines are more suited to the pockets, ledges and screes of the drier and more exposed rock-work.

As to the soil, there are alpine woods where the rocks are of granite, sandstone, schist or gneiss, producing soils which are acid, rich in humus but poor in nutritives, and there are alpine woods where the rocks are of limestone, especially magnesian limestone or dolomite, making a soil which is alkaline and rich in plant food. Each has its characteristic flora with plants which are either lime-loving or lime-hating, together with some plants which seem to be more or less tolerant of either condition.

Walks in these alpine woods are a joy. One may choose an alpine wood in certain parts of the Alps where the soil is acid. There the undergrowth is calcifuge, and, if the wood is sufficiently open, characteristic plants are the bilberry (*Vaccinium myrtillus*) and the cowberry (*Vaccinium vitis-idaea*), both familiar in Britain. In these woods in the Alps one is likely to find the alpenrose (*Rhododendron ferrugineum*), and occasionally in a clear space *Linnaea borealis* (fig. 80), in moss amongst conifers. There are likely to be clubmosses (*Lycopodium spp.*), beech fern (*Thelypteris phegopteris*), and woodrushes (*Luzula spp.*), while occasionally, especially in pine woods, one may find the creeping lady's tresses (*Goodyera repens*).

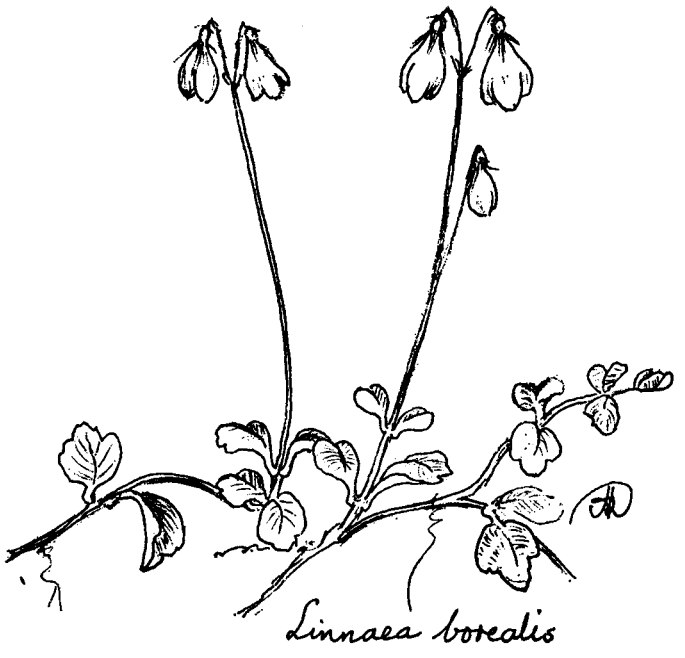


Fig. 80

Limestone is generally much richer in plant species than acid rock and more rewarding accordingly is a sojourn in the alpine woods of the Dolomites, where the limestone consists mainly of the carbonates of calcium and magnesium. Here one finds lime-loving plants. The rhododendron here is the hairy alpenrose (*Rhododendron hirsutum*). Under partial shade of the trees one may find various daphnes, *Daphne striata*, a straggling semi-prostrate shrub, the more upright *Daphne mezereum*, and at the edge of the wood amongst grass, the garland flower, *Daphne cneorum*. The shrubby milkwort (*Polygala chamaebuxus*) is found here, branching amongst other shrubs, and the dwarf alpenrose (*Rhodothamnus chamaecistus*), one of the greatest treasures will sometimes appear. A picture remains in my memory of a clearing in the wood where beside a boulder there was a mountain pine (*Pinus mugo*). Amongst the stones at its foot grew a patch of *Dryas octopetala*. *Erica carnea*, the heather of the limestone, was here, with Rhodothamnus and *Polygala chamaebuxus*. On a rock nearby was a patch

of Globularia and in a damp spot there were plants of the alpine butterwort (*Pinguicula alpina*). In a denser part of the wood among conifers one may find the bushy *Sorbus chamaemespilus*, while the atragene

Fig. 81

(*Clematis alpina*) (fig. 81) scrambles through spruce and shrubs. A really damp open spot is the place for the birdseye primrose (*Primula farinosa*) (fig. 82) and in a large damp clearing one may find the globe flower (*Trollius europaeus*) in drifts in deep humus. Here and there, in damp places too, in or at the edge of the wood, one may see the willow-leaved gentian (*Gentiana asclepiadia*).

Most of these lime-loving plants appear to be growing in some degree of peat or humus which has collected over the limestone rather than on the bare rock. One may even find plants characteristic of acid soils growing in these places, especially if they are shallow-rooted or if the peat is sufficiently deep. This may account for the occasional appearance of *Rhododendron ferrugineum* near *Rhododendron hirsutum* and may explain why *Vaccinium myrtillus* and *Vaccinium vitis-idaea* are sometimes here too.

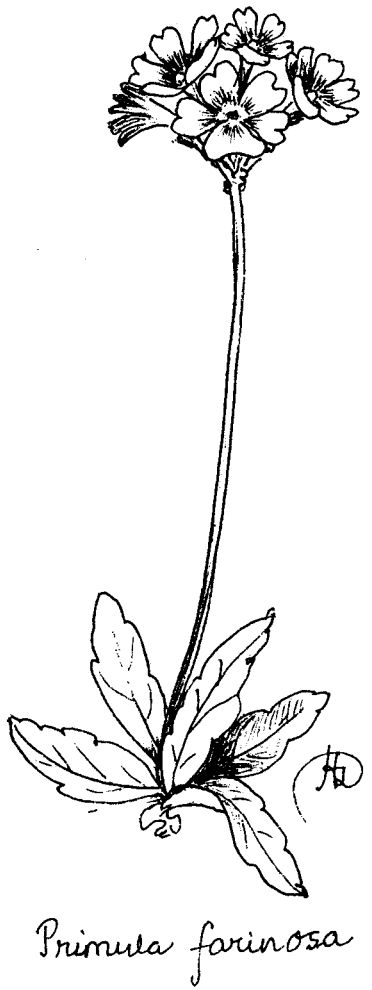


Fig. 82

Seeing these plants in their native habitat may help us to know how to grow them in our gardens. If there is no lime in the soil the growing of ericaceous plants presents few problems. Even *Erica carnea* and its garden derivatives will grow quite happily in acid peat, but is useful in a garden which has lime in the soil. *Dryas octopetala* will grow in a peaty place in the rock garden, but in my garden with

acid soil, I find that it has flowered better with limestone buried underneath. Perhaps in the case of lime-loving plants, peat over lime is the answer. These are just observations made on walks in alpine woods. The question seems tremendously complicated and needs the help of soil chemists and physiologists.

★ ★ ★

While it is desirable to have some of these lovely plants in our gardens, it is important to consider the question of conservation, to avoid the depredation of species. Some wise governments in various parts of the world, notably Switzerland, have declared protected areas in their countries, where no plants at all may be collected. On the other hand, Israel has declared certain plants as prohibited throughout the territory. In Israel there are certain plants which may not be uprooted or even the flowers picked. "Don't pick! Don't uproot! Don't buy them! Don't sell them!" declares their illustrated posters. Another Israeli poster says it is permitted to pick a few flowers of certain plants—those which are relatively common. These laws are reasonable and obviously must be observed.

It is a joy to have in one's garden souvenirs to remind one of holidays abroad, but rather than bringing in even permitted species I now think that one often has more success and better plants gardenwise, by growing them from seed or by buying them from nurseries in this country where they have been raised, as these plants are probably more acclimatised to our local conditions.

Rock Gardening 'from the ground up' - X

by Dr. HENRY TOD, F.R.S.E., S.H.M.

UP TO this point we have been considering the construction of rock gardens, possible variations under differing conditions of site, style, lay-out and so on, but always in the open ground and under "natural" conditions. Rock garden plants can, however, be grown in "protected" conditions in an alpine house, a frame or a plunge. Many people think, quite erroneously, that to grow really top quality plants

one must have an alpine house, that this makes it easier to do so, and that on a less expensive scale an alpine frame has the same benefits. The views expressed here are entirely my own, based on many years of observation and experience, and I am well aware that many will disagree in whole or in part—hence this disclaimer.

I maintain that to grow plants really well in a frame and/or a house is very much more difficult than to grow them in the open with, naturally, some exceptions which we will come to later. There are a number of possible methods which can be employed: clay pots or plastic pots; pots standing on slatted benches, on gravel or on sand; pots with their bases only on, or in the sand or gravel or else plunged to, or nearly to, the rim; plants in double pots, the outer one filled with sand and only the sand watered; plants hand-watered individually or water by sub-irrigation en masse; plants grown outside in pots in an ash, sand or peat plunge and brought into the house for flowering or living permanently under glass; a completely unheated and very fully ventilated house or one kept just frost-free but also freely ventilated; and finally, plants grown in an actual rock garden built in an alpine house, or in level beds made up in one. Whichever or how many of these methods in combination are used, very obviously they involve infinitely more individual personal care than growing in the open. A few days missed may cause havoc except with one or two self-maintaining methods which will be considered later.

For the beginner probably the simplest way is to select a site near the alpine house or frame, as free from shadow or shelter as possible, and dig out a rectangular hole about eighteen inches to two feet deep; line this with properly built brick walls and continue these walls to, say, three courses above ground level. Make quite sure that the soil at the base inside is free of any roots of perennial weeds and then fill it up to about ground level with boiler ash (if it can be obtained) or else fairly rough sand or peat. This is the plunge frame and the plants in their pots (clays are best for this) are plunged to their rims in it and, after a preliminary watering, can be left to grow on naturally in the open. When flowering time approaches they can be lifted and moved into the alpine house where they can flower without risk of damage from wind, rain or mud-splashing. After flowering they are returned to the plunge to be replaced by the next to flower, and so on. This was, I think, the earliest method of alpine house culture and the next development was to provide the plunge with detachable "lights" which could be fixed at any angle from just below the hori-

△ Fig. 71—*Saxifraga brunoniana* Photo—L. W. Beer

▽ Fig. 72—In the Kasuwa Khola Photo—L. W. Beer

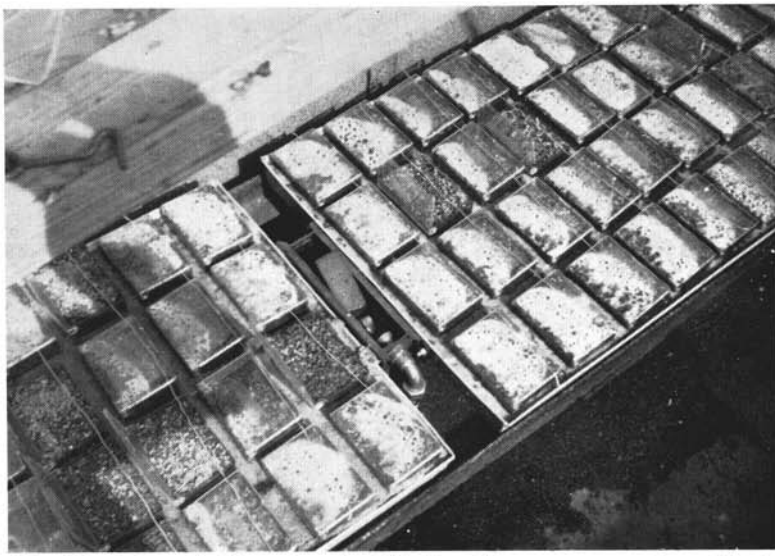


Fig. 73—Automatic Watering—Seed Raising (1) Photo—H. Tod

Fig. 74—Automatic Watering—Seed Raising (2) Photo—H. Tod

Fig. 75—Automatic Watering Photo—H. Tod

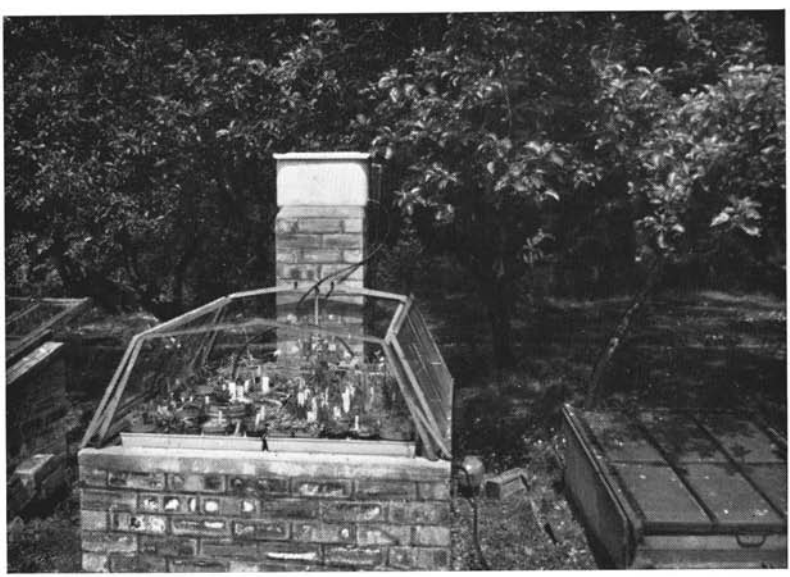


Fig. 76—Automatic Watering Photo—H. Tod

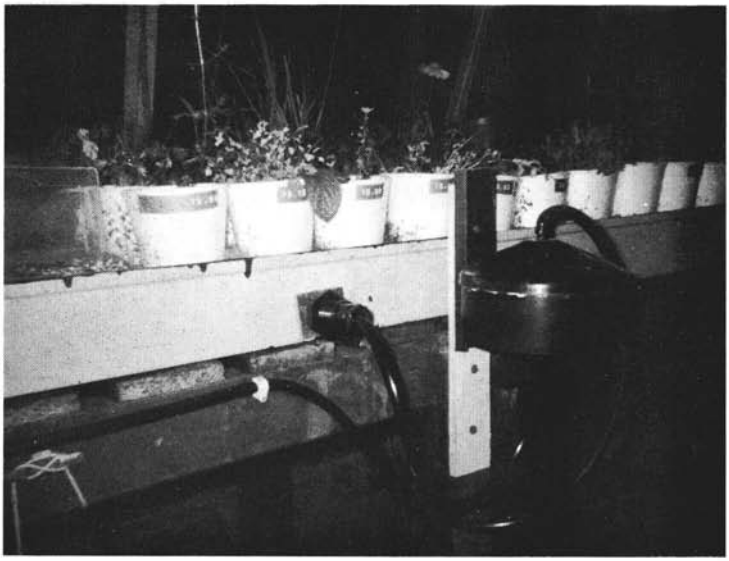


Fig. 77—Nethergreen control Photo—M. E. Tod

Fig. 78—Growing Plants Photo—M. E. Tod

zontal, giving total protection, to vertical, giving none.

In those earlier days the main objective was to grow, flower and keep alive in increasing size those awkward plants like the Aretian Androsaces and the Drabas that make such superb cushions and under the right conditions can literally cover themselves with flowers. They are completely hardy but do not like the clinging damp of our winters; in some parts of the country they will live well enough in the open scree or in a wall, but more usually they tend to rot away. In alpine house or frame conditions protection from overhead damp can be provided and they can, with due care and attention, grow outstandingly well.

The clay versus plastic pot controversy hinges on the fact of the totally different water regimes required. If the pots are to be plunged either indoors or out it must be remembered that the wall of a plastic pot is impervious, i.e. water cannot move *through* it, while with a clay pot wet compost can lose water through the wall and dry compost can absorb moisture from damp plunging material. This means that the compost in a plunged *clay* pot will tend to reach a moisture equilibrium with the plunging material and so be "buffered" against extreme wetness or dryness. This does not apply with a plastic pot where the movement is *only* through the hole(s) in the base. Conversely a plastic pot watered from the top only loses water from the top surface of the compost by evaporation and through the base by gravity drainage. The result is that plants in plastic pots need less watering than those in clays. This loss of water through the wall of a clay pot makes it much less suitable for sub-irrigation watering as the capillary uptake of water often cannot keep up with the loss of water through the wall of the pot and the compost dries out.

Probably the least time-consuming methods, apart from sub-irrigation which will be dealt with later, is keeping the pots plunged in sand-plunges made up on the alpine house benches. In this type of culture the pots can be watered either on the surface of the compost or by watering the surrounding sand and allowing the water to penetrate through the wall of the pot and the drainage hole. Separate sections can be divided off for plants requiring more and less water and in this way varying conditions can be provided.

The rock garden built *in* an alpine house really differs from the open garden only in that watering by hand must replace rain and that total overhead protection is provided. The same applies to beds made up on the staging, but both these methods differ widely from growing

in pots because root formation is normal and unrestricted so that growth may be appreciably different. In part VIII (p. 58) I mentioned the difference in growth rate and size generally between dwarf conifers grown in pots and established in the rock garden; this is a case in point.

It will be realised, I hope, by those who have read so far that a collection of plants in an alpine house requires a lot of tending and care. One outstanding grower of my acquaintance put in an hour to an hour a half each morning before leaving for business and about the same amount on his return. He had regular hours and could do this, but for anyone placed as I was personally at the time when I tried to grow plants in an alpine house it just was not feasible. My working hours were completely erratic and I had many commitments away from home of up to several days at a time. After losing some really valuable plants I realised that until I could make my house automatic I just had to give it up.

About this time the National Institute of Agricultural Engineering published its method for sub-irrigation and I tried it out for seed-raising. Later I saw Mr. Chilcott's very interesting demonstration of the "Wembley Method" for greenhouse plants at Chelsea and tried it out for the Alpine Frame. The results were good enough to make me "automate" my alpine house. I fitted automatic watering. The results of my experience of automatic watering are reported on pp. 297-301 of this *Journal.* I also fitted (non-electric) automatic control of the ventilators as well as thermostatically-controlled electric heating; I had been using this for many years, the setting being at 35°F to keep it just frost free. I have a number of plants of slightly dubious frost-hardiness and do not belong to the school who insist on absolutely no heat whatever. The roof and side ventilators are adjusted to open at 40°F so, though the purists disapprove, it is in no way a "hothouse".

After a fair amount of trouble with clay pots for the reasons given above, I went over completely to plastic pots and I find that with a very thin layer of glass-wool in the bottom of the pot and the compost directly on that, if the base of the pot is screwed down firmly into the sand and a first watering is given through the compost by surface watering, capillary connection is made and thereafter a normal moisture balance is maintained. This may be a "lazy man's alpine house", but for anyone who is busy and perhaps forgetful it *does* work and also solves the nightmare problem of holiday maintenance and attention.

Important Notices

EDINBURGH AND MIDLOTHIAN BULB AND ROCK PLANT SHOW 1974

In 1974 the Penicuik and Edinburgh Shows are, as a trial, combining to have an early Bulb and Rock Plant Show to be held on Saturday 23rd March 1974 in the Horsa Hut, the former Royal High School Buildings, where the last two Edinburgh Shows have been held.

The revised Show Schedule will have many more classes, particularly for bulbs for the rock garden, in both Sections I & II. In addition to general bulb classes there will be classes for suitable Crocus, Iris, Narcissus and Tulipa species (or hybrids).

This preliminary notice is to give Members sufficient time to plant bulbs for this Show which we hope you will support strongly with your entries.

To those who do not know the Horsa Hut there is ample parking space beside it and *no stairs*.

B.B.C. S.M. H.T.

THE SEED EXCHANGE 1973-74

Members are reminded that seed for the Seed Exchange should be sent to MISS J. HALLEY, 16 ABERCROMBIE STREET, BARNHILL, DUNDEE **so as to reach her by 31st October 1973.**

Mr. A. B. DUGUID

MEMBERS will wish to congratulate Mr. A. B. Duguid of Edrom Nurseries, on the award by the Royal Horticultural Society of the Associateship of Honour.

This award is conferred on persons of British nationality who have rendered distinguished service to horticulture in the course of their employment.

EDITOR—CHANGE OF ADDRESS

WILL members please note the new address of the Hon. Editor which is:

10 Eglinton Crescent,
Edinburgh, EH12 5DD

His Telephone number is 031-225 6102

Show Reports

DUNFERMLINE

THE Autumn Show on 22nd September looked woefully thin in the spaciousness of the Music Pavilion, Pittencrieff Park; but in spite of that some really attractive plants were on view. This thinness makes one wonder why, with a little preparation and effort, many more good plants could not have been produced to add to the competition and interest. Is it because of an end-of-season loss of enthusiasm or because by September members do not all feel like facing the trouble and travelling involved in a two-day Show?

The Challenge Cup, for 3 pans in Class 1, was won by Miss J. L. Thomson with *Erodium reichardii* fl. pl., *Lewisia cotyledon* hybrid, and *Astilbe simplicifolia.* Full marks to Mrs. B. B. Cormack for a pan of *Lycopodium selago* in Class 2—not an easy plant! Another very neat plant was *Asyneuma sp.* (A.C. & W. 2136) in Class 4. In Class 6 autumn colour was well shown by *Geranium robertianum* and *Sedum* 'Coral Carpet', a well-fruited *Gaultheria itoana* exhibited by Dr. and Mrs. J. E. G. Good was awarded the Forrest Medal.

The Peel Trophy for 3 pans of Gentians was won by Dr. and Mrs. Simson Hall with *Gg. sino-ornata,* 'Elizabeth', and x *macaulayi* seedling, the latter being awarded a Certificate of Merit. *Gg.* 'Kidbrook Seedling', 'Moonlight', and x *macaulayi* were also good. A well grown *Sedum obtusatum* and two pans of *S. hidakanum* caught the eye and an excellent pan of *Sempervivum arachnoideum* form. Class 20 produced a lovely pan of *Leucojum autumnale* and 21 a very attractive *Asplenium viride.* It pleased me to see, for the first time at a Show, a good pan of *Mentha requienii* in Class 39. Class 43, for 3 pans, produced an interesting array—*Erodium reichardii* fl. pl., *Campanula isophylla variegata, Lewisia* hybrid, *Serratula shawii, Geranium* 'Ballet Girl', *Veronica catarractae* and *Polygonum vacciniifolium.* As always at Dunfermline, many very good Sedums and Sempervivums were on view in both Sections I and III.

In the section for schoolchildren there was the usual great array of flower-paintings, some of which were quite outstanding, and the collections of wild fruits were very good and very interesting, but miniature gardens were much fewer than usual.

The thanks of Club members are due to Mr. and Mrs. Campion

and their team of helpers who did so much work for the Show, and to those exhibitors who helped so much by their entries. In retrospect it seems as if it could not have been so thin a Show after all.

J. L. MOWAT.

ABERDEEN

ONE IS left wondering at times if life and happenings proceed at normal pace without calamities and threats of dire disaster as far as Show Secretaries are concerned. If weather reports and telephone messages were to be relied upon in the week preceding the Aberdeen Show, together with the smallness of the entry, then little short of frantic calamity would attend the opening, but if the Show day dawn did not approach a summer morning in temperature, and sunshine, at least the entries were in line with previous years and indeed with the help of one or two late entrants the total exceeded that of last year. So with the aid of willing helpers, the Judges—Messrs. Lawson, Masterton and Sutherland—got under way. In spite of evidence of the long spell of dryness and hard frosts it was evident that the quality of the plants being exhibited was in keeping with the high standard normally seen and expected at Aberdeen.

The Commemorative Silver Forest Medal was awarded to A. D. Reid for *Cassiope wardii*, a quite outstanding plant, but one which hitherto has presented difficulty in propagation. The Cassiope was one of six pans which secured for this exhibitor the Aberdeen Bronze Medal and he followed up this success by taking the three pan class with excellent plants of *Gaulnettya* 'Wisley Pearl', *Vaccinium nummularia* and the wonderful blue-flowered *Lithospermum oleifolium*. Other plants noted on this bench were *Saxifraga florulenta*, *Cyclamen persicum*, and Androsace from Mr. H. Esslemont, who was successful in obtaining the Walker of Portlethen Trophy for most points in Section I. The points secured by Mr. Esslemont in this Show must constitute a record. Mrs. S. Simpson secured the Bronze Medal for heading the points in Section II. A Large Gold Medal was awarded for a well got together and presented collection of plants from Messrs. Jack Drake, Inshriach Nursery, Aviemore, whilst a Gold Medal was presented to Mrs. McMurtrie of Balbithan, Kintore, for a tastefully laid out miniature scree and plants.

Our good friends the Cruickshank Garden had an outstanding selection of shrubs and plants which secured a Certificate of Merit

endorsed by the Judges for "outstanding excellence in cultivation"—high praise indeed, but Mr. Sutherland and his assistants can take great pride in producing so many fine plants on the bench, more particularly in view of the hard weather. Looking around the benches one saw many fine plants exceptionally well grown. Mr. Crosland, fresh from his success at Edinburgh, had a Certificate of Merit for *Trillium rivale*, a most desirable plant; in another class, namely for cushion plants, he took first with *Raoulia eximia*, approaching six inches in diameter and looking very healthy. A very good pan of *Pleione pogonioides* had just failed to open its petals, but was never the less most attractive. Mr. Esslemont had some outstanding cushions of Androsace and Dionysia and also created interest with a well grown plant of *Erinacea pungens* which one seldom sees well flowered; his *Primula aureata* took the honours in the Primula class. Mr. G. A. Sinclair had many successes, some of his Lewisias and Saxifrages being very attractive. Messrs. A. D. McKelvie and D. G. Hardy caught the Judges' eye with some quite outstanding plants and they together with many others are to be congratulated in beating the most inclement weather and putting such fine plants forward.

We are due our grateful thanks for the excellent publicity provided by the *Press and Journal* and for the many willing helpers who assisted in door-keeping and many other jobs; their success was established by increased attendance and money taken at the door, together with applications for new members; such enthusiasm is what the Club is all about.

A. D. REID.

PENICUIK

THE SHOW was held as before in Eastfield School together with the Penicuik Society's Bulb and Industrial Show, and the weather was perfect, which helped to increase the attendance—the hall was packed most of the time.

The number of entries was slightly less than last year but still much higher than previous years. If, with one notable exception, there were fewer startling "highlights" than in last year's Show, the over-all standard was even higher and as one Judge remarked to me there were hardly any weak or poor entries on the benches. The exception mentioned above was the magnificent plant of *Dionysia curviflora*, which was awarded the first Centenary Forrest Medal in solid silver of the Club's 1973 Show season. It was one of a collection of Dionysias

ranging from the neat little *D. tapetodes* to the slightly blowsy and large—nearly herbaceous—*D. balsamae* exhibited as a non-competitive entry by R. J. Mitchell of St. Andrews University Botanic Garden.

The classes for bulbs and for non-Asiatic Primulas were extremely good this year, with less "blind" bulbs than there have been in recent years and likewise much more even in their development. Mr. Esslemont's fabulous and aged plant of *Primula allionii* (fig. 86) just missed being at its peak; in about a week or ten days all the leaves would have been covered by the flowers. There was a wide range of plants altogether on the benches and, for the first time, I think, there was not a single class without entries in the open section. In seven of the classes there were from six to nine entries and as the competition was so close and the standard high they provided quite a series of problems for the Judges.

Altogether this was a colourful, interesting and enjoyable Show with a satisfactorily wide distribution of firsts, seconds and thirds, no-one "sweeping the boards".

HENRY TOD

NEWCASTLE

THIS SHOW, the first organised jointly by the Alpine Garden Society and the Scottish Rock Garden Club, was held in the Ponteland Memorial Hall on 5th May 1973 when there was a fine display of quality plants in well contested classes.

The principal prize winner was the energetic Show Secretary, Mr. Eric G. Watson, who won A.G.S. Medals for six pans of rock plants, pans not to exceed 12 inches in diameter, and for six pans with a 6½ inches limitation in size, and for good measure he also received the Farrer Memorial Medal for the best plant in the Show. This was a large, very well flowered specimen of *Saxifraga cebennensis*. Noted particularly amongst Mr. Watson's exhibits were *Asperula suberosa*, *Gentiana acaulis*, *Primula aureata*, *Eritrichium nanum* and *Androsace imbricata*.

The Cyril Barnes Trophy awarded to the exhibitor gaining the highest aggregate of points in the Junior Section was won by Mrs. A. Locke, Harrogate, while the Gordon Harrison Cup for 3 pans rock plants went to Mr. J. Brownless, Middlesborough, who in his exhibit had a very well flowered *Cyclamen persicum*.

Among many good plants staged by Mr. Garth I. Merelie, Ponte-

land, was a *Primula aureata* which differed from the original plant raised from a stray seed in the Royal Botanic Garden, Edinburgh, in 1935 in that its flowers were smaller and as too was the orange/yellow centre. Presumably this particular plant and a few other similar plants in the Show had been propagated vegetatively from the plants collected in the Himalayas at a much later date. I should, perhaps, make it clear that the plant shown by Mr. Merelie was not the rather poor so called *P. aureata* form.

Only two exhibitors ventured across the border from Scotland—Mrs. Betty Ivey, Dalry, and Mr. Norman Brown, Dumfries, both of whom were prize winners. Mrs. Ivey had a particularly good plant of *Oxalis obtusa* which duly obliged by opening its many large salmon-coloured flowers. Mr. Brown's outstanding plant was a large, well flowered *Daphne collina* (but was it *collina*?) which was a serious contender for the Farrer Medal.

In a brief report it is not possible to give coverage to all the exhibitors and their good plants. Suffice it to say again that it was a fine Show and a credit to all the exhibitors and that it was well organised by Mr. Eric Watson and his assistants.

To end on a personal note I should like to record that, as a representative of the S.R.G.C., it was a pleasure to judge the exhibits with Mrs. Kath. Dryden, Director of A.G.S. Shows, and Dr. Jack Elliott, a member of the Committee of the A.G.S. The success of this Show augurs well for continued co-operation between the A.G.S. and the S.R.G.C.

D. LIVINGSTONE.

EDINBURGH

IN THE Horsa Hut, at the former Royal High School, a most successful Show was held on Wednesday and Thursday, 25th and 26th April, when many interesting plants were presented to the judges, Mr. Jack Drake, Mr. Alfred Evans and Dr. Henry Tod.

A pan of the beautiful yellow *Pleione forrestii*, shown by Mr. J. D. Crosland of Torphins, Aberdeenshire, was awarded the Forrest Medal —a happy coincidence in the George Forrest centenary year. This was one of the three "new, rare and difficult" plants which won the Elsie Harvey Memorial Trophy for Mr. Crosland, the others being *Kalmiopsis leachiana* 'M. le Piniec', a solid mound of pink flowers—awarded a Certificate of Merit—and the rare white *Paraquilegia anemo-*

noides, forma pallida. In the same class Mr. H. Esslemont of Aberdeen showed three "vegetable sheep", *Raoulia eximia, R. mammallaris* and *Haastia pulvinaris.* The K. C. Corsar Challenge Trophy for three pans of Primula of different species or hybrids was won by Mr. David Livingstone with *Primula aureata, P. villosa* and an attractive purple *P. pubescens* seedling. *Androsace imbricata, Aquilegia jonesii* and *Saxifraga florulenta* won for Mr. Esslemont the A. O. Curle Memorial Trophy awarded for three plants grown from seed by the exhibitor. Another fine *Androsace imbricata* of Mr. Esslemont's was first in the class for one plant grown from seed, followed in second place by *Kalmiopsis leachiana* 'M. le Piniec' with large flowers of a very good pink grown by Dr. and Mrs. Simson Hall. Mrs. Sheila Maule's three pans of rock plants of different genera won the Carnethy Medal and included *Matthiola vallesiaca,* an attractive member of the somewhat maligned family, Cruciferae. The Boonslie Cup went to Mrs. T. M. Hart for a well planned miniature garden and the Kilbryde Cup was won by Mrs. Jill Sleigh for her arrangement of cut flowers. Mr. J. D. Main won the Reid Rose Bowl for the highest number of points in Section I for the second year running. In Section II the Henry Archibald Rose Bowl for three pans rock plants of easy cultivation went to Mr. D. A. R. Thomson of Bonnyrigg, and Dr. and Mrs. J. Gosden gained the highest number of points in Section II and were awarded the Club Bronze Medal. Both Mr. Thomson and Dr. and Mrs. Gosden were exhibiting for the first time. Another George Forrest introduction, *Primula forrestii,* won the R. C. Cooper Bhutan Drinking Cup for the best species Primula for Mr. R. J. Mitchell of the University Botanic Garden, St. Andrews. Mr. Mitchell brought an interesting non-competitive exhibit which included *Primula redolens,* a near relation of *P. forrestii,* and *Arctostaphylos pumila,* a charming dwarf shrub covered with pure white bells—a Californian and unfortunately not quite hardy.

Certificates of Merit were awarded to four plants—the Kalmiopsis already mentioned, *Schizocodon* (now *Shortia*) *ilicifolia soldanelloides,* the fringed pink bells completely concealing the leaves, shown by Mr. Livingstone, *Douglasia vitaliana praetutiana,* a mass of golden flowers filling a 9 inch pan, shown by Dr. and Mrs. Simson Hall, and a large pan of *Primula pubescens* 'Rufus' in beautiful condition shown by Mr. Main.

Many other well grown interesting plants were shown. There were a number of good Androsaces, but all overshadowed by Mr. Essle-

mont's *A. imbricata*, ten years old and 9 inches in diameter. The class for Scottish natives was won by Mrs. E. M. J. Murdoch's *Cochlearia danica*. Mrs. Maule showed another attractive Crucifer, *Matthiola scapigera*, and the dainty "Dutchman's Breeches" *Dicentra cucullaria* won a first for Mrs. B. B. Cormack. There were only two Gentians, dignity and impudence—a large pan of *G. acaulis*, unfortunately not quite fully out, was second to a small pan of *G. verna* in full flower. Mr. Main gained a first for *Saxifraga diapensiodes*, reputed to be a shy flowerer, but his plant was covered with flowers. One does not expect to see Crocus at an April Show, but Mrs. Maule showed a large pan of *C. minimus* in full flower. Another rare plant shown by Mr. Crosland was the charming dwarf *Trillium rivale*. An outstanding beauty among the Rhododendrons was Mr. Esslemont's *R.* 'Phalarope' with large chalky pink flowers.

There was quite a satisfactory entry in Section II and some good plants were shown. In the Scottish native class Mrs. Jill Sleigh showed a perfect Primrose grown in her cottage garden in Perthshire. If this plant had been a rare native from some far away place surely it might have qualified for the Best Primula in the Show. A good plant of *Rhododendron* 'Carmen' with very dark red flowers was shown by Mr. W. T. Meikle. Mrs. Winifred Robertson's *Cassiope lycopodioides* as well as taking a worthy first prize could have qualified for a prize for the largest plant in the Show—covered with flowers, it must have measured about 22 inches across.

There was an outstanding display of Rock Garden Plants brought by Mr. Kenneth Hulme from the Liverpool University Botanical Gardens. These included several of George Forrest's introductions such as *Primula forrestii*, *Pleione forrestii* and the fine form of *Rhododendron racemosum* Forrest's Dwarf 19404. There were two interesting forms of *Primula farinosa*, one acaulis form, resembling a miniature petiolaris type Primula and the other a very deep colour, nearly as dark as *P. scotica*. A plant of the original introduction of *Kalmiopsis leachiana* had large deep pink flowers. Another lovely plant was the yellow *Arum creticum*. These and many other interesting plants were set against a background of Rhododendrons. Our sincere thanks to Mr. Hulme for bringing this splendid exhibit.

The only Trade stand was attractively set up by Mrs. Ponton of Ponton of the Gardens, Kirknewton, and was awarded a Gold Medal.

In conclusion the Show Secretaries thank the Committee and all the willing helpers who set up the Show, manned the Entrance and Information Stand and served Tea and Coffee.

B. B. CORMACK

GLASGOW

THE EASE with which the entries were accommodated on the benches was an indication of the weather conditions prevailing during the preceding month. A night of hard frost a week before the Show, with consequent damage to plants, was the final blow to many would-be exhibitors. Despite this, the Show benches provided colour and interest.

The George Forrest Memorial Medal was won by Mr. and Mrs. Ian Donald for a very fine plant of *Douglasia vitaliana* in full flower. Mr. and Mrs. Donald also won the Dr. William Buchanan Memorial Rose Bowl for six pans in which were represented *Gentiana verna*, *Androsace primuloides*, *Armeria caespitosa* 'Bevan's var.', *Douglasia laevigata*, *Celmisia ramulosa* and *Primula pubescens* 'Rufus'. The Henry Archibald Challenge Rose Bowl for three rock plants was also won by Mr. and Mrs. Donald. In this class their plants were *Pleione limprichtii*, *Androsace imbricata* and *Morisia monantha*.

The lack of an entry for the Edward Darling Memorial Trophy for three Rhododendrons was a reflection of how badly the rhododendrons had suffered in the severe weather.

Mrs. Betty Ivey demonstrated her skill as a grower by winning the William C. Buchanan Challenge Cup for three rock plants, rare, new or difficult in cultivation. The plants were *Primula forrestii*, *Calceolaria fothergillii* and *Corydalis cashmeriana*. Having gained the largest number of First Prizes in Section I, Mrs. Ivey was also awarded the Crawford Silver Challenge Cup.

With a large entry of prize-winning plants Mr. Charles Simpson gained the Wilson Trophy and Bronze Medal in Section II. Outstanding were his *Cypripedium pubescens*, *Rhododendron* 'Golden Fleece' and *Ledum hypoleucum*.

Other eye-catching plants on show were *Uvularia grandiflora*, exhibited by Professor A. S. G. Curtis, Mr. Malcolm Adair's pan of *Gentiana verna* and Dr. and Mrs. Good's *Lewisia* 'Pinkie' and *Lewisia nevadensis*.

A Certificate of Merit was awarded to Mrs. Joan Stead for a very fine example of *Primula reidii* var. *williamsii*. Messrs. J. R. Ponton gained a Certificate of Merit for an exhibit of Lewisias and a Gold Medal for their Built-up Rock Garden.

The Parks Department of the Corporation of Glasgow arranged an attractive display of hothouse plants for which a Certificate of Merit was awarded.

In the Rhododendron Section Sir G. W. Pennington Ramsden gained the Urie Trophy and the Rhododendron Challenge Trophy for having the most points in the Section. Sir G. W. Pennington Ramsden also won the special prize awarded to commemorate the George Forrest Centenary for one truss of each of six species of rhododendrons. A truss of *Rhododendron lindleyi* gained for Mrs. Neil Rutherford the Sir John Stirling Maxwell Rhododendron Trophy for the best individual truss or spray of a species.

Mrs. Rutherford was also awarded several prizes in Section IV for a varied selection of cut flowers.

An exhibit which attracted a great deal of attention from visitors was a 'natural' rock garden made by Miss Margaret Nicolson as a decoration for the Show Secretaries' table.

The Show was opened by the President, Mr. David Livingstone, and the trophies were presented by Mrs. J. Davidson, whose husband has done so much to foster interest in the Rhododendron Section. To them and to all who contributed to the success of the Show the Show Secretaries are very grateful.

M. G. HOLGATE

PERTH

THE UNSEASONABLY warm day-temperatures in March stimulated early growth in cold frames and alpine houses and as Perth Show on 14th April provided the first opportunity for the plants to be displayed on the exhibition benches, there was a record entry and the standard was high. This was truly a SCOTTISH Rock Garden Show, with entries from Aberdeenshire, Angus, Ayrshire, Edinburgh, Fife, Glasgow, Inverness-shire, Midlothian and, of course, Perthshire. The fact that the Show was a one day event no doubt helped to attract entries from afar, and most of the exhibitors managed to avoid staying away from home overnight.

Accommodation in Kinnoull School was taxed to the limit but our new Show Secretary took it all in her stride and emerged from the ordeal with flying colours. At this stage it is appropriate to congratulate the willing team of lady members who organised and ran the "Alpine Tea House" which was such an asset to the Show. Their home baking was much appreciated by all the visitors who responded to the invitation to "Try our Rock Cakes".

For the second year running Mr. J. D. Main, Edinburgh, sup-

ported the Show well and this time he carried off all the silverware, winning the Alexander Caird Trophy for the Six-pan Class, the Dundas Quaich for the Three-pan Class and the L. C. Middleton Challenge Trophy for most points in Section I. His entry in the Six-pan Class was: *Cassiope* 'Bearsden', *Primula pubescens* 'Rufus', *Phyllodoce glanduliflora, Schizocodon soldanelloides magnus, Ipheion uniflorum* 'Wisley Rose' and *Epigaea repens.* It was a newcomer to our Show, Miss J. L. Thomson, Dunfermline, who was second in this Class. Mr. Main's winning entry for the Three-pan Class was *Kalmiopsis leacheana, Cassiope* 'Muirhead' and *Primula bileckii.*

The Forrest Medal was won by Mr. H. Esslemont's lovely plant of *Paraquilegia grandiflora,* closely pursued by Miss Blackwood's *Primula petiolaris,* Mr. J. D. Crosland's *Kalmiopsis leacheana* and Mr. J. B. Duff's *Daphne arbuscula,* all of which were awarded Certificates of Merit.

The other principal prize-winners in Section I, and some of their outstanding entries, were as follows: Mr. A. D. Reid, a large well-flowered plant of *Cassiope wardii*; Major-General Murray-Lyon, *Gentiana pumila*; James Sutherland, *Lithophragma parvifolium*; Mr. and Mrs. H. Taylor, *Campanula tridentata* x 'Olga'; Mrs. B. Ivey, *Eritrichium nanum* from seed, *Cyclamen repandum, Primula reinii* and *Rhodohypoxis* 'Albrighton' and 'Fred Broome'; Dr. Stead, *Claytonia nivalis,* and Mr. J. D. Youngson, *Veronica hulkeana.*

The entries for the Class for a container of various Rock Garden Plants arranged for effect were all beautifully presented and the prizes went to Mrs. Ivey, Miss Blackwood and Mrs. H. Taylor, in that order.

A welcome newcomer to the Show was Miss Margaret MacKechnie from Kilsyth who, we understand, had never previously competed at any S.R.G.C. Show. She certainly made a masterly start by winning nine First Prizes and one Second Prize in Section II, thereby qualifying for a Bronze Medal. We wish her continuing success in the future.

To Mr. J. R. Aitken, Orchardbank Nursery, Perth, we were again indebted for a skilfully constructed Trade Stand.

There are few rock gardeners who are not attracted by Paintings, Sketches or Photographs of Alpine Plants and in fact some of the S.R.G.C. Show Schedules include a Section for such exhibits. We in Perth were once more indebted to Lawrence Greenwood, one of the Club Members, for an excellent display of his latest water colours which drew much admiration from visitors to the Show.

Last but not least we must congratulate Miss Rhoda Fothergill,

our new Show Secretary, not only for her successful running of the Show but especially for encouraging the children of Kinnoull School to exhibit so many artistically presented Miniature Rock Gardens, which earned them a Gold Medal from the Judges. A further Gold Medal was awarded to the children for decorating the walls of the hall with a quite astonishing number of plant drawings and a descriptive panel on the life of George Forrest. The children themselves could not let this opportunity pass without adding a further panel on the life of David Douglas, the famous plant collector, who was a pupil of Kinnoull School.

J. B. DUFF

Plant Hunting in Mongolia
I. Alpines of Shiir Chairchan

by VLADIMIR VASAK

ON THE southeastern border of Changai Mountains are situated the famous places of one of the greatest palaeontologic discoveries of this century. There were found by an American expedition the remains of primeval lizards—Dinosaurs. Near these places extend eruptive hills named Shiir Chairchan.

Our botanical expedition stopped one day during our way from Arbaicher to Barun Baian Ulan at a small pass just at the foot of those well known hills. As we had only very limited time there, we took a hurry up to see as much as possible (fig. 87).

The flowers I have seen here were really very interesting and uncommon, and I'd like to remember some of them. The first plant I enjoyed was a small dense shrub up to 50 cm high, which has an interesting local name—emegen shilby—i.e. shin of an old woman—perhaps for its somewhat distorted twigs. It is *Atraphaxis frutescens* (L.) Ewersm. (Syn.: *Polygonum frutescens* L., *Atraphaxis lanceolata* Meissn.), a shrub, which is widespread from the East European steppes to E. Siberia and Central Asia. Although it is a member of the Polygonaceae family, which is not too rich in decorative plants, it looks out quite nice and pleasant. Its blossoms and fruits, hanging in rich grapes, are pink and its leaves are stiff and grey-green. It inhabits

there the gravel of volcanic hills and dry beds of rivers and brooks, sandy spots and all places with disturbed or naked ground, where is only weak concurrence of other plants (fig. 88). Its twigs are a favourite food of camels. It is in garden culture (although rarely) since 1770 (Rehder), it blooms in late summer with its whiteish small flowers and is entirely hardy, which is rare in the semi-desert shrubs. Just near to this shrub there grew a semi-shrubby *Asterothamnus centrali-asiaticus* Novop. Its Latin name is proof of its widespread habitat. It is a subshrubby Aster, in Mongolian named "bor lavaj", for its distinctly grey leaves (lavaj=grey), it means a grey Aster. Its big inflorescences have rays of a nice white colour. The wild plants are often eaten by camels and goats.

I suppose that it could be such a nice plant for the rock garden, but I'm sorry that I could not find anywhere its ripe fruits. Also I am so afraid that these beautiful inhabitants of the desert would not be too adaptable to grow in other conditions far away from their inhospitable waste land (fig. 89).

A few steps from both the mentioned bushes grew *Panzeria lanata* (L.) Bunge (Syn.: *Leonurus lanatus* Spreng., *Ballota lanata* L.). This densely woolly plant has several local names. Nochoj chel—the dog's tongue, jumt scholb and temen angalzur—Panzeria of a camel. And I must say that it is no wonder that this plant all the time attracts the local inhabitants—the same as with members of our expedition. We were two, the botanist of our National Museum, J. Soják, and I; on our way through the steppe—passing the dazzling white flowers of *Panzeria lanata*. Some time ago this plant was cultivated in the Botanical Institute in Leningrad. But in winter it had to be transplanted to the greenhouse, as it could not spend winter outdoors. In Mongolia it blooms in July, in Leningrad it did bloom some time later —in September. Its tops contains about 0.039% of aromatic oil, which is used in perfumery and cosmetics (Gorjajev 1952). Its flowers are so used in Tibet as medicine (Cammerman and Semicov, 1963). The preparation made from its tops has a similar use as that of *Leonurus quinquelobatus*. Panzeria, as it is too tall and robust a plant, is suitable only for larger gardens with rather dry soil rather than for regular rock gardens. I've brought some of its seeds and so I shall try it.

On the volcanic rocks there was widespread another related plant —jaman angalzur—a small Panzeria—*Lagochillus ilicifolius* Bunge. Its name is characteristic; its stiff and glossy green leathery leaves look like those of some holly (Ilex). It is a dwarf plant, only 10 cm high,

with many smooth whiteish stalks and relatively large yellow-white flowers. Although it does bloom mostly in June, we found some flowering specimens even in August. *Lagochillus ilicifolius* could be a really first class alpine with its nice appearance, but I'm afraid that it will be very difficult in the garden. But I shall try it in all ways—and let us hope! I must not forget that I've crowned this plant as a queen of beauty of Shiir Chairchan.

Of the nicely blue-flowered shrub *Caryopteris mongolica* and yellow-flowered plants *Haplophyllum dahuricum* I have written many times. But I must remember here both above mentioned plants again as they are very lovely.

A scarce and for me quite new plant was the small desert asparagus —*Asparagus gobicus* N. Ivan. In contrast to most other species of this genus, which are very high, usually over 1m, this small plant reaches only several cm in height. I have collected some of its ripe fruits and now I have to wait to see if it will be happy with our climate. No doubt it is a very nice plant quite suitable for the rock garden, and in my opinion it might not be too difficult. Its flowers are inconspicuous, but its decorative value is based on its dark red berries and its very neatly branched nicely green twigs.

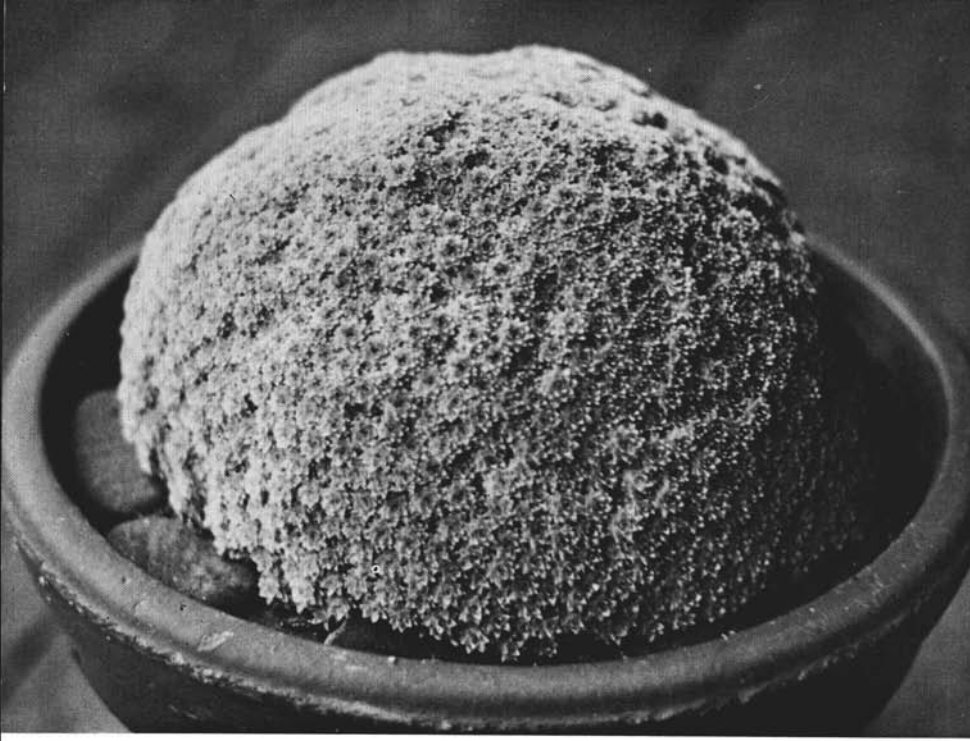
On rocky slopes there grew small plants of *Bupleurum bicaule* Hebm., in Mongolia named "brish ubs" or "altan ag". Altan means gold, "ag" is *Artemisia frigida.* This small Bupleurum is one of the most important pasture plants. I must say that it is not so nice as the European *Bupleurum ranunculoides* L., growing even in Belanské Tatry, but I'm sure that this plant is suitable for a rock gardener's purpose. The umbellifers are not often presented in alpine gardens and only a small number of these plants are suitable for them.

In my bag from the volcanic mountains of Shiir Chairchan were not missing, of course, my lovely Leguminosae. I have here collected three species of this family: *Astragalus mongolicus* Bge. (*Phaca macrostachys* Turcz.), which is widespread in western parts of Mongolia and in the adjacent mountains of USSR. Its thick, fleshy roots are used in China as well as the roots of *Astragalus propinquus* Schischk. as an urinary remedy. It is not so decorative as another member of this family, *Vicia costata* Ledeb., a plant up to 40-50 cm high, which has many rootstocks and so numerous stiff stalks; it is a valuable pasture plant here for goats, sheep and yaks, especially during winter.

The third member of this family which I have found here was a very nice small shrub closely akin to *Caragana pygmaea*—it was *C.*

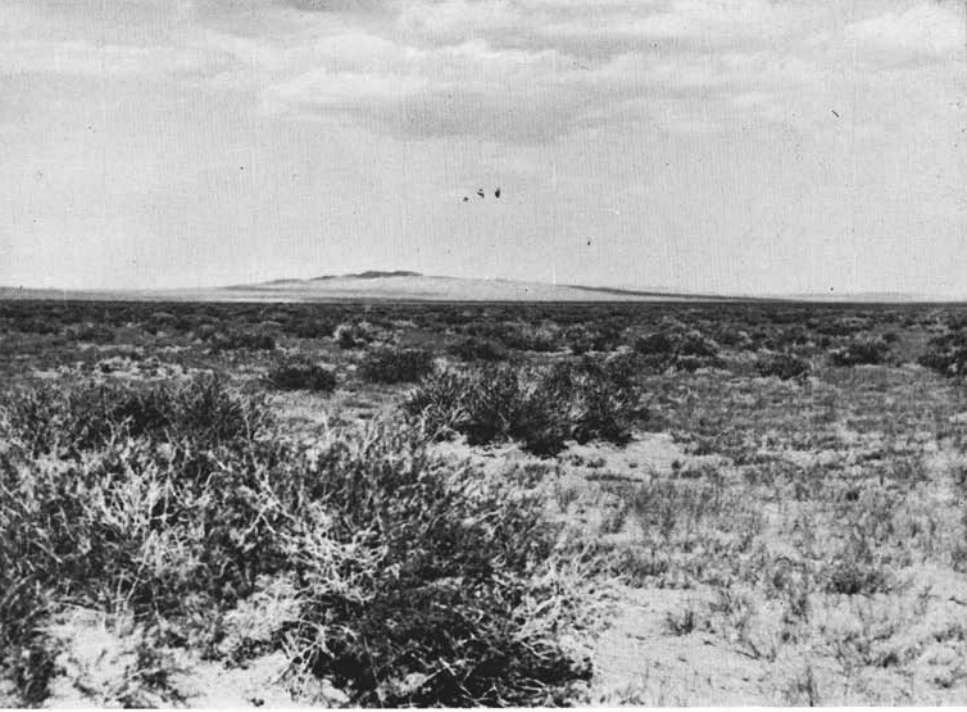
△ Fig. 83—*Cornus canadensis* Photo—The late D. Wilkie

▽ Fig. 84—*Epigaea repens* Photo—The late D. Wilkie



△ Fig. 85—*Raoulia mammallaris* Photo—R. J. Mitchell

▽ Fig. 86—*Primula allionii* Photo—M. J. Baird



△ Fig. 87—Semi-desert in Mongolia Photo—V. Vasak

▽ Fig. 88—Sandy desert in Mongolia Photo—V. Vasak

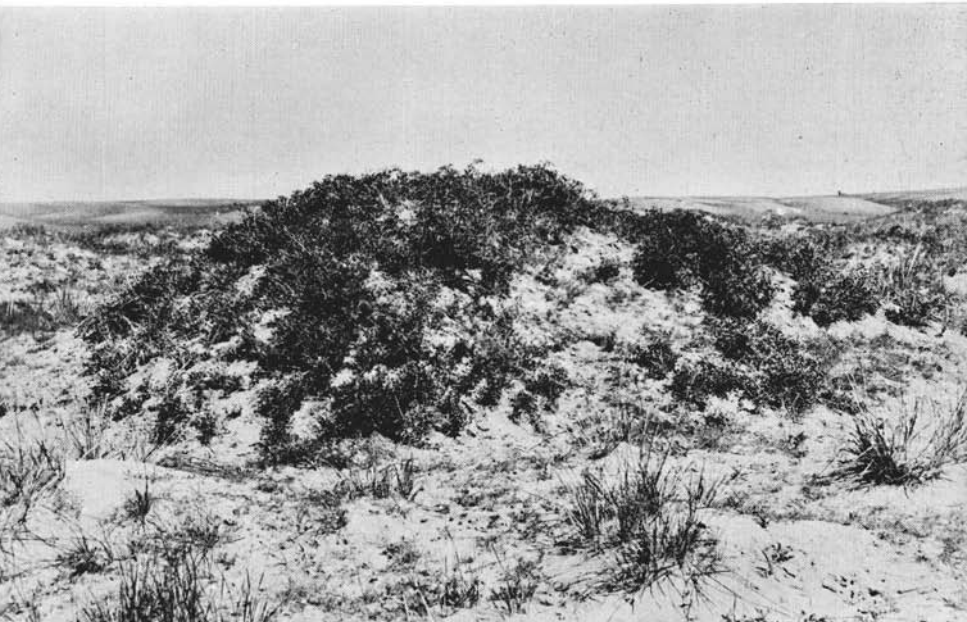


Fig. 89—Shiir Chairchan

Photo—V. Vasak

leucophloea Pojark. (Syn.: *C. pygmaea* var. *arenaria* Fisch., *C. aurantiaca* var. *deserticola* Kom.)—in Mongolian named "altan chargan" and "altargana", i.e. golden Caragana. While in the living plant the bark is of a creamy colour, it changes on dry twigs into a gold one. I must say that this gold colour is very rare in the wild here. I myself have seen the gold plant only as this golden Caragana. I have not seeds of it, as these were not yet ripe, but I hope and am looking forward to the possibility of obtaining some seeds from my botanical friends in USSR, as this Caragana does not grow in mountains Saur, Tian-Schian, Tarbagatai and Dschungarian Alatau.

Now I'd like to remember one plant with very nice wide leaves—*Thalictrum foetidum* L.: it is not too pleasing to collect it, as it is intensively bad smelling, as confirmed by its Latin name, but it is a useful medicinal plant which is sometimes used in USSR in cases of hypertensis and in Tibet as a remedium for bronchitis. Its leaves are curly and shrunk, as conveyed by its Mongolian name: burshigar.

Reginald Farrer does not recommend it for the rock garden as it is too high—up to 30 cm in culture—but prefers its cultivation in larger gardens on stoney hillsides and outcrops, as it grows in its home conditions in Europe and Central Asia.

The last plant of Shiir Chairchan I collected is *Ephedra przewalskii* Stapf.; its Mongolian names are "shar dzergene" and "chonin dzergene", yellow or sheep's Ephedra. Unlike some other species which are straight, this Ephedra has its young twigs curly. It is necessary to say that it is a very characteristic plant of the Gobi Desert, growing in such cruel conditions, which other plants cannot survive. Its aged shrubs are 60-80 cm high, and on one hectare there grow about 100-200 plants. It is generally considered as a poisonous pasture plant in Mongolia for its content of the alkaloid ephedrin.

I have concluded my today's story of Mongolian plants with a little mysterious nature of this distant country by mentioning a desert plant having the name of the famous Asian traveller of the past century —Przewalski. He passed through Mongolia several times on his expeditions to the uneasily accessible regions of West China. And I have to confess that I'd very much like to visit once the places of some of his expeditions. In case that my dream will be realised, I'll inform you, dear readers and friends in alpine gardening, about all my meetings with the new and nice plants of this zone, of course.

And now—how to end my short story on my plant huntings in Shiir Chairchan? Perhaps with a hope and wish that some of the

seeds I have brought from Mongolia (there were about 1800 field numbers) will give some nice and uncommon plants, as would wish in my case each mountain lover and alpine gardener.

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Book Reviews

"DWARF BULBS," by Brian Mathew. Published by B. T. Batsford in Association with The Royal Horticultural Society. Price £2.80.

The author is a botanist at the Royal Botanic Gardens, Kew, and previously worked at the R.H.S. Garden at Wisley. In case the fact that Mr. Mathew is a botanist puts you off, let me say at once that the claim on the dust cover "the needs of the amateur gardener have been borne in mind and over-technical botanical language has been avoided" is fully substantiated. I found the book very readable and I was agreeably surprised at the great amount of information so succinctly imparted in an easily digestible form. Mr. Mathew states that his choice of dwarf bulbs is a completely personal one based mainly on plants which he has grown or is trying to grow at present. That I accept without reservation, for no one could write so intimately about plants which he did not know from personal experience.

In addition to the systematic list of bulbs arranged in genera and species there are notes on cultivation, propagation and pests and diseases.

There are a number of excellent line drawings by one of Mr. Mathew's colleagues, Miss Pat Halliday, and the book is well illustrated by 100 photographs, half of them in colour. One could find fault for one reason or another with some of the photographs but the fact that there is a little "fuzziness" or colour not quite true in a few is of little moment in what is in my opinion an excellent book. This is not a book to be borrowed from the local library, but for one's own bookcase where it can be consulted as the need arises. In other words it is a book of reference on a subject which appears to be attracting an increasing number of enthusiasts and little wonder, for do not bulbs give, as a rule, quicker and often good results in a comparatively short space of time? What more could a beginner ask than to plant bulbs in, say, September and have an excellent display in the following January, February, March and April?

D. L.

"ALPINES," by Lionel Bacon, 240 pp. including illustrations. Published by David & Charles. £3.95.

This book, by the Honorary Secretary of the A.G.S. 'Panel of Experts' which advises on rock gardening problems, makes a very welcome addition to the rock gardener's library. It is firmly based on the author's own experience and observation, which gives it a sound and reliable basis,

and results in a welcome absence of the secondhand gaffes which occur repetitively in some horticultural writings.

Dr. Bacon is a confirmed disciple of Symonds-Jeune, who laid down the principles of ' Natural Rock Gardening ' in the more spacious days before the last war. Followers of Symonds-Jeune will always produce aesthetically pleasing rock gardens, but there are few, nowadays, with broad enough acres to follow him completely, and I feel that the gardener with today's small suburban garden must be more sparing in the use of stone in order to leave more room for the plants.

The author aims to be ' useful to, and readable by, beginners ' but I think the gardener who is already a rock gardening addict will derive more benefit from the book; indeed, any beginner following Dr. Bacon's advice ' to excavate clay subsoil to a depth of 2 feet ' having disposed of the clay and replaced it with alpine mix before ever starting to lay his rocks, would hastily remove to a flat and a window box—having recovered from his slipped disc !—whereas the gardener with some knowledge and experience behind him would appreciate the necessity for modifying these precepts to suit his own garden and capabilities; but I must repeat that the basic principles are sound.

In the first half of the book, Dr. Bacon begins with alpine plants in the wild and the conditions in which they live, followed by their varied requirements in cultivation. He goes on to the construction of the rock garden and its various adjuncts—scree, moraine, bog, peat bed, alpine house and frame, and this is followed by excellent advice on plant care and cultivation, and a short note on nomenclature.

The second part of the book is about the plants themselves. Dr. Bacon lists some 500 plants and gives concise descriptions of plant, habitat and cultural requirements. A most useful feature lists the synonyms of plants which have fallen victim to taxonomical juggling—and which of us has not searched the reference books for details of a new acquisition which was there all the time under a previous, or a subsequent, name ? I know of no other book so helpful in this way.

As Dr. Bacon gardens in Hampshire, and the list is based on his own experience, his advice is inevitably a little wide of the mark on some plants grown North of the Border—Ericaceae are not widely covered, and several are listed as alpine house plants, which are much happier in the open ground in the North. Ferns and dwarf conifers are not covered at all.

Chapter 9 summarises the plants suitable for specialised positions—waterside, woodland, bog, scree, etc., and Dr. Bacon finishes with a short bibliography. I feel that in future bibliographies his own book will be a worthy and useful inclusion—it is certainly one I shall consult on many occasions.

J. S.

" The Concise Flowers of Europe," by Oleg Polunin, assisted by Robin S. Wright. Published by Oxford University Press. Price in U.K. £1.95 net.

When Oleg Polunin's " Flowers of Europe " was published in 1969 it was welcomed enthusiastically, but on account of its large size and weight only the most dedicated of plant lovers could include it in the restricted amount of baggage allowed for continental travel. " The Concise Flowers of Europe " now published in 1972, being lighter and smaller, can easily be carried.

As described in the preface it is " designed to make possible the easy identification of nearly 1100 plants likely to be encountered on European travels." In the original " Flowers of Europe " identification is by means of botanical characters, adapted from the Flora Europaea. In this volume botanical terminology is almost eliminated and identification is by such plant characters as are obvious even to the layman without any knowledge

of botany. An illustrated glossary, however, is available as an introduction to more specialised knowledge.

The book is divided into six sections, to include herbaceous and aquatic plants, shrubs, trees, woody climbers, also rushes, grasses and sedges. Within each section plants are segregated by the colour of the flower, size of the plant, shape of the leaf, etc. Reduction in the text has been cleverly achieved by the use of symbols, so that within each group there are further aids to identification through flower form, habitat and distribution in Europe. The normal time of flowering is added and English names of the flowers are given.

The colour plates are the same as in the larger volume and are good as visual aids to identification. The botanical names and the scale are given, while the English name and a reference to the text are added.

Being a shortened version of the " Flowers of Europe," the number of species described is restricted and this is achieved by the omission of the line drawings and their descriptions. It is good to see that some prominence is given to rushes, grasses and sedges, as these are too often neglected.

At the price of £1.95, this book should be well within the reach of the amateur and should prove a useful companion on European travel.

H. D.

" Flowers of South West Europe," a field guide by Oleg Polunin and B. E. Smythies. Published by Oxford University Press. Price £6.

Many of us are familiar with the books of Oleg Polunin, and some of us have been on the botanical tours which he leads to many parts of the world.

This book is dedicated to Charterhouse, where Oleg Polunin served for many years as a Master. I believe that the Duke of Edinburgh on being presented with one of his books, opened it and exclaimed ' Extraordinary names wild flowers have, here is one called Black Horehound ' ! It must also be given to few people to have the distinction of having on their wall a portrait of their father by Picasso.

The co-author, B. E. Smythies, was, I understand, in the Forestry Department in Burma and later was Conservator of Forests in Sarawak. I believe his original interest was ornithology, and he has written two books on the subject, " Birds of Burma " and " Birds of Borneo." He now lives in Spain and is interested in the flora of that region.

The double page drawings of plants have been done by Jill Smythies, and the botanical drawings by Mrs. Barbara Everard. These drawings have given me much pleasure and are helpful to the amateur in identifying plants.

The book has 496 pages of text, which includes the drawings, and 80 pages of colour illustrations. It covers an extensive area—Portugal, Spain and south-western France (west of the Rhône and south of the Loire)—and is designed as a readily portable guide to the most botanically interesting and most beautiful regions of south-western Europe. It is the first of four regional guides to cover most of Europe. The preface says ' it is planned to be used in conjunction with the ' mother ' volume " Flowers of Europe," ' but personally I should not have thought this was essential. The text is in two main sections ; the first part, consisting of two chapters, describes twenty-three botanically rich regions ; interesting or characteristic species are named and indications given as to where these plants can be found. This is of particular help to the plant hunter who is so often unable to get any local information.

Chapter 1 entitled " Landform, Climate and Vegetation " is most informative, it deals with geological and geographical regions with maps showing landforms and all relevant information. A double page of maps

shows the distribution of important plants, embracing trees, mountain plants, endemic plants, etc. This section is most useful and there is also an Administrative Area Map. There are also two coloured maps showing land use, inside the covers.

Chapter 2 describes the various plant hunting regions. The twenty-three regions are shown on a map, each region being numbered to correspond with the names listed beside the map and in the text; it is then a simple matter to find any region. This makes it very easy to pinpoint any area with which you are concerned. I found this to be the best part of the book. It tells in a most interesting way about the parts of the country through which you are travelling, the height of the hills or mountains, the geological formations, types of soil and the plants to be found there, and for good measure a bit of history is thrown in. I found it hard to stop reading straight through this part.

Each region has a double page of drawings, and a list of plants to be found there. Western Costa del Sol has drawings depicting flowers at different seasons—spring, then summer and autumn. A small section shows National Parks, Reserves and Walks, and where information concerning them can be obtained.

The second part is concerned with the identification of species with short diagnostic descriptions and keys. A probable total of well over 6,000 seed plants is to be found in this area, so many of the 'difficult' families with insignificant flowers have been omitted or briefly described. Excellent drawings are also included in this section.

I should particularly like to mention the lovely Terrain Colour Plates which recall so well the beauty and atmosphere of a marvellous landscape.

Finally, there is a list of indexes, the first one of the popular names of plants given in English, Spanish, Portuguese and French, which to the non linguists among us is very helpful. This is followed by an index of place names listing places of botanical interest, and an index of plants; between these two there are many pages of coloured illustrations of plants, and last a Bibliography.

A most important part of the book deals with Conservation. It states that a reliable authority is in the process of preparing a Red Data Book of rare and threatened plants, that is about 10% of all the species of flowering plants, something in the region of 20,000 species are in danger of extinction in the world. It gives the usual threats, including horticultural vandalism and depredation by collectors. These two are of particular concern to us, and in Chapter 2 the rarities that should not be collected except in special circumstances are marked by a dagger. It is quite a shock to see how many plants are so marked. It also recommends guide lines to the botanist and plant hunters collecting in foreign countries.

I regard this book to be an important possession, not only to the plant hunter, but also as a reference book to find out about the many plants we acquire from this large region, and to learn about their needs in our gardens. I think this is an essential part of anybody's luggage travelling in the area covered, and I look forward to using it in the future.

S. M.

The Davidson Slide Library

THE COUNCIL has agreed that the S.R.G.C. collection of slides shall be known as *The Davidson Slide Library* to honour the work of Dr. James Davidson and the late Mrs. Davidson. Dr. Davidson began to assemble the collection in 1956 and was dependent almost entirely on donations of spare slides by photographer members. When he became President in 1964, Mrs. Davidson was elected to succeed him as Curator of the Slide Library, and she continued to send out slides to lecturers even during her final illness.

The number of slides has now grown to more than 2000 and the collection includes six illustrated lectures on tape. Over the years, many of the older slides are suffering from the wear-and-tear of frequent use and of packing and postal transit. Some of them are of plants which in 1973 we would not consider to be of top quality. It is hoped gradually to replace some of the poorer slides and to add to the collection by pictures of plants now being seen for the first time in shows and gardens.

The Council believes that members would like to be invited to subscribe to a fund to increase the value of the Slide Library, thus showing their appreciation of the Davidsons' work. Donations may be sent through Group Conveners or direct to the present Curator:

R. S. Masterton, Esq., M.R.C.V.S.,
Curator of the Davidson Slide Library,
Cluny House,
ABERFELDY, Perthshire.

(Signed) L. C. BOYD-HARVEY,
Honorary Secretary.

Obituaries

Mrs. C. E. DAVIDSON: 1st January 1973

THE DEATH of Connie Davidson was not only a grief to her many friends but also a sad loss to the Club. She had known for more than a year how serious her illness was and her determination to live her normal useful life was an inspiration to all who worked with her.

She was born in Vancouver but returned home to Scotland at too early an age to have any Canadian memories. We in the Club knew her first when she and her husband, Dr. James Davidson, came back again to Scotland from London in 1949. Even the years in war-time London had failed to diminish their shared interest in natural things, and they were already members of the Alpine Garden Society. Their first activity in the Scottish Rock Garden Club had been to join a meet of Edinburgh and East Lothian members to climb Ben Lawers. It was James and Connie who were the first to find *Saxifraga cernua* there actually in flower, and it was they who helped the plodding beginners of the party to identify other discoveries. In the years which followed they were to extend their mountain climbing to the Alps, the Pyrenees and the mountains of Greece and Crete. When Connie was asked to lecture and show her slides at a North Berwick Discussion Weekend, her chosen subject was "Mountain Summits". She could not be content with being "*almost* to the top".

When she realized that her agile climbing days were over, she had been planning a holiday in the Arctic Circle to see arctic-alpine plants at sea-level and to take their photographs for the Slide Library.

Connie had that kind of lively, forward-looking enthusiasm which needed an outlet, and she used her talents generously for the benefit of her fellow members. In 1955 she succeeded Mr. R. S. Masterton as Seed Exchange Manager. This is one of the Club's most demanding duties, requiring good organisation and meticulous recording, all concentrated at high pressure over the winter months. In addition to the routine work, she used to make frequent visits to the Royal Botanic Garden to check the names of donated seeds which she suspected might be of doubtful validity. Everything had to be as perfect as she could make it.

In 1964, when Dr. James Davidson was elected President of the Club, Connie assumed his previous responsibility for the Slide Library.

She initiated the formation of a collection of illustrated lectures on tape for sending on loan to those Groups where travelling by visiting lecturers can be difficult during the winter months. At the request of Mrs. Clarke of Ashfield, Massachusetts, she had copies made of some of the tapes and of their accompanying slides for loan to our members in U.S.A. and Canada.

Through the Seed Exchange and the Slide Library, Connie's influence on rock gardening was world-wide. She was also a "good villager". She became involved with several local associations and organised the annual Flower Show in Carlops Village Hall. The Davidsons had for many years entertained parties of visitors to their interesting garden, so, somehow or other, they must have found time to get down to actual rock gardening.

Connie was an experienced and expert trout fisher, but only occasionally was she able to get away from her duties for a few days of this real relaxation.

She was too ill to attend the Annual General Meeting in November 1972, but it made her very happy to be told that she had been elected as a Vice-President in recognition of her sustained exceptional services to the Scottish Rock Garden Club.

L. C. B-H.

Dr. LUCY DEAN

WITH the death of Dr. Lucy M. Dean on 31st March 1973, the Club, and its West of Scotland Group in particular, lost one of its outstanding personalities.

The daughter of Professor R. W. Dron, sometime Professor of Mining in the University of Glasgow, Dr. Dean was brought up in Bearsden and educated at Bearsden Academy and the Glasgow High School for Girls.

Her wish to make a career in medicine naturally caused her to volunteer to help in the care of wounded servicemen during the First World War. Immediately after the war she began her studies in the Medical School in the University of Glasgow where she graduated in 1925.

Bearsden remained her home after her marriage to Captain William J. Dean in 1926. With a son and two daughters, family duties occupied most of her time for some years, but she continued to maintain her

varied interests. A keen member of the Guide movement, she was responsible for starting Guiding in Bearsden. On terminating her active connection with the Company she remained for many years a valued member of the Local Association, her services being recognised by the award of the Thanks Badge.

In the Second World War her medical knowledge was put to good use, especially when, as Honorary Surgeon of a First Aid Post in Clydebank, she was on duty during the blitz.

The inauguration of the Blood Transfusion Service in the West of Scotland provided the opportunity for her to embark on an absorbing and satisfying career. She shared in the growth of the Service from its inception to the splendid organisation it is today.

During her childhood family holidays were spent in sailing off the west coast of Scotland or, farther afield, longer periods were spent in the Alps. The attraction of the islands persisted throughout her life, as did her delight in the Alpine flora. Her love of nature is shown by the subjects of her numerous paintings in oils: her pleasure in artistic pursuits caused her to value highly her membership of Bearsden Art Club.

Dr. Dean joined the Scottish Rock Garden Club in 1954 and was elected to Council in 1957. The enthusiasm with which she entered into Club activities made her the obvious choice when the Convenership of Dunbartonshire became vacant in 1960. She also served as a member of Council for two subsequent terms.

Dr. Dean was appointed Seed Exchange Manager in 1970. There is no doubt that after the death of her husband in December 1970 her preoccupation with the work of the Seed Exchange helped to fill the gap caused by her bereavement. For two years she carried out the duties with zeal and enthusiasm, deriving great pleasure from the exchange of experiences and greetings with participants from widely differing environments. During the 1972-73 Seed Exchange, in spite of her illness, she maintained a close interest in the work.

Her spontaneous generosity was well known, as was her hospitality in affording overnight accommodation to visiting speakers or welcoming parties of enthusiastic members to view her garden. The funds of the Glasgow Show have benefited on several occasions from her willingness to open her house and garden to members and friends. Visitors delighted in seeing the choice plants growing at their best in the conditions she had, by careful study, found to be most suitable for them.

The generous endowment made by Dr. Dean in 1972 towards the finances of the West of Scotland Group will enable the Group to invite eminent speakers from farther afield more frequently than has hitherto been practicable.

Above all, she will be remembered for her humour, her ready friendliness and her courage.

M. G. H.

Mrs. T. A. STUART

MRS. T. A. STUART, better known to her many friends in our Club as Margot, died suddenly on 9th June 1973. For many years she was a very active member of the Club, serving as a Member of Council and as Group Convener for North Perthshire. She was also one of the chief organizers of the Discussion Weekends held in Pitlochry. She was a very good plantswoman and a successful exhibitor at our Shows.

Perhaps the most noteworthy achievement which she and her husband accomplished was the conversion of a complete jungle of wild raspberries, nettles and every other kind of rampant weed into a most charming garden where Club members were always made welcome. Dr. T. A. Stuart, who died suddenly a few months ago while on a visit to New Zealand, was not primarily a rock gardener, trees and shrubs were what he specialized in. He it was who largely provided the frame for the new garden—windbreaks, specimen trees and a fine collection of ornamental shrubs. He also developed an old mill lade into a charming stream with a number of pools whose banks were clothed in many species of primulas and other moisture-loving plants.

Margot had many contacts and friends abroad and had twice visited the U.S.A., where she was well-known and well-liked. She was probably one of our best recruiters in those parts. She and her husband will be sorely missed in the Club.

D. M. M-L.

A. TODD

THE PASSING of Mr. Alex. Todd on 13th October 1972 deprived the Club of one of its notable plantsmen. A native of Paisley, he trained as a mechanical engineer and during the First World War saw service with the Royal Flying Corps. Subsequently he was a member of the experimental and development staff of Albion Motors of Glasgow, later transferring to the Mobil Oil Co., with whom he remained until his retiral in 1958.

Although he had been a spare-time gardener for many years, after his retiral his chief interest became increasingly centred on his garden. He had joined the Club soon after the Second World War when, following on a few years' sojourn in Newcastle upon Tyne, Mrs. Todd and he returned to Scotland and made their home in Bearsden. Brought into contact with plantsmen of the stature of William C. Buchanan and Edward Darling, he imbibed of their enthusiasm and techniques, and in time came to emulate their successes in alpine plant propagation and culture. During his membership of the Club Alex. served as a member of Council, of its Finance Committee and on occasion as a judge at its Shows. He served the Glasgow and West of Scotland Group of the S.R.G.C. as chairman over several sessions in the mid-sixties. More recently, during the first two years of the late Dr. Lucy Dean's tenure of the managership of the Club's Seed Exchange, Alex. Todd was a very active member of her supporting team.

Alex. is survived by his wife Cathie who is carrying on the good work in their garden, and by a married daughter. By the rest of us he will be remembered for his enthusiasm and wide experience of alpine plant culture; and, especially to those who were privileged to know him in his garden, for the generosity with which he would offer seedlings and rooted cuttings of even the most precious subjects.

N. H.

Seamill
Discussion Weekend and Show

SATURDAY 12th and SUNDAY 13th OCTOBER 1973

THE SHOW will be held at the Seamill Hydro during the Saturday afternoon (12th October) of the Discussion Weekend.

SHOW SCHEDULE

Section A Open to all Members.
- Class 1 1 rock plant in flower or fruit.
- Class 2 1 rock plant for foliage effect.
- Class 3 1 conifer.

Section B Open to Members who have not won a trophy or medal at any Club Show.
- Class 1 1 rock plant in flower or fruit.
- Class 2 1 rock plant for foliage effect.
- Class 3 1 conifer.

Each of the six Classes will be awarded a First Prize and a Runner-up Prize. The William Buchanan Medal will be awarded to the plant judged best in the Show.

The Show is the centrepiece of the Weekend. Let's guarantee the Weekend by having a wonderful Show.

Exhibitors please have their plants staged by noon on Saturday.

There are still some rooms available within the Seamill Hydro grounds, and of course there are both single and double rooms available at the Inverclyde and Seamills Hotels which are within 2 or 3 minutes walk of the Hydro.

But send your bookings to the Hydro.

You will be notified, before any reservation is made at the two overflow Hotels.

Joint Rock Garden Plant Committee

DUNFERMLINE—22nd SEPTEMBER 1972

AWARDS FOR EXHIBITS

CERTIFICATE OF CULTURAL COMMENDATION

To H. Esslemont, Esq., 9 Forest Road, Aberdeen, for *Haastia pulvinaris.*

To J. Crosland, Esq., Treetops, Torphins, Aberdeenshire, for *Dicentra peregrina pusilla.*

To J. Crosland, Esq., for *Raoulia eximia.*

PERTH—14th APRIL 1973

AWARD TO PLANT

CERTIFICATE OF PRELIMINARY COMMENDATION

To *Arcterica nana* as a flowering plant for the rock garden. Exhibited by Major-General D. M. Murray-Lyon, D.S.O., M.C., Ardcuil, Pitlochry, Perthshire.

AWARDS FOR EXHIBITS

CERTIFICATE OF CULTURAL COMMENDATION

To H. Esslemont, Esq., for *Paraquilegia grandiflora.*

To J. Crosland, Esq., for *Kalmiopsis* 'Monsieur le Piniec'.

Tours for Gardeners and Botanists

Special tours for the study of alpine plants are, as usual, being arranged for 1974, and some advance information is given below. Full details with dates, prices and names of the accompanying experts will be ready in October and those interested are asked to register their names and addresses with us so that brochures can be sent immediately they are available. It is planned that the following centres will be included:—

ITALY
Selva—Val Gardena—with Major-General D. M. Murray-Lyon
Castro di Marina—Lecce
Fasano del Garda

SWITZERLAND
Binn—a new centre in the Valais region (an extra centre is also being considered)

SPAIN
Sallent de Gallego—Huesca
The Sierra de Nevada with Granada
Covadonga—the Picos de Europa

GREECE AND TURKEY
Two 'Sites and Flowers' Cruises in April

TURKEY
A three week tour to include south and central Turkey with an ascent of Nemrud Dag—an adventurous holiday through superb country

ETHIOPIA
Four tours from Blue Nile to Red Sea, of three weeks, each including the Rift Valley Lakes, the Semyan mountains and the Historic Route

SOUTH AFRICA
Spring flowers in the Cape Province

YUGOSLAVIA
Five cruises in the m/y Adria to many little-known islands along the Dalmatian Coast, with three sailings in May and June emphasising the local flora

Other tours of interest to naturalists will be operated to Kenya, India, Kashmir, Nepal, Ceylon, Pakistan with Afghanistan and Persia, and the Far East, by

FAIRWAYS & SWINFORD (TRAVEL) LTD., (SRGS)
18 Saint George Street, Hanover Square
LONDON, WIR OEE (Telephone 01-629 6801)