

Editorial copy



The JOURNAL of
THE SCOTTISH
ROCK GARDEN CLUB

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VOLUME XII, Part 3
No. 48

APRIL 1971

Editor — P. J. W. KILPATRICK, Slipperfield House, West Linton, Peeblesshire

Obtainable from John B. Duff, Hon. Publications Manager,
Langfauld, Glenfarg, Perthshire

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NOTICE

The ANNUAL GENERAL MEETING will be held in Hutcheson's Hospital, No. 2 John Street, Glasgow, C.2, on **Thursday 4th November 1971, at 2.0 p.m.**

Members are notified that nominations are required for President and other Office-bearers, and for five Ordinary Members of Council. Nominations *in writing*, seconded by another Club member or members, must be sent to the Honorary Secretary no later than 20th August, the nominator having ascertained that the nominee is willing to serve if elected.

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

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

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Growing Rock Garden Plants in Character and Condition

by HENRY TOD, Ph.D., S.H.M.

The W. C. Buchanan Memorial Lecture given at North Berwick
on 24th October 1970

I HAVE often said and written that it is much more difficult to grow the more normal rock plants in an alpine house than it is in the open garden. One of the main problems is to "keep the plant in character" and I thought it might be of interest to see just what this actually means.

Anyone who has done a fair amount of showing, and all of us who are judges, know quite well when a plant is or is not "in character", but it is not the easiest thing to express exactly what is meant by the phrase.

A plant growing in its native habitat—and particularly if it is more or less free from immediate local competition—will be in character. It will assume its true habit—a compact tuft, a firm close-growing shrub, a tight or a loose mat, a leggy sprawling untidy shrub or a dwarf tree, or one of immaculate outline like many of the dwarf conifers, under its natural growing conditions. If the competition is severe, even in its natural habitat it may be distorted so that it is "not in true character"—a good example is *Genista anglica* fighting its way through heather and grass as compared with growing free from local competition when it forms a somewhat untidy, but still reasonably neat little shrub.

In a plant's true habitat, conditions are more or less standard, that is, the weather, wind, sun, rain, temperature and nutrient supply, are much the same no matter what part of the world it grows in, for if they differ appreciably, the plant probably will not grow there. It is, after all, part of what is known as a "climax vegetation"—one which develops by a simple "survival of the fittest" to those particular conditions. As a result the plant has its own typical characteristics of size, shape, colour, compactness or looseness and so on. Thus a *Rhododendron* of the *Lapponicum* group will have much the same characteristics whether it comes from a few feet above sea-level in

Arctic Lapland or from the high Himalayas more than ten or twelve thousand feet up ; or *Silene acaulis* at nearly sea-level in Shetland, a couple of thousand feet up Ben Lawers in Scotland, nine thousand feet up in the High Tatra in Czechoslovakia, or fourteen thousand feet up in the Colorado Rockies—the weather and soil conditions are similar.

What is so really remarkable is that we can grow such plants at all in our lowland and southern gardens and keep them *very nearly* in character, but if such a plant is grown indoors under the protection of glass it is quite unusually difficult to prevent it growing entirely *out* of character. Here I speak from experience, for I have grown rhododendrons as experimental plants under glass for many years, and what should have been compact plants of eighteen inches to two feet high have raced up, but not *out*, to three or four feet, perfectly healthy but wildly out of character. The same rhododendrons, moved perforce out into the open, had a very rough time readjusting, but the foliage toughened up, growth upwards stopped and the whole lot—some seventy-odd plants—have now, about two or three years from the move, become much more typical, still leggy but much stronger and more robust.

There are several factors which, with the best intentions in the world, one may overlook. *Campanula turbinata*, grown in full exposure, is a neat, tufted plant, but if it is sheltered by a bigger plant, even though grown in the open in a suitable soil, will grow too far “up and out”. Similarly *Aquilegia schockleyi*, fully exposed in the open rock garden, is compact ; grown really hard in a poor mixture, will be fairly nearly in character, but in the open in too rich a mixture and sheltered to some extent, similarly will grow up and out. *Chrysanthemum haradjanii*, grown in scree and fully exposed in the open, is prostrate and a brilliant silver, while under glass again it is soft and sprawling and only a pale silvery-green. Admittedly some rock plants look soft and out of character for a rock plant when they are not—such is *Lewisia tweedyi* even grown in full exposure. It is definitely cabbage-like in its foliage, but that happens to be its true character and the way it grows in the wild.

I grew two young plants, as nearly identical as possible, of an *Arabis* labelled “*soyerii*” for four months, one under glass and one in a hard exposure. The first developed large, rather pale, soft leaves, while the second formed a fairly compact tuft of smaller, tough, deeper green leaves and began to flower. *Dianthus deltoides* cv. ‘Brilliant’ let

me down badly, for the one under glass moulded off while the other formed a tough prostrate mat.

Position may cause surprising changes in growth and habit. Our old friend "London Pride" (*Saxifraga umbrosa*), a ramping mat grown as it was in days gone by as an edging to a flower-bed, becomes a handsome rock plant when it is grown in a crevice. *Symphyandra cretica* growing on the flat is an untidy leafy plant; in a crevice its leaves form a neat tuft with the flowers out on slim wiry stems above it.

A plant must expose its leaves to the light so that the photosynthesis by which it builds up its tissues may proceed. Under natural conditions it receives light more or less from all round itself. If a rival plant is close to it, it will grow away from it—the same applies to a stone or a bank of soil—but reach the light it must, and to do so it will bend towards the light. Ultimately a plant grown in a place or under conditions where light is restricted or from one direction will develop lopsidedly in that direction. A holly-tree in my garden used to be in the shade of a row of lime-trees and the main trunk grew up at about thirty degrees from the vertical—it *had* to get to the light. The limes were felled and on the side where the limes had shaded it the growth, now two years old, is growing up quite normally. The very early-leafing and flowering plants that "do well in the shade" like many of the cyclamen, utilise the fact of the bare stems, branches and twigs of the deciduous trees and shrubs to get their needed light and complete their yearly cycle of leaf and flower before the shade of the canopy develops.

Shade plants that do not "function" in this way solve the problem by increasing their leaf-area—as can be seen in many of the house plants now grown so much—or else by exposing as much of their leaf-surface as possible at right-angles to the incoming light, as do Ramondas and Haberleas with their wide, flat leaf rosettes, though these two are more "partial-shade" plants.

Most probably the reason why certain plants such as *Eritrichium nanum* and *Jankaea heldreichii*—and from a different extreme of conditions, *Lepidium nanum*—are classed as "impossible" or nearly so lies in the fact that their range of tolerance of changed conditions is very small. Cut down the intense radiation, change the water relationships, reduce the wind, alter the violent changes of temperature from blazing sun by day to freezing cold by night for a more steady temperature range, any one, two or all of these may be the reasons for their extreme difficulty in cultivation. Other plants are less intolerant of

change and *will* grow ; these intolerant ones generally will not, though there are a few records of these very difficult plants being grown successfully—but at what cost of time, trouble and care ? As an example, let us consider the yearly stages of *Oenothera caespitosa crinita*. In the wild in Nevada on a limestone stone slide it forms a dome of grey leaves studded with the big white flowers which turn pink as they fade. The second year from seed it produced its first flower, a year older it was just hanging on and flowering again, and this year, at four years old, it has flowered three times in the year and is now slowly beginning to assume a suggestion of the tufted form—but I have lost three other plants from the same batch of seed which I collected in 1965.

Aymon Correvon has shown that many of the high alpiners, when grown low down on flat ground, actually alter their growth habits. He makes the point that one of the biggest changes produced is in what he calls the “density” of the plant. Growth becomes less compact and tufted as vegetative growth is favoured by lowland conditions. The actual plant tissues become less tough—they are softer, larger and less efficient due to a decrease in the number of the so-called “palisade cells”. The cuticle layer is thinner and lignification is reduced. He has shown that the whole leaf is about 42% thinner, the ratio of thickness to breadth is altered from 0.214 to 0.125, and where there are protective hairs on the leaf their number is markedly less. These changes mean that the whole plant is much more vulnerable to fungal or bacterial attack. He also showed that these changes may be so profound that high alpiners such as *Gentiana pyrenaica*, which grows naturally in wet boggy ground, when grown on the flat ground at low altitude can be rotted away by systematic overhead watering with a rose on a watering can. He describes the foliage and tissues of these plants, which he classes as “delicate”, as being “blown up with water” and accordingly very easily injured as they lack the natural resistance and toughness of the plant growing in its natural habitat. In addition he makes the point that when a plant goes into a strongly vegetative phase it is to the detriment of the flourish. Thus some of these high alpiners abandon to a considerable extent their natural protection with the change of environment and this may be one of the most important factors in their extreme difficulty in cultivation.

A further factor which I think may be of very real importance by itself is the effect of radiation. Sellei, working in Hungary in the 'thirties, showed that if the ability of a plant to absorb radiation is

increased by letting it absorb certain dyes, it will be dwarfed—in some cases to half its normal size—though flowering and fruiting is not appreciably affected—and he suggested that the intensity of radiation at heights far above sea level may be a factor, in addition to wind-force and lower planes of nutrition, in the reduced size of mountain plants. A number of years ago I was able to follow this up by growing identical plants in two gardens about a couple of miles apart. One was fully exposed to the sun's radiation, being well above the town's dust and smoke ; the other was a hundred feet lower with trees, hedges and a burn running through it so that the air was much moister and there was a fair amount of smoke and dust. I took simultaneous radiation maximum temperatures, which gave a measure of the intensity of radiation, in these two sites, and recorded the relative humidity as well, and found a big difference between them. In the clean, dry air of the one the maxima were from twenty to sixty degrees Fahrenheit higher and the relative humidity was about ten to twenty per cent lower on average. I planted as nearly identical young plants in both in closely similar soils and found in the exposed garden that growth was only about $\frac{2}{3}$ of that in the other—and this was the case for quite a wide range of rock plants. Under the conditions of greater radiation, growth was smaller but flowers were slightly larger and slightly more numerous in relation to the size of the plant, brighter in colour and with rather more scent—in other words more nearly “in character” than under the softer conditions.

I also made one rather striking observation in the exposed garden. I had two banks, one facing south-west into the sun and wind and the other north-east away from both. The latter bank had been developed previously and I had planted on it, among other plants, several cultivars of mossy Phloxes, *P. subulata* cvs. They formed big lush green mats and never flowered—or very little. When the south-west bank was made up I ran short of plants and, until I could get something better, I filled the gaps with Phloxes, intending to pull them out and discard them later. They took a fearful hammering from the wind, shrank back to a fraction of their former size as shoots were torn off in the gales, and then settled down into hard tufts and covered themselves with bloom—they were not discarded after all !

Now those in their latter state were truly “in character” as I saw them many years later in the Rockies where they come from, and from that time I have planted mossy Phloxes so that they get the hardest conditions that I can provide—and with good results.

Finally, one must consider the question of the nutrient supply that the plant gets. All plants require the five major nutrients nitrogen, phosphorus, potassium, calcium and magnesium, and the critical point is that they should be in balance. In most natural soils they are in balance—nutrient deficiencies are not common in plants growing in the wild.

I have always suspected that Farrer's Scree (or Moraine, as he called it) mixture was based on what he saw with the eye rather than on actual composition. Most people, looking at a scree, would think that the plants growing in it were living in starvation conditions, but this is far from being the case. Although the top six inches to a foot of a scree is similar to Farrer's formula, farther down one finds very different conditions, for here lodges all the organic debris, dead plant and animal material which has been washed down by the rain and, once there, it mixes with the mineral matter weathered from the rocks and the stones of the scree itself to give a material much more closely resembling Boothman's Rich Scree mixture—a very different proposition.

Granted that the scree plant and also the rock or crevice plant has to get its roots down a long way to get to its food supply, once it reaches it, all is well. As a result, to starve rock plants seriously may lead to failure *but*, and this is critical, any sudden supply of nutrients will cause an undesirably sudden flush of growth—and this will be soft and vulnerable. A nutrient supply which releases its content only very slowly will not have this effect—hence the value of the John Innes Base Fertiliser in small amount, or else a more rapidly available source such as Bio applied as it is in extreme dilution at more frequent intervals.

There are, however, some plants which seem to be just impossible to keep in character. I saw a species of *Erigeron*, or possibly *Aster* growing in the Fremont Pass in Colorado at just over 11,000 ft., where it was a neat plant, some three inches tall with big flowers. I raised a number of seedlings from seed which I collected from it and tried them out in a variety of really hard exposures—full sun, wind, semi-scree, full scree and so on. It, at best, grew up to look rather like a poor form of Michaelmas Daisy, some nine inches tall at best and two feet or so at worst, with rather pale insignificant flowers; in none of the positions or conditions was it remotely like the plant in the wild.

One possible source of trouble which may contribute to the difficulty of keeping some rock plants such as this in character under any

protection or even grown hard in the open rock garden has only recently occurred to me. This is rather a tricky point for it relates to soil temperature and microbiological activity which is, of course, very largely temperature-controlled.

All organic matter whether supplied as a feed or present as dead plant roots, peat, leafmould, only becomes a source of plant nutrients when it is attacked and broken down, that is, "mineralised" by the micro-organisms present in the soil. Now below certain temperatures this activity ceases, so there is no release of nutrients that the plant roots can absorb. This critical temperature is not reached for very prolonged periods in our winters, whereas it probably is maintained for months on end in the mountains. This may keep the plants more or less stationary as regards development until the spring comes. With the spring and the melting of the snow, the soil temperature will rocket upwards, for the sun's heat at high altitudes is great compared with the lowlands. This may produce a rapid release of nutrients to the rock plant which then shoots away in growth—but still under the full influence of wind and radiation as we have seen earlier.

Further, at ten to twelve or fourteen thousand feet up in the Rocky Mountains, from the last spring snow and frost to the first autumn ones is usually about ten or eleven weeks—compare that with thirty weeks or so in our climate—can this also be a major factor ?

Wengen, 1970

Notes from a Member of the S.R.G.C. Tour

by ANNE C. MORGANS

"Hie to haunts right seldom seen,
Lovely, lonesome, cool and green."

(Sir Walter Scott)

THESE ARE words that are always with me in the Alps, although written about Scotland ; for the still, silent moments of the mountains are a bonus for the plant-hunter ; a rushing stream or waterfall may break

the silence only to enrich the moment when far-off forests become darkest blue as they recede down to a distant lake, opalescent and still in the valley below.

The searcher may study the plants he finds where they grow, and buy the seeds from the village shop, or remove a small sample of root according to his conscience or intent, but always his delight is intense when a rarity is seen. A cheerful "hello" is given to old friends, the gentians, campanulas, veronicas and alpenroses ; and a passing nod to the commoner meadow plants ; the salvias, phyteumas, trifoliums, hieraciums, etc., which brighten the passing scene with colour and gait.

The tour to Wengen, this year, was blessed with glorious weather ; and many areas were well scrutinised for alpine treasures.

First, the nearest hunting-grounds above Wengen ; the walk (or train-journey) to Wengernalp revealed many attractive woodland flowers ; the deep blue mulgediums (*Circerbita alpina*) as handsome as garden delphiniums, purple *Adenostyles leucophylla*—with white-backed leaves resembling large *Centranthus*, and the queer-looking *Cirsium oleraceum* which never seems to do anything but remain a tight head of creamy thistle-like flowers. Tall orchids abounded—all colours from palest pink to darkest purple amongst the very pretty *Veronica latifolia*.

After Wengernalp and on to Kleine Scheidegg the scene changed and meadow flowers predominated. First the buttercups and tall daisies (*Bellidiastrum michelii*), then *Campanula barbata* (in great numbers) ; and on to Eigergletscher for the high pasture flowers—*Gentiana acaulis* and *G. verna*, *Ranunculus aconitifolius*, *Gagea fistulosa*, *Viola calcarata* (purple), etc., and beyond, higher up in rocky places, the dainty *Lloydia serotina*, *Linaria alpina*, *Primula auricula*, *Saxifraga paniculata* (aizoon), *S. androsacea* and *S. oppositifolia*, *Androsace chamaejasme*, *Campanula pusilla*, *Draba aizoides* ; and, on a stretch of scree the sweet-smelling *Thlaspi rotundifolia* (fig. 50) with *Dryas octopetala*, *Ranunculus glacialis* and the wee white *Draba dubia*.

Returning to Wengen, and on an expedition in the opposite direction, by the Männlichen cable-car, cushions of *Androsace helvetica* (fig. 51) were found high up in chinks of the Tschuggen Rocks. Numerous odd plantlets of *Ranunculus alpestris* grew all over the place (still on the rocks) as well as *Primula hirsuta* and several small saxifrages. Nearby, in boggy hollows were very lush marsh-marigolds, trollius, purple pansies, *Ranunculus pyrenaicus* (with tall grass-like leaves), to-

gether with many of the other high prairie plants ; and soldanellas and crocuses at the edges of snow patches.

A visit to the Alpine Garden at Schynige Platte was most interesting, as the garden seems to have been greatly enlarged recently and many plants are now grown from seed in new scree beds. Walks and scrambles beyond here proved rewarding, and small saxifrages (*caesia*, *seguieri* and *hostii*) and interesting ferns were seen.

Crossing the Lauterbrunnen valley to Mürren and Allmendhubel towards a lively waterfall, a path, coloured with *Viola lutea*, was followed to that lovely valley, the Blumental, a wide saucer of sunshine, which was thought by some members to be the "tops" as many interesting finds were made round its rocky rim—*Erinus alpinus*, *Veronica alpina* and *V. aphylla*, *Viola biflora*, *Daphne mezereum*, *Biscutella laevigata*, *Dryas octopetala*, etc. The café-restaurant in the centre of the "saucer" was a welcome sight too !

A leafy walk, when shade was needed, to the Sefinen waterfall, through woods and meadows beyond Stechelberg at the far end of the Lauterbrunnen Valley, revealed *Astrantia major*, *Maianthemum bifolium*, *Thesium alpinum*, many orchids and the poisonous *Vincetoxicum officinale*. Nearby, the amazing cable-car up to the Schilthorn gave some members a chance to see *Androsace helvetica* growing at their feet as they followed in the steps of James Bond in his latest film, "On Her Majesty's Secret Service."

A jaunt to Grindewald provided a pleasant ride in the chair-lift to First (with no hasty hopping on and off) ; and the walk down was good as so many varieties of flowers were seen on the way.

Other journeys to the summits of the Rothorn, the Niesen, the Niederhorn gave glimpses of *Paradisea liliastrum*, yellow fox-gloves (*Digitalis grandiflora*), wolf's bane (*Aconitum lycoctonum*), pink *Cephalanthera rubra*, the hairy *Pulsatilla vernalis*, the minute *Gentiana nivalis*, *Primula elatior*, really large globularias (*nudicaulis*—the powder-puff flower (fig. 52)—and *Silene acaulis* in all shades of pink. All these places were rewarding, but probably one of the best grounds was in the Wengen area itself ; the triangle Wengernalp-Biglenalp-Mettlenalp was a most pleasant day's ramble. Beginning at Wengernalp, the long path meandered downhill through rocky woodland to the beautiful valley of the globularias (*cordifolia*) which covered the rocks with patches of pale blue. Here, in this idyllic scene, members ate their packed lunches by a babbling stream as they gazed at the variety of flowers around them—*Senecio doronicum*, *Hieracium villosum* (with

fluffy leaves, buds and stems), thyme, *Aquilegia alpina*, tall *Veratrum* and very large alpenroses (*hirsutum*). The walk then led on through more woodland where *Cypripedium* was found (far in the wood) and, on the path's edge, a cluster of *Moneses uniflora*, looking like little angels ready to take flight. Then, over more open ground with numbers of exceedingly large *Anemone narcissiflora* and *Trollius europeus*, continuing along the foot of rocky heights with hanging glaciers, this delightful day's outing ended in a large meadowy Tal, full of orchids and bog-plants ; and for thirsty ramblers, a welcome glass of lager at the Wengernalp Station hotel.

Most members agreed that the flora of the Wengen area was not as exciting as that of other places in the Alps, but that the scenery was as magnificent as any and the village a haven of peaceful existence.

Some of the group stayed on for an extra week and were rewarded by a pleasant Village Festival of music and dancing with a procession of small children dressed as gentians, pansies, lilies, edelweiss, etc., and bearing a banner saying "Please protect our Country's Flowers". A dozen or so stately cows followed wearing huge bells at their necks and colourful decorations and leafy branches on their heads. Villagers in their local costumes completed the happy scene.

An unexpected fall of snow, on another day, transformed everywhere to Fairy-land ! Buttercups and clovers popped up through a carpet of sparkling white ! The sun melted it quickly away, and so too, with regret, the last members of the S.R.G.C. left the valleys of the great peaks—the Wetterhorn, the Schreckhorn, the Eiger, the Mönch and the Jungfrau.

APOLOGY

Owing to the postal strike it has been impossible to send proofs to contributors. The Editor apologises to them for any mistakes which may have been introduced. He asks that errors may be notified to him so that these may be corrected in the next issue.

The seed exchange must be in complete chaos, but the Editor and Seed Exchange Manager have been unable to communicate, and apologies are given to members who have not received seeds.

Apologies are also due to any advertiser whose application has been held up in the post.

Alpine Plants of Gurvan Saichan

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GURVAN SAICHAN is the most Eastern mountain range of the Gobi Altai, its peaks reaching nearly 3,000 m of height. Rising sharply from the Gobi Desert, Gurvan Saichan is 150 km long and about 50 km wide. In the heights between 1,600 and 2,000 m. the dwarf savin—*Juniperus sabina* L. can be found, called by Mongolians “chonin arc”, the Sheep Juniper. Otherwise Gurvan Saichan has almost only herbaceous vegetation without any tree and therefore the whole mountain terrain can be seen quite plastically in the morning or evening light.

I describe my wandering in the Gobi Altai in greater detail in my other article “Alpines of Baga Bogd uul” published in the American Rock Garden Society Bulletin No. 2, 1968, and so not to repeat myself too much I shall be brief. The way from Ulan Bator, the capital of Mongolia, to the foot of Gurban Saichan was about 2,000 km long. I was a member of Czechoslovak and Mongolian Scientific Expedition. We were 5 naturalists, 3 botanists, one zoologist and one entomologist.

August 25th 1966 was my second most eventful day in Mongolia. I can give it a Silver Medal. The Golden One I would give to August 20th, spent in Baga Bogd Mountains which I described in the American Bulletin. Before giving an account of this day I would mention a small event. We made a stop in a sandy dry river bed where no water had occurred during the last 10 or 1000 years ! It was so hot that as soon as you let the glowing sun touch your bare neck you could see black spots before your eyes. But I had my anorak on so that my eyes were well. On the ground there were small pieces of jantar, jasper, and also the very lovely flowering jewel *Iris bungei* Maxim., a Mongolian endemic plant. It was growing on the border of the dry river bed where no other vegetation occurred and formed a thick green “brush” of leaves and big scented purple-violet flowers.

But let us go back to our destination—Gurvan Saichan Mountains. We left the town Dalanzadgad on August 24th at noon, passed a semi-desert and a steppe, and there in a mountain valley leading to a pass, on the sheer cliffs, we saw shrubs of wild almonds—*Amygdalus pedun-*

culata Pall. which were about one or two metres tall. When flowering they must be beautiful. When I climbed up the cleft I saw that only some of the shrubs bore fruits. This feature is quite common in areas with extremely dry and harsh conditions (middle Asia, Andes, etc.). The plants do not waste their energy. They are niggardly on love. But when grown in cultivation they usually flower well and more freely than in the nature of their homeland.

A little later we came to the recreation centre of Mongolian children in a mountain pass. Late in the afternoon I went together with a Mongolian botanist Cojzhamc towards the second highest peak of this mountain range, westwards from the pass, which goes to the Southern Gobi and further on to the Kchan Lan Mountains and Tibet. There was no water in the mountains and we had to be very sparing of it. At the end of a narrow mountain hollow we pitched the tent and then I hurried up the near hills to see before nightfall the flora there. I found interesting and nice plants and saw from a distance my destination—a mountain 2,809 m high ! But it was growing dark quickly and so I went back to our camp (fig. 48).

Next morning we set out very early. My friend returned at half-way but I covered lots of kilometres at the altitude of 2,000-2,800 m. On different shrubby and sub-shrubby species of *Artemisia* I saw the bright blue parasite broomrape—*Orobanche caerulescens* Steph., its Mongolian name is “dzerleg gojo” which means a wild “gojo”. Gojo is a strange plant. *Cynomorium songaricum* Rupr., from own family Cynomoriaceae, parasite of nitrebushes—*Nitraria sibirica* Pall., *N. roborowskii* Kom., and *N. sphaerocarpa* Maxim. The pulpy stems of *Cynomorium* are about 30 or 40 cm tall and 2-3 cm thick ; these are very rich on sugar, starch and tannin, pleasant scent as fruits. People make brandy from them. We found *Cynomorium* only once in Gobi Desert.

Over there on the slopes we saw the big yellow flowers of the poppy—*Papaver rubro-aurantiacum* (Fisch.) Lundstr. (fig. 49), 10 cm tall, with a basal leaf rosette. The colour *rubro-aurantiacum*—red-orange—has only dry flowers in herbarium. I grow this plant from seed and if it stays in cultivation as neat as it is in the wild then it can be a gem for a rock-garden ! Very nice also was the violet-blue starwort—*Aster serpentimontanus* Tamamsch. (*A. cylleneus* Onno), near to European *Aster alpinus* L. It is called by Mongolians “sheep-eyes” —chonin nud. This plant is well known and very popular and its Asian alpine forms are especially pretty. Next alpine plant of the



Photo—Vladimir Vasak ▲

Fig 48—The Mongolian Steppe

Fig. 49—*Papaver rubro-aurantiacum*

▼ Photo—Marta Rybova





Photo—P. J. W. Kilpatrick ▲

Fig. 50—*Thlaspi rotundifolia*

Fig. 51—*Androsace helvetica*

▼ Photo—P. J. W. Kilpatrick





Photo—P. J. W. Kilpatrick



Fig. 52—*Globularia nudicaulis*

Fig. 53—*Colchicum* 'Autumn Queen' at
Thornsett, Dore, Sheffield



Photo—R. D. Nutt





Photo—R. D. Nutt



Fig. 54—*Colchicum giganteum* at Royal
Botanic Gardens, Kew

Fig. 55—*Colchicum* 'Rosy Dawn' at
Thornsett, Dore, Sheffield



Photo—R. D. Nutt



Compositae family I want to mention is alpine saw-wort—*Saussurea alpina* DC., only 10 cm high, with leaves silver underneath and many purple head flowers. It was growing on scree of the lower slopes. High up, above 2,000 m, there was of course a classical alpine plant of lion's-foot—*Leontopodium campestre* (Ledeb.) Hand.-Mazz. Its companions were the omnipresent worm-wood—*Artemisia frigida* Willd. in its sub-species *parva* Krasch. This *Artemisia* is one of the essential fodder plants in Mongolia. The above mentioned alpine form makes stout silver turfs with no numerous flower heads. The whole plant is strongly scented.

On the northern slopes of the range, leading to the peak, (2,809 m) I found the little white stars of rockfoil—*Saxifraga cernua* L. forma *simplicissima* Ledeb. with simple stems bearing only one flower. The leaves form a basal rosette and the whole plant is only 5 cm tall. I saw there also a small flock of *Tetraogallus altaica*, beautiful alpine birds which are called by Russians very aptly "mountain turkeys". And really they were angry with me in a turkey-like way, with tails held up in a fan-shape. They do not like flying and so they left me gravely and "on foot".

The nice yellow lousewort *Pedicularis flava* Pall. is plentiful in Gurvan Saichan. Its Mongolian name "chueling" means a "bleeding wound" because the cattle poisoned by this plant have a bloody urine. A neat alpine growing on the dry and stony slopes was rock-jasmine—*Androsace incana* Lam. It formed colonies of small semi-globular buttons with white or whitish-pink flowers; it is near related to *A. villosa* L. It appears more often in North Mongolia than in the Gurvan Saichan Mountains.

Another *Androsace* appearing there is *Androsace filiformis* Retz. a biennial, with umbel of white flowers and a basal leaf-rosette. In poor soil it is quite decorative but in a richer one it grows too tall. Sea-lavender—*Limonium flexuosum* (L.) Ktze., called by Linnaeus *Statice flexuosa*, I found only in a few very nice specimens. In Baga Bogd Mountains I collected a similar species, *Goniolimon speciosum* (L.) Boiss. The flowers of sea-lavender are pink, and very long-lasting. Even the dry finished flowers keep their pink colour. This plant is suitable for dry places but is in culture only a biennial.

Very rare in Baga Bogd uul and also in Gurvan Saichan was a dwarf lovely *Iris tigridia* Bunge. I found only one plant with a seed-pod. If this species can be kept and propagated, then its big purple-red flowers will be a lovely spring decoration for a dry rock-garden. From

the Labiatae I collected in several localities mother-of-thyme *Thymus serpyllum* L., then a nice small blue skullcap—*Scutellaria grandiflora* Sims., dragonhead—*Dracocephalum foetidum* Bunge, a nice annual, and catmint—*Nepeta sibirica* L., both of these latter plants have violet blue flowers which are very big, especially the *Nepeta sibirica*. The annual *Amethystea caerulea* L. can be used on most exposed and driest parts of a rock-garden as a temporary decoration. From the family of Rosaceae I found interesting the tiny and rare plants of *Sibaldianthe sericea* Grubov with small whitish flowers, an endemic of Mongolia, and two species of small yellow cinquefoils—*Potentilla multifida* L. with softly cut leaves and a hybrid *Potentilla sericea* x *P. sibirica* (synon. *Potentilla pamirica*) with small silvery leaves.

My love and also my study object in the Botanical Institute is the family of Leguminosae. Of these I found in Gobi Altai milk vetch—*Astragalus alpinus* L., which has been neither collected nor recorded there. Quite a nice plant with compact inflorescence of intense blue-violet colour. The European specimens of *Astragalus alpinus* have whitish-blue-violet flowers. Very decorative for the dry places could be the cushion-like spiny shrublet *Oxytropis tragacanthoides* Fisch. and small *Oxytropis pumila* Fisch. with violet flowers in rich racemes and several basal hairy leaves. On the southern slopes of the mountain range was found *Astragalus laguroides* Pall., a small stemless plant with violet flowers and greyish hairy 3-8 pinnate leaves. The inflorescence on the end of flowering looks like a hare-tail. I collected seed of this species and think that it could be a good plant for collectors. It is a Mongolian endemic plant.

In the afternoon I spent an unpleasant time when being surprised by a big thunderstorm and heavy rain. I could hardly see in the thick cotton-wool clouds and being quite alone in unknown mountains I knew that my situation had not been too pink ! But my fortune did not leave me and I got on the right side of the range, near the pass. There I met yet another lovely *Astragalus miniatus* Bunge, only 10 cm tall, with salmon-red flowers and grey-green leaves. Still I found only one specimen of another endemic plant of Gobi Altai, *Valeriana saichanensis* Grubov, a small attractive deep violet alpine valerian. Unfortunately the inflorescence was finished.

Just as I chose my "Beauty" in Baga Bogd uul—it was feverfew—*Pyrethrum pulchrum* Ledeb.—so I found my Queen of Beauty in Gurvan Saichan as well. It was *Orostachys thyrsiflora* Fisch., a plant which resembles, with its pulpy leaves, a *Sedum*, and when sterile it

resembles again a *Sempervivum*. Otherwise it was a very nice pink flowering plant. It grew only on one locality, on tuff rocks in a dry slope in the altitude of about 1,600 m.

And, with this Queen of Beauty of Gurvan Saichan Mountains I close my article. I chose my Queen myself so that there is only little of objective judgment, but if we are able to grow on the young specimens which I brought home and raise new plants from seed, then Index seminum of our Botanical Institute will offer the seed of this beauty and the Scottish rock-gardeners will be able to see themselves if my choice was right.

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European Primulas and their Hybrids

by DAVID LIVINGSTONE

(Lecture given at North Berwick on 25th October 1970)

IN THE April 1956 *Journal* I wrote that in recent years there had been a tendency for growers of rock garden plants to neglect our European primulas in preference for their Asiatic cousins. I think this is still true today. I note too that gardening journals in recommending plants for the rock garden seldom mention European primulas. I therefore regard it as my task this morning to beat the drum for European primulas and their hybrids, many of which are easily cultivated, easily propagated by division, and are free with their flowers. They are good subjects for the rock garden, for the alpine house and the cold frame and even the beginner can have success quite quickly with a selected half dozen or so. Forty years ago when I first began to take an interest in rock garden plants the late Dr. William Buchanan recommended a number of plants to start me off, among them *Primula pubescens* 'Mrs. J. H. Wilson'. I still grow it—I would not be without it—and this was the variety which kindled my life-long interest in the genus

Primula. If I can arouse the same interest in even a few of my audience and in a number of readers of the *Journal* I shall be well satisfied.

The majority of the primulas with which I shall deal thrive in a fairly rich diet. I mainly use now what I regard as roughly a John Innes No. 3 potting compost with coarse sand added, the quantity varying according to the species or variety. I have given up to a large extent precise measuring and tell by feel of hand whether my compost is gritty enough for the particular subject. In any event quick and free drainage is essential whether the plants are in the open garden or in pots. With few exceptions all should be planted in full sun in the rock garden, or nearly so, but they should be so planted that their roots can seek out the shelter of a rock. Plants in pots should be partially shaded by wooden slats in prolonged periods of strong sunshine and at no time should these primulas be allowed to dry out whether in pots or in the garden.

European primulas in the open should be lifted and replanted every two or three years, otherwise they will go leggy and lose vigour. In the year or years when no replanting is done a top dressing of the compost advised earlier should be given. Pot-grown specimens should, I think, be re-potted every year. All of these operations should be carried out immediately after flowering when root activity has just begun after the winter's rest. The stronger-growing varieties like the *pubescens* hybrids respond well to a watering now and again during May, June and July with a weak liquid feed.

Old withered leaves must be removed—tweezers are good instruments for this purpose—otherwise mould may gather on them and cause decay in the stem. It is particularly important that this operation should be carried out weekly in the autumn and much more necessary with plants in pots than with those in the open ground. One's stock of most species and varieties of European primulas can be readily increased by simple division immediately after flowering. Increase by seed is also possible in many cases and unless cross fertilisation has taken place the species will come true. Seeds from hybrids are unlikely to give plants identical to the parents but, particularly with the *pubescens* varieties, the results can be interesting, indeed surprising. I have a self-sown seedling from x *Goeblii*—I am not absolutely sure that it is this hybrid derived from *auricula* x *rubra*—which I am growing on as it has the most beautiful round flowers which open a blueish-purple then quickly become a rich purple. Will Ingwersen has recorded that second and third generation seedlings from x *Goeblii* will give

flowers ranging from yellow to purple. At the moment I have a dozen or so seedling primulas which have been self-sown in pans of *sempervivums*. One has flowered and the leaf and clear pink blossoms indicate an affinity with the species *villosa*. Try raising seedlings from hybrids—it's a lucky dip and you may get a winner. Seed of all the European primulas are best sown when harvested. Delay in sowing is likely to retard germination.

European primulas are remarkably free from disease, although some stock seems to be infected with mosaic which shows itself as a mottling of the leaves with a consequent loss of vigour. The only remedy is to burn the plants. The two main pests of primulas are root aphid and the larvae of the vine and raspberry weevil. Only twice in forty years so far as I can recollect have I been troubled by these pests. The first indication of root aphid is a loss of vigour and yellowing of the leaves. An examination of the plants will reveal the insects, which appear to be covered in white down, around the neck of the plant. Further examination will show that they are clinging to the whole root system. With a bad infestation the plants should be lifted or knocked out of their pots and their roots and stems washed clean of the aphid and re-planted. The soil in which the plants have been growing should be disposed of. In the case of pot-grown specimens, crystals of Para-di-chlor-benzine placed under the vent will prevent a recurrence; indeed, if the attack is only slight this would get rid of the root aphid without resort to the more drastic washing of the roots. I have had no experience of plants being attacked in the open ground, but I have no reason to believe that crystals of this chemical placed in the soil but not actually touching the roots would not be effective. In the discussion which followed the reading of this paper it was suggested that spraying or watering with a systemic insecticide would kill off root aphid. This would certainly be worth trying.

The vine and raspberry weevils are somewhat like dull grey beetles and being nocturnal feeders are very difficult to find. Their presence is shown by pieces eaten out of the edges of the leaves just as though they had been punched by a ticket inspector. But the harm is done by the larvae of the weevils which live in the soil and eat the roots. Wilting plants when the sun becomes stronger in the spring is often the first indication of the devilish work which has been going on all autumn and spring. Arsenate of lead in the soil is said to kill the larvae but I have no experience of this. I rid myself of them by lifting the plants, sifting the soil with my hands and killing them one by one.

The larvae are easily recognised. They are about one-third of an inch long, white in colour, and lie just under the surface of the soil in a characteristic half-curved state. By the way, they also attack Cyclamen and Saxifrages. However, if my experience is anything to go by, you may seldom, if ever, meet either of these arch enemies. Occasionally in the spring and summer I spray with a systemic insecticide and this takes care of greenfly and indeed this may also account for the fact that in recent years I have had no root aphids.

I have had difficulty in obtaining slides to illustrate all of the European primulas which I have grown. This may be indicative of the fact already mentioned that these primulas have been somewhat neglected. I had a number of slides of my own taken by Mr. Alf Evans in my Edinburgh garden and by Dr. Norman Holgate in my garden at Bearsden. Both are excellent photographers and I am grateful to them for this record of some of the primulas I have grown. These slides have been augmented by others from our own Slide Library, the A.G.S. Library, Alf Evans and Mr. John Lawson, and I hope they will be sufficient to indicate the value of these primulas for garden and pot culture to encourage some of you to have a go for the first time or to extend the range which others now grow.

May I stress that all I have said and will say about the plants illustrated derives almost wholly from my own personal experience and that with few exceptions I have grown these plants at one time or another with varying degrees of success—and failure !

The following slides were shown and abbreviated notes are given as appropriate :—

Farinosa, *frondosa*, *halleri* (*longiflora*) and *scotica*. None is very long-lived and should be kept going from seed which is freely set and germinates readily. These species make good pot specimens and in the rock garden, because they are small, they look best planted in drifts. They all die back in autumn to resting buds which tend to be raised out of the soil by severe frost. Consequently they require inspection during the winter and if necessary pressed back into place. *Allionii* is a gem for the alpine house or cold frame, but rather difficult in the rock garden. A very gritty, porous compost is necessary and great care must be exercised in taking off dead leaves. Mr. Harold Esslemont, who grows this species to perfection, has told me that he allows his plants to go slightly limp by withholding water to ease the task of plucking off dead leaves. It is beneficial to work in some fresh coarse compost among the stems to encourage fresh roots after flowering,

and again this could be more easily done with the plant in a slightly limp state.

'Ethel Barker' is a hybrid from *allionii* but is much easier to grow and will succeed out of doors, particularly in the drier areas of Scotland. *Minima*, a very tiny species, is free flowering in short alpine turf in the wild, but it is shy with its blossoms in cultivation. Fortunately it has given us two natural hybrids, *x bileckii* and *x forsteri*, which are reasonably easy to grow in pots or in the garden and which give freely of their large flowers.

Marginata in all its forms, particularly 'Pritchard's' and 'Drake's' varieties, is a good species which grows and flowers well without fuss. The parentage of 'Linda Pope' is in doubt, but *marginata* would appear to have been used in its breeding, giving it large silvery leaves enhanced by wonderfully symmetrical lavender-blue flowers. 'Barbara Barker', a seedling from it, has similarly shaped flowers of pink but lacks the handsome leaves. However, it is well worth growing, if it can be obtained, as a companion to 'Linda Pope' or as a substitute for it. *Carniolica* is a delicate-looking species with small bell-like flowers which requires some shade from the mid-day sun. It has never been readily available, but a cross of this species with *auricula* (*x venusta*) hybridised again with *marginata* has given us 'Marven', a very good well established plant with rich violet flowers freely borne and scented.

Clusiana, *glaucescens*, *spectabilis* and *wulfeniana*, all of the same section of primulas, are very good species with the first named in its best forms being outstanding. The finest form of *clusiana* which I have grown and also lost was given to me by Major-General D. M. Murray-Lyon. It had flowers as large as a five shilling piece. A really sunny position with root shade suits it best.

Rubra, *villosa* and *viscosa* are botanically closely related species, but distinct enough to the gardener's eye to warrant growing all three in a large collection. The best to my mind is *rubra* which is itself variable in leaf and flower as one would expect, since it is found in the wild over a wide altitudinal range as well as over a large geographical area. *Auricula* too is a variable species and in its best forms is a most beautiful plant with white mealy leaves and large trusses of scented yellow flowers nicely set off by a white paste eye. One form, *Auricula* ssp. *balbisii*, which I found in the Val Gardena in the Italian Tyrol, has no meal on its leaves or stems and the flowers have no white eye or scent, but its blossoms compensate by being a deeper yellow with almost a trace of orange.

Where *rubra* and *auricula* meet in the wild one can find natural hybrids and in cultivation man has crossed these two species to give that excellent group of easily grown and floriferous primulas known collectively as *pubescens* hybrids. These are truly good plants for the beginner, presenting no real problems in a good vegetable soil. Most of them have been in cultivation for a very long time, but Jack Drake and his partner John Lawson, Inshriach Nurseries, Aviemore, have introduced in recent years two new ones, 'Christine' and 'Marlene', which compare favourably with those that have stood the test of time, namely the following :—

'Alba'—white as the name indicates, and sweetly scented. This one requires a little mid-day shade.

'Mrs. J. H. Wilson'—deep lilac and a very great favourite.

'Faldonside'—crimson. All the stock that I know has a yellowing of the leaves in early spring growth, but I am not aware whether this is caused by a virus or is simply a characteristic of this variety. Certainly neither its growth nor flowering is affected.

'Ruby'—wine red.

'Rufus'—brick red. The strongest grower of them all and with me the last to flower.

'The General'—rich terra-cotta red and quite outstanding.

A number of writers have recorded that 'Faldonside' and 'The General' have a weak constitution, but this is not true in my experience.

x *Hyacinthia*, not to be confused with the asiatic *Primula hyacinthina*, is a very strong growing hybrid with blue flowers, but unfortunately much of the stock is affected by virus. However, it is such a good garden plant that it is worth searching for clean stock.

Jack Drake and John Lawon have given us another fine hybrid, 'Joan Hughes', with large trusses of reddish-purple flowers. I do not know its parentage but suspect that *rubra* was one of them. It is small in growth and I have not attempted to grow it in the garden, but it makes a good pot specimen.

This is a very sketchy account of European Primulas and their Hybrids because of the restriction of time, but I hope that even so there has been enough interest aroused to cause members to grow more of these rewarding plants and to take them to the show bench where by reason of their gay colours they make an impact on visitors.

Mont Ventoux

by SHEILA MAULE

THIS MOUNTAIN is in 'Petrarch' country ; in a letter Petrarch described his climb of Mt. Ventoux, and I believe it is the first time a writer ever wrote about a mountain climb. For those who, like me, don't know anything about him here is a thumbnail sketch. He was born on July 20th 1303 and was a lyric poet, of Florentine extraction, whose father went to Avignon, the then seat of the Papal Court. He became a churchman and had a lifelong passion for Laura (possibly Laura Noves, wife of Hugo de Sade). She inspired him with a passion which has become proverbial for its constancy and purity. You cannot be in Provence without being conscious of his name cropping up all the time, along with Mistral, the famous Provence poet (1830-1914) who did so much in his writings to keep the ancient language of Provence alive.

We were staying at Pernes-les-Fontaines, a small, walled mediaeval town in the Department of Vaucluse, off the tourist track. The house was outside the town, and as we sat on our little terrace looking over the town to the mountains beyond, a high conical-shaped white peak stood out from the rest ; this was Mt. Ventoux. We could not see it clearly as there was usually a heat haze, and my mind was not on alpinism in that land of vineyards, olive trees and hot baked earth. Every day we went exploring, not so much the usual sights in that part of the world, but the countryside, foothills and byways. We did 'do' some of the well known sights of course, but we rather concentrated on the countryside. In that enchanted land there is so much to see, fairy tale castles and villages built on the tops of hills, the reason being, for the villages at least, for defence against the Saracens.

One evening as we sat on our terrace my son-in-law said, as he was studying the map, "would you like to go to the top of the mountain ? It is called Mt. Ventoux and there is a road to the very top." We decided to go next day.

Ventoux is a corruption of Ventour, said to mean 'wind buffeted' and, as we were to discover later, it was almost an understatement. The height is 6,273 ft., which makes it by far the highest mountain in the lower Rhône Valley. From the summit on a clear day almost the whole of Provence can be seen. The guide books say you can see a

panorama extending from Marseilles to Mt. Blanc and from the Cevennes to the Italian frontier.

The next morning we packed a picnic and off we set via Carpentras, through lovely villages, that looked as if time had stood still in them, vineyards and woods and, most of the way, climbing up through the foothills of the Basses Alpes. Presently we came to the lavender fields, acres upon acres of them ; the very air seemed to be lavender coloured, and I feel that Farrer would have described it as 'amethystine'. The country here was rolling foothills and very stony, poor land ; the effect was all shades of lavender and we were enchanted with it. I didn't know that lavender was an 'alpine', but it seemed to grow everywhere—on the roadsides, at the edges of the woods, and we found it well above the tree line. Our landlady was adamant that we had to be very careful of walking in the lavender fields, as 'serpents' abounded in them. But the only 'serpent' we saw was when we were exploring the Roman Theatre at Orange after 9 p.m., and we spotted one curled up just inside the door where many people were coming in. We pointed it out to the attendant and he made short work of the poor thing with a rock.

The lower slopes of Mt. Ventoux are covered with forests, in which many flowers were growing, no doubt many of them growing further down earlier in the summer. Particularly lovely, I thought, was *Campanula persicifolia*, swaying gently in the breeze, with the sun shining through its petals ; it was a very elegant plant. At last we were above the tree line, where there was a small settlement of chalets, used by the winter sports people, but which can, I believe, be rented in summer ; there was also a café at this point. The road all the way up is excellent.

The whole of Mt. Ventoux above the trees is glaring white limestone scree, mostly very large stones, very difficult to walk on, and very steep. At first glance there did not seem to be much growing, but up above the café on the slopes above the road we saw hundreds of small yellow poppies, which I think were *Papaver rhaeticum*—a lovely sight. (I should like to say here that I am no botanist, and I am open to correction to any plant to which I put a name, also never thinking I would need it, I had no book of reference with me.) We drove on towards the summit until we found a stopping place and got out to do a bit of exploring.

Walking was difficult on the unstable scree, but we soon found there were plenty of plants, unfortunately few in flower as we were too late in the season (August), but *Campanula allionii* was threading its

way through the stones, and its beautiful little flowers were sprinkled here and there, though never a lot ; a *phyteuma* was also growing with it, and it was well flowered and of a very intense blue. Everything was very dwarf, sheared off by the incessant wind, so if even the books say a certain height for a plant, it didn't ever get to that height on Mt. Ventoux. Along with the other plants there was a very attractive small yellow *linaria*, which has kept its character when grown from seed in my garden. Crouching down among the stones there was a lot of a very small crucifer, looking like a tiny white *alyssum*, very silver in the leaf, white flowers, large for the plant, very sweet smelling and turning pinky-mauve as it aged ; I was suspicious that it was an annual, and I gathered seed of it which germinated well, but it lost all its character here, grew large and bushy, with the smallest of flowers, and I suspect I have it for ever as there are seedlings everywhere. Mossy saxifrages were in the shady parts and *Iberis sempervirens* was plentiful. *Saxifraga oppositifolia* was everywhere, with intensely silver leaves. There was a *myosotis* which I hoped was *M. rupicola*, but which turned out to be a rather dirty pink when grown from seed. On the boulders were beautiful silver clumps of *Douglasia vitaliana*, which I see in Anthony Huxley's "Mountain Flowers" grows on stabilised scree and acid soils, of which this was neither ! The cushions were fully 6-8 inches across, but they had already flowered.

We got into the car again and drove to the top, where there is a restaurant and a tall building. This area is all fenced off, for which we were to be grateful later. We got over to the north side of the mountain and found different plants. *Linaria alpina* grew here, and a little pink-flowered annual plant which I think is a *Euphrasia sp.* ; *Paronychia serpyllifolia*, again so silvery on the limestone, but not so attractive in the garden, and a lovely little spurge which I was unable to grow from seed.

We went down hill again and parked at the café I mentioned earlier, and climbed up another slope. Here grew the most marvellous *Carlina acaulis*, enormous clumps, and the flowers so silvery they looked as if they had been sprayed with aluminium spray ! Also there was the most enchanting small 'pea' which proved to be *Ononis cenisia* ; in my ignorance I brought a plant home and, not knowing how difficult the whole family is to transplant, I just gave it ordinary care and had no trouble with it, and I have also grown it from seed but they didn't flower this year. There was also a lot of *Eryngium sp.* as white in the leaf as the rest. A small hawkweed also grew there, a very nice yellow

flower, again with intensely silver leaves. I brought one home and grew it on the only limestone 'alp' I have, on top of a lump of tufa in a trough ! It has kept dwarf, no doubt because it is starved, but the leaves are not so attractive here. There were lots of plants which I didn't know and, surprisingly to me, quantities of pink foxgloves, chiefly in the little gullies where they could get some shelter.

We had only been in Provence for a few days, and as the temperatures were somewhere in the upper 80s it was useless to try to collect seeds or plants then, so I was promised a trip to the top the day before we came home.

So the time drew near when the holiday was coming to an end, and we were visiting the Greek ruins at Glanum at Saint-Remy-de-Provence, which contain the only Grecian houses known in France, and further along the road is the ghost town of Les Baux. The excavations at Glanum are well below the road surface and the heat was terrific, so we decided to go and have a cool drink. The town is famous, among other things, because Van Gogh, while in the asylum there, painted some of his best paintings, and the 'prophet' Nostradamus was born there. We sat in the shady street and drank iced lemonade—I think I have never tasted anything better ! Later, as we sat on our terrace having dinner, the heat was very oppressive, though it was usually very pleasant at this time of evening. The cicadas seemed to be shriller, and the flying insects were in clouds round the light. It all pointed to a storm. I awoke in the night to hear the trees 'whispering change' and the cicadas were silent. Then I heard the first gust of wind, then the rain, the mistral had come ! The wind was tremendous, the trees bent double, and very heavy rain. In the town next morning they assured us it was 'très douce', but we thought it quite frightening. The roads were littered with branches and debris, but one very good thing was the dust had been laid.

The last day of the holiday had come and there was nothing else for it but to pay our visit to Mt. Ventoux in spite of the mistral. So again the picnic was packed and off we went. It was a brilliant sunny day, and whereas before the storm the views were always blurred with heat haze, this time we could see for miles in the brilliant light. When we got to the café, almost at the top of the mountain, and turned the corner, my daughter said 'look at the deer' ; on closer inspection they proved to be not deer but the very athletic sheep of France, with long legs, and they can climb like goats. There was a large flock of them, and presumably they were very hungry, because they were slowly going

over the scree, and they were not selective ; everything to them was edible. We got out of the car and could hardly stand upright, the wind was so strong and perishingly cold. We hurriedly got back into the car and decided we would go down a bit and have our lunch. We found a gully on the less windy side and had lunch amid boulders festooned with silver cushions of *Douglasia vitaliana*, and all around epilobium, ononis, foxgloves, and many other flowers. Then into the breach once more. When we got to the top the wind was unbelievable and we had orders from my son-in-law that we were not to go near the 'edge' as we might be blown over. Everything edible had been eaten by the sheep, except on the very top which, as I said before, was fenced in. So up amongst the throng of people we went, all crowded at the side of the escarpment and looking north. I am sure that never in my life will I see such a view again ; it was, to use that hackneyed phrase, 'breathtaking', though we didn't have much breath anyhow in that hurricane ! We thought we could see Mt. Blanc, and every valley and range stood out in sharp relief. We simply stood and gazed, and could hardly get down to the job in hand, i.e. collecting seeds, mostly from under the feet of the tourists. One bewildered man could bear it no longer and came to ask us if we were looking for insects ! However, we did not do badly and even if we had got nothing the view was worth any journey.

The drive home was sheer pleasure, every turn in the road brought fresh delights, and flowers galore. And so our last day in Provence was over. We caught the train from Orange next morning, a long journey to Paris in a very crowded train, arriving on the dot, and so to fly to London, then to Edinburgh at midnight.

I am lucky not to be able to say, as Robert Louis Stevenson said, 'I was only happy once—that was at Hyères', but I do think that Provence has a mystery, beauty and romance that catches at the imagination, and I shall be very happy to return, this time with my copy of 'Mountain Flowers' safely packed.

This is a translation from Michelin—Guide Vert—Provence, pp. 104-106.

The massif is the most prominent in the Rhône area of Provence, dominating the Rhône valley to its west, the plain of Carpentras and the plateau of Vaucluse lying to the south, and the lower massif of Les Baronnies to the north. The summit is 1912 m above sea level. It is swept by the gales of the mistral, and the temperature there is, on average, 11 degrees lower than that at the base ; there is twice as

much rain on the summit as at the base. At the Observatory the thermometer can fall to -27°C and from December to April there is generally snow from 1300-1400 m to give excellent winter sport facilities.

Flowers and plants usually seen in Provence are found on the slopes, but alpines are found on the summit, especially Spitzberg saxifrage, and the small hairy Greenland Poppy. The flowers are at their best 1-15th July.

Since the 16th Century timber has been sent from the slopes of Mt. Ventoux to Toulon for shipbuilding, but reafforestation was begun in 1860; Aleppo pines, green oak, white oak, cedar, beech, pine, fir and larch give way to an enormous stretch of white stones at about 1600 m.

The oldest road up Mt. Ventoux was made about 1885 at the same time as the Observatory which it was built to serve. There is also an Air Force radar station and a television relay station on the summit.

In summer, during the heat of the day, the mountain is often surrounded by mist; in winter the air is clearer, but climbers require skis.

Snowdrop Cultivars and Colchicums in Cultivation

by R. D. NUTT, M.A., F.I.C.E., F.L.S.

The Clark Memorial Lecture given at Edinburgh on 5th November 1970

I HAVE a distinctly guilty feeling about this being my first public contact with the S.R.G.C. Being a Yorkshireman, I realised soon after I joined the S.R.G.C. in 1957 that it would pay to become a life member. Let me hasten to add that I did the same with the A.G.S. but, since their subscription was higher, I became a life member somewhat later. In part repayment I have long felt that I should have contributed something more than seeds to the Club, but of late have not had time to do much writing. Now I am kindly called to task by your ex-President, Mr. John Mowat, to give this annual Clark Memorial Lecture, one of the conditions being it shall be printed in the following April edition of the *Journal*. The spoken word is very different to the

written word, so I have had to prepare two lectures. However, being a Yorkshireman, I have given much thought on which subject I would like to lecture and in addition it might be useful to try and have printed. For my sins, I have spent rather more time than most of us looking at, and growing, snowdrops, but they in themselves would be rather too specialised a subject for a lecture at an Annual General Meeting. A solution presented itself which related to R. D. Trotter. He began his garden at Brin, Inverness-shire, in 1947, and I gather that the soil was so acid that he was hardly able to grow his beloved rhododendrons, but he could grow snowdrops and also Colchicums, and many of you may have been recipients of his generosity. It was my misfortune not to have had the courage to contact him on the latter subject until a year before he died. How much richer would our knowledge of both subjects been had I been less of a coward. He died a few months before he was going to send me some rare Colchicums ; however, his daughter, Mrs. E. Parker-Jervis, had found my letter and sought me out and sent me the promised bulbs. She was determined to save as many of her father's treasures as possible and has taken many of them to the south where she lives. This has led to much work in checking names, etc.

I therefore intend to talk to you about some Snowdrop Cultivars and Colchicums in cultivation, as I feel that there will be those among you who have had bulbs from R. D. Trotter and others who will I hope ere long acquire bulbs. In recent years little has been written about either subject and unless steps are taken to continue to save the bulbs from extinction, some of them will certainly be with us no more, and it is with this in mind that I have written.

Since the Colchicums about which I intend to talk have just finished flowering, I will begin with them.

COLCHICUMS

My own interest in autumn flowering Colchicum began in the early sixties, when I fell in love with the hybrids, and ever since I have been trying to collect these most spectacular bulbs. They seemed to be such easy things to grow, and are very long flowering, especially at a time when there are few other bulbs in flower. Many people complain about the leaves being untidy and large in the spring and summer and for this reason will have no truck with them. If you cut off the leaves you will have no flowers. It seems to me that you never get 'owt for nowt' and the price for such lovely masses of large flowers, undistracted

by fussy leaves, is paid for later by putting up with the leaves. Possibly I have been lucky in that I am able to grow my Colchicums in a rather large 'cabbage patch'. On the subject of cost, they did seem rather expensive per bulb, but convert it into price per square inch of flower and they are decidedly cheap.

In due course I found that bulbs under the same name from different sources were quite distinct, so that I started to check the names under which they had come, with the literature. Perhaps I should have left well alone as I now have need to collect all the hybrids and some of the species and grow them and then try to give them their correct names. It seems apposite to mention that two Scots nurseries have helped me greatly with the rarer hybrids and forms—Edrom Nurseries and Mrs. McMurtrie—to whom I am grateful. They may possibly be surprised to hear this !

Looking through three of this Autumn's better known bulb catalogues, I find that between them they offer five hybrids, eight species (but that is allowing for correcting the names) and four varieties. The hybrids are *C.* 'Autumn Queen', *C.* 'Lilac Wonder', *C.* 'The Giant', *C.* 'Violet Queen' and *C.* 'Waterlily'. I will add that two of us are thinking of holding a competition as to how many wrongly named bulbs one of the firms has sent us ! Prices for what purport to be the same species or hybrid may vary by tenfold ! Nor will you secure any other different hybrid, species or variety from Holland. In none of these catalogues are spring flowering Colchicums offered. E. A. Bowles, mentioned in his *A Handbook of Crocus and Colchicum*, no less than nineteen hybrids and I believe these are *all* still in cultivation *somewhere*. One of my objects is to find them.

I am going to discuss the autumn flowering Colchicums, which are available, together with some other varieties, hybrids and some species.

Surely the hybrids have been fully described. As far as I am aware, 'No'. Such descriptions as there are, are few and poor. They are covered rather than described by E. A. Bowles but I am not alone in finding that he is not of the greatest value until you have got your eye in, that is, you have looked at a great many different Colchicums and appreciated the differences. I blush to think of the number of names some of my bulbs have been given by experts and by me. What is required is an article which will help the beginner, but whether I will succeed in helping is open to question. It is no doubt the height of presumption but, for reasons which will become apparent, it may go some way to encouraging you to look more critically at your Colchi-

cums and, in any case, I am committed to putting pen to paper for all to criticise.

A few words in general about the genus. Colchicums are found throughout the northern hemisphere from Great Britain, possibly naturalised in Scotland, to Afghanistan and North West India and as far south as North Africa, Iraq and Iran, where they would appear to prefer to have a dry summer and a wet winter and are generally found in open ground. To illustrate such a bland and typical gardener's advice, I recall finding two species of Colchicum in Iran, north of Teheran in the foothills of the Elburz mountains. At Lashcrack, I found *C. kotschyi*, which has small leafless pink or white flowers and was flowering in October ; it was growing in a rock-hard cornfield ; nearly no rain had fallen since mid-April but the soil was a clayey-marl so that evaporation would be very slow in the summer in spite of the summer shade-temperature being in the nineties (Fahrenheit). The other species was *C. szovitsii* from Ab-Ali, a ski-ing resort. Its white and pink flowers appear with its leaves in March-April. It was growing in an irrigation ditch, with some shade from trees. I collected it in leaf in June some years later. Both these species had a dry summer, but *C. szovitsii*, the one with the leaves, had summer shade and some summer water. Both had some winter rain. In this country where it is much wetter and we have cooler summers, we ought to try and provide them with a place which is dry after the leaves have developed.

For those interested in the species, two useful articles have recently appeared, both in R.H.S. Lily Year Books : the first in 1962 by Mr. B. L. Burtt covering the leafless autumn flowers and the second in 1968 by Mr. R. D. Meikle covering the Colchicums which flower with their leaves in the spring. The standard work is by Stefanoff, whose monograph was compiled from dried material. It was published in 1926. Alas, it is in Bulgarian, except for the descriptions of the plants and the key, which are in Latin. There are two problems in studying colchicums ; the first is that either you need to have a good knowledge of Bulgarian before using the monograph—it would be infinitely preferable to have it translated (if you know of anyone who would do this and, if necessary, of any funds to pay for it, please let me know), the second is that monocotyledons do not dry well. Colchicums are possibly one of the worst offenders since the colours and the tessellation vanish within days of drying and you really need to work from living material. In recent years there has been an embarrassing richness of collected material, which the professional institutions have tried to

keep alive, but, alas, in some cases little is left. It is the individual gardener—you—who really has the love and patience to keep these plants in cultivation and if anyone is to try to sort out the genus he needs to know who grows what, under which collector's number and, of course, be able to visit the plant.

Returning to the hybrids, many look very much alike. We must be 'grateful' to two people for these hybrids. The first being J. J. Kerbert, head of a Haarlem nursery called Zocher & Co., who between 1901 and 1905 crossed *C. speciosum bornmuelleri* and *C. giganteum*, both large purple-violet autumn flowering species, with an even bigger, but tessellated, autumn-winter flowering species, *C. bowlesianum* from Greece. At that time *C. bowlesianum* was called *C. sibthorpii*. Incidentally, the complex of large tessellated Greek species was sorted out by Mr. B. L. Burtt in Kew Bulletin 1950, pages 431-4. Later, when exactly I am not yet certain, possibly in the nineteen thirties, R. O. Backhouse of Sutton Court, Hereford, also of daffodil fame, raised seedlings of *C. speciosum*.

It would be of great value to be able to re-form a living collection of all the hybrids so that they could be properly described and available for inspection. Wisley had all of them when F. J. Chittenden was Director, but they were no longer labelled and intact by 1955 when the present Director, Mr. C. D. Brickell, went there as Assistant Botanist. Now he is trying to re-form and extend the collection.

In order to try and see which characteristics might be useful as a means of identifying the bulbs, it is proposed briefly, and not exactly scientifically, to examine the flowers. The larger-flowered Colchicums usually have very beautiful and conspicuous stems, these being about one and a half times as long, or longer, than the segments. The stem colour might seem to be a useful means of identifying them, but alas, in *C. speciosum* there appear to be every colour from white (*C. speciosum*) or green (*C. speciosum* 'Album') through to purple-violet *C. speciosum* 'Atrorubens'. Possibly the presence or absence of a white throat might be useful; beware, its size seems to vary somewhat from year to year. As for colour, if you read the catalogues or literature you will find anything from white, through the pinks, rose, mauve to imperial purples and one yellow colchicum, *C. luteum*, from Afghanistan. Certainly within those discussed below there is white and there is purple-violet of varying hues as checked with the R.H.S. Colour Chart. When seen in the sun the colours are quite different and the plants seem to be requiring a different name.

The segments are often patterned, chequered or tessellated, as is frequently found in Fritillaries. Just to confuse us, some species of *Colchicum* are plain, partly tessellated or tessellated, as are forms of *C. autumnale*. The colour of the filaments might be another method for separating out the species and forms : they are usually white or green. The anthers within which there is the pollen vary between pale yellow, orange, yellow-ochre and pale purple, changing somewhat with the age of the flower. The style possibly offers the best method : they are either white, or white with purple tips, white-purple or purple, but again there is a colour change with age. The shape at the tips are their really useful feature, particularly for dried material. But we are gardeners and I shall take a simple approach, not that gardeners are necessarily simple people, but I am not a botanist.

Lastly, and to my mind least, are the leaves. The problem is they come up either fairly soon after the flowers, as with *C. cilicicum*, or during the winter. It really is asking rather a lot of people to go outside in January or February, to remember clearly where which bulb was planted, and check the leaf description, but it is necessary. Anyhow, I have omitted it from my descriptions !

It seems to me that for the average gardener it might be simple to divide artificially the *Colchicum* up into Tessellated, Slightly or Sometimes Tessellated, and Untessellated, and then use the colour of the throat, either it is 'self' coloured as the segments, or is different, that is, it is white or greenish, whereas the segments are coloured. It is all very unscientific, but no matter. I think it might help a lot. The descriptions are still rather tentative and need to be re-checked during the next flowering season.

Heavily Tessellated

THROAT SELF-COLOURED

C. agrippinum Baker. Origin a mystery, yet occasionally found in the wild in this country. Purple-Violet Group 81 C, star-shape of medium size. Very distinct and unlikely to be confused with any other. Stem white ; segments 50×1.8 cm with inner ones slightly narrower, throat self-coloured ; fil. Purple-Violet ; *anther Red-Purple*, Group 59 D ; *style Purple-Violet*, erect with very slight bend towards apex ; Sept.-Oct.

C. bowlesianum Burt. N. Greece. Purple-Violet Group 80 B on a background of 80 C ; globular, appears large and massive. Stem white, short ; segments 6.5×2.3 cm ; heavily tessellated all over, apex

recurved and inverted hood, throat self-coloured, white, deep but narrow channel to half way up segments ; fil. Purple-Violet ; anther orange-yellow ; style white, erect, slightly expanded at apex, brownish-yellow tinge at face ; scented of roses ; Oct.-Nov. Very close to *C. sibthorpii* but differs by the latter having *green pollen*.

C. 'Waterlily', introduced by Zocher & Co. E. A. Bowles says was *C. autumnale album fl. pl. x speciosum 'Album'*. Purple-Violet Group 81 C/D, double flowers. Stem very white, normally in the hybrids there is a touch of yellow or green in the white ; segments 7.5×1.9 cm and less, 40-50 segments, lightly tessellated ; anthers and styles are to be found ; Sept. There are said to be several forms about, but they need collecting up and growing side by side ; quite why there should be is yet to be explained.

THROAT WHITE

I was given a bulb called *C. autumnale 'Rosea'* but have no authority for its name. This year it has failed to flower as I moved it in the Spring. Pale purple, segments 4.0×1.3 cm with rounded apex, lightly tessellated, throat white ; fil. white, erect away from the segments (like *C. cilicicum*) ; anther yellow ; style white with slight curve at apex which is Purple-Violet.

C. giganteum Hort. syn. *C. illyricum*, *C. illyricum superbum*, *C. speciosum*, *C. speciosum illyricum*. Clearly sorted out by E. A. Bowles. The flower, once one has seen it, is distinctive (fig. 54) ; it opens out very wide to about 45° and the segments are twisted. Pale Purple-Violet, Group 81 C. Stem greenish to purplish-white ; segments 7.0×2.3 cm with inner segments smaller, tessellated, white throat to $1/3$ way up segment, margins can be undulate and can have clockwise twist when seen from the side ; fil. greenish-yellowish-white, erect ; anthers yellow ; style white, erect ; Sept. Flowers after *C. speciosum*. E. A. Bowles refers to an illustration in *Flora and Sylva*, Vol. 1, p. 108, where it has been beautifully drawn, but the colour has far more rose in it and there is nearly a complete absence of blue, which is very much there in the growing plant.

C. sibthorpii Baker (syn. *C. latifolium*). Greece. Purple-Violet, Group 80 D, globular ; appears large and massive. Stem white, short ; segments 4.5×1.6 cm, smaller, lightly tessellated, ; fil. greenish-white ; anthers yellow-ochre, *green pollen* ; style white, crooked ; Sept.-Oct. Resembles *C. bowlesianum* but differs in the green pollen.

C. 'Autumn Queen' (fig. 53), introduced by Zocher & Co. Purple-Violet, Group 81 C, large funnel-shaped; stem greenish-white; segments 6.5×2.5 cm with inner segments slightly narrower, heavily tessellated; throat white to about 1/3 way up segments; fil. white, anthers yellow-ochre over purple; style white, tip curved over and purple; Aug. Was considered by E. A. Bowles to be synonymous with *C.* 'Princess Astrid' and 'Rubens'. It seems to me that *C.* 'Princess Astrid' flowers a little later than *C.* 'Autumn Queen', is rather stiffer or waxlike. My *C.* 'Rubens' flowers Oct.-Nov. and is untessellated and very like *C. speciosum* 'Atrorubens', so must be wrongly named.

C. 'Disraeli', introduced by Zocher & Co. I mention it since it has been offered for sale in the last ten years, unless all the bulbs were *C.* 'Autumn Queen' as were mine. E. A. Bowles described it as having a 'large flower of great substance, with segments slightly waved at the margins and hooded at the apex, the throat of *bowlesianum*'; conspicuous tessellation; mid Sept.

C. 'Princess Astrid', introduced by Zocher & Co. Purple-Violet, Group 81 D, large, funnel-shaped. Stem white with or without faint green; segments 7.0×2.5 cm, inner ones somewhat narrower, heavily tessellated, throat white to 1/3 way up segment; fil. whitish; anther yellow and purple; *style white with apex expanded into a knob*; Sept. Strongly resembling *C.* 'Autumn Queen' but with me in 1970 flowered later; is deeper in colour than *C.* 'Autumn Queen', is stiffer or waxlike or less floppy, and smaller segments. I have a number of bulbs from different sources. H. R. Fletcher in the A.G.M. description, *Journ. R.H.S.* 79, 1954, p. 129, just separated them by their flowering time.

C. 'Doendel', introduced by Zocher & Co. Purple-Violet Group 81, C; very large and very early. Stem Yellow-green, Group 150 C; segments 7.5×3.3 cm, and inner segments smaller; pointed but reflexed outwards; tessellated, white throat with centre extending further up segments; fil. white; anther orange to brown; style, apex curved; Aug.

C. 'Rosy Dawn', Barr & Sons (fig. 55). Purple-Violet, Group 81 C, very large, globular. Stem greenish-white; segments 7.0×2.9 cm with inner segments narrower, tessellated, throat white to 1/3 way up segments; fil. white; anther deep-yellow; style white, *erect, no crook or splay at apex*; Sept. Not in E. A. Bowles. In the above descriptions of *C.* 'Rosy Dawn' and *C.* 'Autumn Queen' the only difference would

be the shape of the style, but from quite a distance they are distinct. Using the R.H.S. Colour Chart there appears no difference, but *C.* 'Rosy Dawn' is much richer in its red or rose and has less blue in the purple ; this comes out clearly when photographed in colour. The shape of *C.* 'Rosy Dawn' when open is fuller and rounder due largely to the shape of the segments ; *C.* 'Rosy Dawn' has segments which rapidly come to an apex, and are 'fuller' compared to *C.* 'Autumn Queen', when they taper earlier, seeming sharper, but above all there is a strong but unmeasurable colour difference.

C. 'The Giant', introduced by Zocher & Co. Purple-Violet, Group 81 D, very large, very open with white throat. Stem yellowish-white ; segments 9.0×3.0 cm, inner segments smaller ; lightly tessellated, throat white up to half way up segments and further in centre, opens wide ; fil. yellowish-white ; anthers deep orange over purple ; style white, apex curved slightly and expanded, very slight purple ; Sept. Easy to grow, produces masses of flowers and always offered for sale.

C. 'Violet Queen', introduced by Zocher & Co. Purple-Violet, large. Stem white ; segments 6.5×2.2 cm, heavily tessellated, throat white ; fil. white ; anther yellow ; *style purple*, erect, very small boss at apex ; Sept. Until a kind friend gave me a bulb this Autumn, my different bulbs had proved to be wrongly named, so I must await future years to say how it is distinct.

Slightly or Sometimes Tessellated

THROAT SELF-COLOURED

C. autumnale L. Europe. Colour purple-violet to white, variable, small flowered. Stem white or purplish ; segments 5×1.5 cm, inner segments narrower, can be slightly tessellated and this can disappear, throat self-coloured ; fil. white/purple ; anther yellow but can be purple ; style white erect with slight curve towards apex, purple tip ; Aug.-Sept. Very variable in nature and improperly known. It is one of the small flowered Colchicum and the only other one I am listing is *C. alpinum* ; they differ in that the filament bases are inserted at the same level in *C. alpinum* which can have the effect of the anthers appearing at the same level, while *C. autumnale* has the filament bases inserted at two levels with the effect that the anthers appear at two levels. All the other Colchicums listed follow *C. autumnale* in this respect.

The horticultural forms of *C. autumnale* do not seem to be tessellated, so are put under Untessellated.

C. cilicicum Stapf. Dammer. Asia Minor. One of the easiest and

most beautiful when you obtain it true to name, so often it is not ; very open globular flower with conspicuous white channel down the tessellated segments, with very conspicuous pale yellow anthers (fig. 56). Has one of the largest bulbs of the genus. Stem white ; segments 6.0×2.8 cm and inner segments narrower ; lightly tessellated ; Purple-Violet, Group 80 B or 81 D ; white conspicuous channel $2/3$ way up segments and reflects in conspicuous whitish central midrif on outside ; fil. white erect, stands away from the segments ; anther rich-yellow ; style erect and straight, apex rough face, can be extended beyond the segments, white with top $1/3$ pale purple and deeper at top ; very sweet honey scent ; Sept. The leaves come up soon after flowering and E. A. Bowles used this to separate it from *C. byzantinum*, of which the leaves do not appear until the Spring. With me the flowers are quite distinct, but see E. A. Bowles, Ch. XVII, where Stapf mixed them up in Bot. Mag.

E. A. Bowles had a superb purple form which he called *C. cilicicum purpureum*. It seems to have a white throat from his coloured photograph. It is believed to be still in cultivation but very rare.

C. speciosum Steven. Asia Minor, Caucasus. Large globular Purple-Violet, Group 81 C, flower with white throat and faintly tessellated. Stems greenish-white, often with purple lines ; segments 7.0×3.0 cm and inner ones smaller ; faintly tessellated, throat white to about $1/3$ way up segments, apex very slightly hooded ; fil. greenish-white ; anther deepish-yellow ; style white, just curved at apex with the face just purple ; Sept.

C. speciosum bornmuelleri (Freyn) Bergmans. Asia Minor. Is usually distinguished by its green stem, but in nature this is probably just an extreme form of *C. speciosum*. Purple-Violet, Group 81 C. Stem greenish ; segments 7.5×2.3 cm and inner segments narrower and/or smaller, lightly tessellated, throat white to about half way up segments ; fil. yellow-white ; anther yellow ; style white, slight bend at apex, tip face just purple. Aug.-Sept. E. A. Bowles points out that it is just an earlier form of *C. speciosum* and points out that the flower buds are white when they push through the soil.

There are two other forms of *C. speciosum* which should be about. *C.* 'Maximum' which has no white throat and was grown by R. D. Trotter. E. A. Bowles found it difficult to grow. It was a late flowerer. *C.* 'Magnificum', a seedling of *C. s. bornmuelleri* but larger, selected by Van Tubergen ; they do not list it now.

C. 'Lilac Wonder', introduced by Zocher & Co (fig. 58). Purple-

Violet, Group 80 C, long narrow segments, a large beautiful flower of considerable substance before it has collapsed onto the ground, which it does much earlier than others. It is doubtful if it was a cross from *C. bowlesianum*, but why not *C. cilicicum* x *C. laetum*? Stem white with faint purple-violet; segments 8.0 x 2.0 cm, with the inner ones very slightly smaller, but is variable; throat self-coloured. E. A. Bowles refers to some white if you force the segments apart at the base, very slight tessellation like a net or veins, white medium narrow channel from base to half or 2/3 way up segments (this is also found in *C. cilicicum*); fil. white; anthers chrome-yellow; style white with conspicuous but small hook at apex; Sept. The style not dissimilar in shape and colour to *C. laetum*.

There are two other hybrids similar in shape to *C. 'Lilac Wonder'*, *C. 'Mr. Kerbert'*, which E. A. Bowles says has a white throat and still lighter tessellation. It appears to have the same floppy habit as *C. 'Lilac Wonder'*. Quite extraordinarily it was given an A.G.M. in 1952, but I cannot trace anyone growing it today. The other Colchicum is known as *C. 'Constable's Variety'*. Such bulbs as are in cultivation, and there was a great patch of it at Cambridge Botanic Garden, are due to R. D. Trotter. To judge by the Cambridge flower it is a good doer. It is not mentioned by E. A. Bowles. It has a white throat at the base only. When I have grown it for a few years it might be possible to separate it out. It appears to have more tessellation than *'Lilac Wonder'*, which has no white throat, only a white median line.

THROAT WHITE

C. 'Premier', introduced by Zocher & Co. Although I have only just acquired and do not recall seeing it, I feel it must be about, as E. A. Bowles says it is so robust it can be planted in grass. 'Light mauve-pink, white centre'; only slight tessellation.

Untesselated

THROAT SELF-COLOURED

C. alpinum DC. France, Switzerland, Italy. Although I have collected it, I find I have no detailed description of it and must rely on others. It is difficult to cultivate, though it does flower some years with me. Small, rose-coloured, segments up to 3 cm, no tessellation, throat self-coloured; Aug. See under *C. autumnale* for the differences between them.

C. autumnale 'Album'. (E. A. Bowles refers to a white form of *C. autumnale* from Suffolk, but quite what it looked like is not clear).

This is a most distinctive form supplied today by nurserymen and it is the same as was available before Hitler's War. The flower appears on a very long stem and rapidly widens out to form a sphere. Stem white ; segments 3.0×1.1 cm, throat self-coloured ; fil. white ; anther very pale-yellow-ochre ; style white, crooked at apex ; Sept. I have heard this flower called "Old Bones" and that is exactly what it looks like when it has started to go over and lays on the ground.

C. autumnale 'Alboplenum'. This received a F.C.C. as long ago as 1872. E. A. Bowles says there is an inferior form about, "neither so double nor so white". Other than bulbs I have purchased, I have yet to see it elsewhere. There would appear to be either confusion or inconsistency in that E. A. Bowles and one other reliable authority refer to one of the parents of *C. 'Waterlily'* as *C. autumnale album fl. pl.* Which name has priority ? Both are used by nurserymen today. The *R.H.S. Dictionary of Gardening* uses '*album plenum*', as do some other writers.

C. autumnale 'Plenum', to which should possibly be included *fl. pl. roseum plenum* and '*pleniflorum*' (Bowles). Again I have only seen the flowers in my garden. They never last long, nor does it seem over easy to flower, but the fact is that it is normally offered for sale at a most reasonable price means that other people must be able to grow it. It resembles a small *C. 'Waterlily'*. Purple-Violet, Group 80 C. There are said to be different forms about. Stem white ; segments 4.5×1.0 cm and smaller up to 40 sets ; no anther or style. Very beautiful indeed.

C. autumnale 'Minor'. No mention by E. A. Bowles but offered at one time by Van Tubergen and others. Small neat flower on very long stem (13 cm). Purple-Violet, Group 80 D. Stem white, but purple towards top ; segments 4.5×1.5 cm and inner ones smaller, not tessellated, very slight white channel 1/3 to half way up segments, throat self-coloured, rather deeper than the segments ; fil. purple ; anther yellow ; style purple, very small crook ; sweet scent ; Sept.-Oct. A good doer. It is very like *C. autumnale* 'Album', but which has a greeny-yellow-white stem contrasting with the white stem of 'Minor'. The flowers are the same shape but have the colour differences.

C. byzantinum Ker-Gawl syn. *C. autumnale major* and *majus*. There is no record of its seeding and its origin is obscure. Mr. C. D. Brickell considers it may well be a hybrid of *C. laetum* (which it closely resembles in a number of ways) and *C. cilicicum*. It is the commonest Colchicum sold in the stores with an enormous bulb. Pale Purple-

Violet, Group 80 C, small, somewhat globular and neat. Stem white ; segments 4.5×1.5 cm and inner ones smaller, *apex rounded and usually a deeper purple at margin, spoon shape, NOT strap-shaped, somewhat globular* ; not tessellated ; throat self-coloured ; white channel half way to $2/3$ up segments ; fil. white ; anther pale-yellow ; style white, often varying in length, apex slightly expanded and bent, Crimson-purple ; Sept.-Oct. E. A. Bowles devotes a chapter to it and *C. cilicicum*, about which there was much confusion in the literature, but most gardeners find *C. byzantinum* and *C. laetum* very similar with *C. cilicicum* distinct. There is very little doubt that the two former often resemble each other. The *differences* are :

	<i>byzantinum</i>	<i>laetum</i>
<i>Segs.</i>	Spoon-shaped, rounded and larger towards the apex, often deeper purple at apex margin, globular.	strap-shaped, thin, parallel sided.
<i>Style</i>	Purple crook.	White crook.
<i>Leaves</i>	Enormous, amongst the largest in the genus.	

Some years *C. byzantinum* has much larger segments than others, when in the latter case it resembles *C. autumnale* 'Minor' in form, but not in colour, but in the former case is strongly like *C. laetum*.

C. laetum Steven. Caucasus. It can so often resemble a flower which the birds love and have torn to shreds (fig. 57). Stellate ; light Purple-Violet, Group 81 D. Stems white ; segments 5.5×1.1 cm. and inner ones smaller, strap-shaped, not tessellated, throat self-coloured, white central channel up to $2/3$ up segments ; fil. white ; anther dull pale-yellow ; style white, apex crooked ; Sept.

C. speciosum 'Album', raised by Backhouse of York, not to be confused with R. O. Backhouse of Sutton Court, Hereford. *Very large globular white flower on green stem.* Stem green ; not tessellated, throat self-coloured ; fil. green ; anther pale-yellow ; style white, curved at apex ; Sept. The only other white Colchicum is *C. autumnale* 'Album', which is a small thing and has an off white but not green stem.

C. speciosum 'Atrorubens', raised by R. O. Backhouse of Sutton Court, Hereford (fig. 60). It might be described as *all Purple-Violet*, Group 80 B. flower *with white throat* and easy to pick out. Stem violet-purple ; segments 7.0×2.8 cm and inner segments smaller, not tessellated, large globular neat, white throat to about $1/3$ up segments and in centre goes higher, slight hood at apex ; fil. greenish-white ; anther orange-yellow ; style white, slight curve towards apex ; very

slight rose scent ; Sept.-Oct. If grown in shade the stem will be greener and less purple-violet.

C. 'Huxley', raised by R. O. Backhouse of Sutton Court, Hereford, about 1950. As far as I am concerned, the most beautiful, the most perfect (fig. 59). It is reputed to be a slow grower. Stem greenish-purple-violet ; segments 7.5×3.0 cm and inner segments smaller, not tessellated, white throat to half way up segments and white channel to $2/3$ way up ; fil. greenish ; anther deep-yellow ; style white with a kink towards the top (is this normal ?) ; very faint scent ; Sept. One nursery had quite a stock in the early nineteen sixties but is now unable to supply.

Species and Varieties less well known

C. atropurpureum syn. *C. autumnale atropurpureum*. Staff.

I include this as two nurserymen offered it for sale this year, albeit at a high price. It is new to me this year. It is no doubt about in gardens. E. A. Bowles found it difficult to keep. Van Tubergen had it from the Valley of the Meuse. Small-flowered, deep purple changing to deep crimson, late flowering, resembling *C. autumnale*.

To complete the record, the following hybrids have been, and some I know are, in cultivation : *C. 'Beaconsfield'*, *C. 'Fearndown Beauty'*, *C. 'Danton'*, *C. 'Darwin'*, *C. 'General Grant'*, *C. 'Lausanne'*, *C. 'Mr. Kerbert'*, *C. 'President Coolidge'*, *C. 'Rubens'* and *C. 'Ruby Queen'*.

I must record my grateful thanks to Mr. C. D. Brickell's quiet guidance, generosity and enthusiasm. Dare I hope that these few notes will spur on the day when he produces his monograph. I am also grateful to those generous gardeners who have given or parted with their bulbs ; without them there could be no lecture.

GALANTHUS

There are probably rather less than twenty species of *Galanthus* and many of them are imperfectly understood. Possibly it would be better to have said that none of them are, as yet, properly understood, since much more material needs to be collected and grown, particularly from France, Italy, Switzerland, Yugoslavia, Albania, northern Greece, Turkey, Lebanon, Syria, Iran and, not least, Rumania and Russia.

I am going to leave this vague subject alone. I shall perforce briefly describe three or so species to explain the diagnostic features as they occur in cultivars. Let me hasten to add that much new material has

been collected in recent times and most of it is being grown, but we need more, and I should be interested to hear of any collected material. I have over one hundred and twenty distinct cultivars, all of which are clones. Occasionally I am trying to see if any of them breed true, but that is another subject.

Various people have tried to produce artificial keys for the species and possibly that of F. C. Stern is the most satisfactory ; it comes unstuck when you try and fit in some of the newer species and some of those imperfectly known when he wrote *Snowdrops and Snowflakes*, R.H.S. 1956. What is more—but only more—perfectly understood are the differences or distinctions of the clones ; alas ! many of them are only very briefly described. The Royal Botanic Gardens, Kew, are slowly collecting together dried material of the cultivars and from time to time some histories and descriptions follow. The work is time consuming. Elsewhere Dr. H. R. Fletcher, before he left the Royal Botanic Garden, Edinburgh, was forming a living collection, which I know is still being looked after.

Geographically *Galanthus* follow *Colchicums* but exclude North Africa, Iraq and Afghanistan. They also start to flower in the autumn, beginning with the *G. nivalis* 'Reginae-Olgae'-*G. corcyrensis* aggregate in Sept./Oct. and ending with a form of *G. ikariae* in May.

Stern divided the species into three Series :—

Nivales in which the leaves are applanate or pressed flat against each other in vernation, i.e. *G. nivalis*.

Plicati in which the margins are rolled back or folded in vernation, i.e. *G. plicatus*.

Latifolii in which the leaves are convolute in vernation, i.e. rolled round each other, i.e. *G. elwesii*.

This may explain why one needs the leaves in trying to identify a snowdrop. Looking at other useful features, a few cultivars have green lines or blotches at the tips of the outer segments, i.e. *G. n.* 'Viridi-apice'. Nearly all snowdrops have green markings on the outside of the inner segment ; these may be at the tip—apical, i.e. *G. nivalis*, or in addition, they may have green markings at the base—basal, i.e. *G. graecus*, or the green markings may be joined together, i.e. *G.* 'Merlin'. Alternatively, the green markings may be yellow as in *G. n.* 'Lutescens' or there may be an absence of green markings *G. n.* 'Poculiformis'. Do not be led astray by someone pointing out that a snowdrop has two stems—scapes ; many will do so when well grown, that is in the third year after planting, and there are clones

which exhibit this characteristic frequently. Do not be led astray by trying to separate snowdrops by the relative proportions of the ultimate flower stem—pedicel and the flower sheath—spathe ; so very often they vary from year to year, either one or the other is longer in alternate years ; there are a few cases where there is a constant relation, i.e. *G.* 'Magnet'. The spathe may be split as in *G. n.* 'Scharlockii' and this is generally constant. There may be several pedicels as in Mr. O. E. P. Wyatt's *G.* 'Kite' (fig. 61) but odd things happen then ! There are, of course, double flowers, and they are possibly the most difficult to describe and recognise. And there are the others. . . .

Green Markings

OUTER SEGMENTS

G. caucasicus came to me from Mr. Gerard Parker ; whether it was a mutation or a seedling from a bulb he had from E. A. Bowles is uncertain, but E. A. Bowles' bulb was given him by Alec Wilson of Daffodil fame. It is pure *G. caucasicus* (whatever that may be) with about five green lines on both sides of the outer segment tip.

G. elwesii, a dozen bulbs from the 'stores' were planted some years ago by Dr. E. F. Warburg of Oxford. They grew so well they were split up and planted in grass. Mr. E. B. Anderson, on visiting the garden in 1968 noticed the green tips, which are in the form of very short green lines at the apex of the outer side of the outer segments. I know of at least three other lots of green-tipped *G. elwesii*, but are rather shy of increase.

G. n. 'Scharlockii' very often has green tips on the outer segments. I suspect the weather has something to do with it, as the markings are stronger in some years than others and also can be absent. There are about four green lines on the tip of the outside of the outer segment.

G. n. 'Viridi-apice' most obligingly always has about three long green lines in the centre of the outer face of the outer segments. The name was suggested by the Scientific Committee of the R.H.S. when the flowers were exhibited by Messrs. Barr in 1922. The bulbs came from Holland where bulbs with similar green markings were not uncommon.

G. n. 'Pusey Green Tips', a double *nivalis*, naturalised in the area of Faringdon, Berkshire (fig. 62). The green lines at the apex of the outer face of the outer segments are diffused together. Margery Fish had a similar snowdrop from the Netheravon Valley, Wiltshire, which she called 'Pewsey Green', but so far with me it has never had any extra petals.

G. n. 'Pusey Green Tips' x 'Scharlockii' is a seedling found by Mr. O. E. P. Wyatt at his old garden at Maidwell Hall. It has a split spathe from 'Scharlockii', a double flower and four green lines diffused together on the apex of the outer segments from 'Pusey Green Tips'. It is quite one of the most enchanting snowdrops I have ever seen. I have suggested to him we should call it 'Green Maid' (fig. 65).

INNER SEGMENTS

A rather lovely form of *G. elwesii* occurring in my parents' garden at Thornsett, Dore, Sheffield, from a batch of dried bulbs. The two green marks of *G. elwesii* are in the form of two very broad 'V's with the apical 'V' inverted and the two tips just touch.

A form of *G. plicatus* in which the green apical mark has stretched almost to the base of the inner segment. It is a seedling which I found at Maidwell Hall after Mr. O. E. P. Wyatt had left. Someone may suggest it is a form of *G. byzantinus* in which the two green marks have fused together, but then it would have leaves with undulate margins, which it lacks.

G. n. 'Virescens' came from E. Fenzi of the Vienna Botanic Gardens in the last century (fig. 63). The inner segment is all green except for a white ribbon round the margin. There are also green lines on the centre of the outer segments. For some reason it is scarce.

G. 'Colesborne' would seem to have originated at Colesborne, Gloucestershire, the home of Henry J. Elwes (fig. 67). The different stories of its history will be found in the R.H.S. 'The Daffodil and Tulip Year Book' for 1971. The foliage is glaucous convolute and the inner segment is all green with a white ribbon round the margin. The inner segments form a narrow tube like *G. elwesii*.

G. 'Merlin', raised from *G. plicatus* x *elwesii* by James Allen of Shepton Mallet, has glaucous slightly plicate foliage (fig. 66). The outer segments are extremely long, being about three times as long as the inner ones. The green marking on the inner segment is a broad inverted 'Y' in which the stem is broader still. It is not easy to grow.

Mr. E. B. Anderson raised a charming little snowdrop with glaucous appanate slightly plicate foliage which he called 'Tubby Merlin'. The ovary is pale yellow. The inner segment is green, becoming yellowish towards the base, with a very broad white ribbon and has a deep notch at the apex.

ALL GREEN

G. n. 'Boyd's Double', but it does have other less polite names. It

is quite monstrous, being all green. The inner segments are the same length as the outer. Not surprisingly, it is quite sterile, both stamen and style being absent. It is difficult to keep.

Yellow Markings

G. n. 'Lutescens' has all the normal green markings of the inner segments yellow, as is the stem.

G. n. 'Lady Elphinstone' has all the green markings of the double *nivalis* yellow. Alas, when newly planted and in lighter soils, it seems to come green rather than yellow. It is the only yellow double I know, unless you have treated your snowdrops with 'Dalapon' or some other herbicide.

White Snowdrop

G. n. 'Poculiformis' when behaving itself, and it again seems to depend on soil and weather, has the inner segments as long as the outer and no green apical mark. It more often has just two green dots on a normal inner segment. All other snowdrops *generally* have pairs of green lines covering the inner face of the inner segment, but this usually has two pairs at the centre only.

Doubles

G. n. fl. pl. there are many distinct forms which I consider are fun to separate out, but not necessarily with a name.

G. caucasicus 'Double' has glaucous convolute foliage and two small wedge-shaped apical marks at the apex of the inner segments. It is very regular in shape, the inner segments are rather like a crinoline. I can only trace its history back to Lady Beatrix Stanley of Sibbtoft Manor, Market Harborough.

G. 'Hill Pöe', syn. 'Barbara' (fig. 68) and sent out under 'Ophelia' by The Giant Snowdrop Co. in the early sixties, often has five or six outer segments and very regular inner segments. The foliage is only very slightly plicate.

G. 'Hippolyta' was one of the many doubles raised by H. A. Greatorex in the forties. Had they not been given to Wisley, I doubt if most of them would be still in cultivation. I have selected this one, not because it is my favourite, but, since 'Joint Rock' chose to give it an A.M. this spring, I thought you ought to see it. The foliage is glaucous plicate with undulate margins, and splayed out. A fairly open arrangement for the inner segments with a green broad inverted horseshoe marking.

Some Other Cultivars

G. 'Allen's Perfection' (fig. 69). Again I am indebted to Mr. Gerard Parker. I have yet to hear of other people growing it. One of the erect glaucous leaves is convolute and one is plicate. It is the only case of this which I have noticed. The inner segment has an inverted broad 'V' at the base and suffused paler green over the rest. It is truly named 'Perfection'.

G. 'Atkinsii', which I hope everyone grows. It is one of the earliest to flower and has very long, thinnish outer segments. Sometimes one of the inner segments is aberent, that is as long as the other segment. It is said that this was the Backhouse of York form, but I believe it is due firstly to soil and secondly to weather. Usually only one margin of the glaucous leaf is plicate and the other margin is applanate.

G. 'Brenda Troyle' is a good doer which 'Neil Fraser' is not. 'S. Arnott' is larger and then there is 'Mrs. Backhouse No. 12'. I have a note that one leaf is plicate and the other applanate; this needs further observation. Apical mark very wide inverted 'V'.

G. caucasicus 'Three Leaves'. There are also other species such as *G. ikariae* which have three leaves.

G. 'Curley' (fig. 70), a natural hybrid selected by The Giant Snowdrop Co., Hyde Lodge, Chalford, Gloucestershire. Leaves glossy, deep green, plicate, silver channel and curled. The inner segment has a green cross at the apex from which green lines continue down the edges to the base. Small and lovely and distinct.

G. elwesii 'Whitakii' has been included in order to warn you that it was a name given to a large form of *G. elwesii*, imported annually from Turkey, and you will find different clones with different markings. I suspect that the same is about to happen with *G. elwesii* 'Casaba'.

G. 'Kew'—my name, not theirs. Some long-forgotten lot of snowdrops had seeded at the Botanic Gardens there in certain places and are completely uniform. I drew the authorities' attention to it and we had an interesting correspondence over which species it might be; finally, we agreed that we did not know! The glaucous foliage is applanate and it has apical and basal green marks.

G. 'Melvillii' I include as it is not only a very beautiful plant but to illustrate the work required in checking on a name. The Giant Snowdrop Co. sent bulbs out under this name as they had been told that such was its entitlement. One day, years later, they asked me to check on this. I found a painting by E. A. Bowles in the Lindley Library and quite clearly their plant was incorrect and I had been



Photo—R. D. Nutt



Fig. 56—*Colchicum cilicicum* at Cambridge
Botanic Garden

Fig. 57—*Colchicum laetum* at Cambridge
Botanic Garden



Photo—R. D. Nutt





Photo—R. D. Nutt



Fig. 58—*Colchicum* 'Lilac Wonder' at
Thornsett, Dore, Sheffield

Fig. 59—*Colchicum* 'Huxley' at Thornsett,
Dore, Sheffield



Photo—R. D. Nutt





Photo—R. D. Nutt



Fig. 60—*Colchicum speciosum* 'Atrorubens'
at Cambridge Botanic Garden

Fig. 61—*Galanthus* 'Kite' at Thornsett,
Dore, Sheffield



Photo—R. D. Nutt





Photo—R. D. Nutt



Fig. 62—*Galanthus nivalis* 'Pusey Green
Tips' at Pusey

Fig. 63—*Galanthus nivalis* 'Virescens' at
Headbourne Wartby, Winchester



Photo—R. D. Nutt



growing it and distributing it for years. What I am showing you is the correct plant which I found this year in Mr. Norman Hadden's garden at Porlock Weir. The leaves are applanate, very thin, green mark curved over the sinus.

G. 'Mrs. Backhouse No. 12' has been mentioned, since E. A. Bowles considered it one of the best in cultivation. The glaucous foliage is very slightly plicate and it is very like 'Brenda Troyle'. I understand that R. D. Trotter had two forms he called Backhouse. Can anyone enlighten me ?

G. plicatus, a small snowdrop raised from seed from Turkey and given to me by Mr. Ron Ginns. The foliage is plicate but it has apical and basal green marks on the inner segments which would make it *G. byzantinus*, but this it is not. It reminds me of 'Kew'. I include it to prove how little we know of the species.

G. 'Robin Hood' was grown so very well by R. D. Trotter that I am certain many of you will have it. The broad glaucous erect foliage is only very slightly plicate. The flower is exceptionally large, even beating Mr. E. B. Anderson's seedling *G.* 'Mighty Atom'. The green marking is in the form of an 'X' with the apical half much thicker and deeper green ; sometimes the space between the two apical arms is filled with green.

G. 'Straffan', one of the later flowering snowdrops which usually flower when 'Atkinsii' is over. It was surprising that although cultivated since 1856, it only got an A.M. in 1968 when I showed it. The glaucous leaves are only just plicate at their base. The green marking is much thicker, rounder and more upright than 'Brenda Troyle'. It has the whitest flowers of any snowdrop.

And so I could go on through the rest of the one hundred and twenty cultivars, but I suspect confusion would be even more rife. May I suggest you look carefully at your snowdrops as you may have new seedlings or mutations. Many of those who have so kindly and generously encouraged me have been mentioned in these notes ; in addition, there are so many others without whose help there would be little to say today, including my parents, in whose garden the snowdrops are grown.

The Discussion Weekend 1971

THE SEAMILL HYDRO, WEST KILBRIDE

AYRSHIRE

30th and 31st OCTOBER 1971

PROGRAMME

Saturday :

- 1.00 p.m. Lunch
- 2.15 p.m. Address of Welcome
- 2.30 p.m. The W. C. Buchanan Memorial Lecture
"Alpines in a Small Garden"
by Mrs. C. Greenfield
- 4.00 p.m. Afternoon Tea
- 4.30 p.m. "The Cultivation of Asiatic Primulas"
by R. B. Cain, Esq., Ph.D.
- 7.30 p.m. *Dinner/Dance or Dinner and film show (at 9.00 p.m.)

Sunday :

- 8.30 a.m. Breakfast
- 10.00 a.m. "Rock Gardening in the North of Scotland"
by James Sutherland, Esq.
- 11.15 a.m. Morning Coffee
- 11.45 a.m. "Orchids without a Greenhouse"
by Dr. C. North
- 1.00 p.m. Lunch
- 2.30 p.m. "Practical Propagation" with illustrations
by C. Simpson, Esq.
- 4.15 p.m. Close of Proceedings
- 4.30 p.m. Afternoon Tea

HOTEL ARRANGEMENTS FOR WEEKEND RESIDENTS :

Bookings for the weekend must be made *direct* with THE MANAGER, SEAMILLS HYDRO, WEST KILBRIDE, AYRSHIRE, mentioning membership of the S.R.G.C.

This beautiful sea-fronted hotel with 8 acres of lawn and garden leading directly to a sandy beach, commands a magnificent prospect across the Firth of Clyde of the peaks of Arran and the hills of Cumbræ, Bute and Argyll.

There is an indoor heated sea-water swimming pool, a Russian Steam Bath and a Finnish Sauna Bath.

The Special Conferences rates are : Rooms with private bath, television and telephone £5.50. Standard rooms £4.40. This quotation includes accommodation and all meals from Lunch on Saturday to Afternoon Tea on Sunday and service charges.

Early application is strongly advised, particularly by those members requiring single rooms and by those who wish to stay for an extra night.

*There will be NO extra charge for the Dance, but members wishing to attend the Dance please inform the Manager WHEN BOOKING so that table arrangements can be made.

NON-RESIDENTS :

Non-residents who require meals will be charged 62½p for Lunch, £1.05 for Dinner or Dinner/Dance if preferred, 5p for Morning Coffee and for Afternoon Tea. These prices do NOT include service charge. Tickets for meals may be purchased at the Reception Desk.

CONFERENCE CHARGE AND IDENTITY BADGES :

In order to cover the overhead expenses of the weekend there will be a Conference Charge of 75p for each person. Non-Residents will be asked to contribute 50p if attending for one day only, or 75p if attending both days. This is payable at the Conference Office on arrival at the Hydro, when members will be issued with identity badges which THEY MUST WEAR AT ALL TIMES.

ROCK PLANT COMPETITION :

Details of this Competition will be given in the September *Journal*, but will all weekend participants please make a special effort to support the Competition. The winner will receive the W. C. Buchanan Bronze Medal (presented by Dr. Henry Tod).

All plants will be displayed in the large Conference Office, which will be locked when not in use.

Raoulias in Nature

by BRIAN HALLIWELL

RAOULIAS are a group of plants coming mainly from New Zealand, where they are most frequently found at higher elevations. Roughly they fall into two groups ; the vegetable sheep, an aptly descriptive name for those cushion plants which tax the ingenuity of the most skilful grower, and the scab weeds, equally descriptive of the group of carpeting plants that are easy to cultivate when given the correct treatment.

These scab weeds play an important role in the colonisation of sub-alpine river gravels in the high country of New Zealand and it is this role that has given them their collective name.

Almost all the rivers in the South Island of New Zealand rise in the Southern Alps and are fed by melting snows and ice.

In spring and early summer the glaciers and snows melt very rapidly, producing vast quantities of water. This gathers into a torrent of enormous force and as it rushes down the steep mountain sides towards the sub-alpine valleys carries with it rocks of all sizes. As the slope of the ground lessens, the force of the water decreases and the rocks are deposited.

At first the water is confined to one fairly narrow channel, but as it reaches the valley it spreads out. Here the river is not confined by banks, and at flood times will fill the valley. When the waters fall, it may no longer remain in a single channel, but may divide into several streams which will meander across the rock strewn valley, continually changing course. These streams disappear beneath the surface, only to reappear at flood times.

In addition to these channels, formed from the main stream, there are tributaries and side streams which behave in exactly the same way.

The whole valley floor is filled with rocks of varying sizes with the largest ones nearest the end of the glacier, having been deposited first. At flood times there is tremendous jumbling and battering which causes breaking, whilst freezing and thawing causes splitting and disintegration. Continual movement of the rocks causes grinding and pounding to produce still finer particles.

All rivers of glacial origin are milky in colour on account of the glacial mud which they carry and, after a time of flood, this mud

settles over all the rocks, to be left behind as the waters fall.

Glacial valleys cut out by the very glaciers that now give rise to these rivers are flat bottomed and although vast quantities of rock are deposited, the surface remains more or less level, if uneven.

Rising and falling of the waters of the main stream causes more and more deposition of rocks even though there is little deepening of the main channel. This results in banks building up so that eventually the perimeter of the valley is formed into terraces which in time cease to be inundated at flood times.

Here, then, is a vast expanse of river gravel of all sizes from large rocks down to glacial silt. In winter it is frozen solid and if not under snow is exposed to sub-zero winds. Frost at these high altitudes is frequent in most months of the year.

In spring it may be under water or at least subject to flooding. Frequently drenched in mountain storms and often subject to mist and low cloud, but there is nothing in the ground to retain this moisture.

During summer it is grilled under a hot sun when the stones can be so hot that they are uncomfortable to touch. At this time of the year, the winds are hot and searing and suck up any moisture. This causes desert-like conditions on the surface even though, underground, there is ample water since the water-table is high, but this is water fed from the melting snows and ice and it is only a few degrees above freezing point and so too cold to support plant life.

It does not seem possible that such inhospitable conditions could support any form of plant life. However, it is here that the mat-forming *Raoulias* take root and form the first step in the colonisation of the river gravels.

The first to appear is *Raoulia tenuicaulis*. Seeds falling onto moist patches of silt will germinate. The radicle grows down among the rocks to anchor the plant only, for it plays little or no part in water absorption. As shoots develop they grow horizontally between the stones seeking protection from the fierce sun and winds. These stems grow rapidly, having tiny leaves widely spaced. From these stems adventitious roots are produced which grow down just below the surface where moisture warmed by contact with stones can be found and used.

Side shoots develop on which the leaves, although still tiny, are larger and closer together than those on the main shoots. These fill up the spaces and eventually a mat is formed. These mats are moss-like in appearance but of a much firmer texture.

Side shoots continue to be produced and eventually these grow over those produced earlier. As this process continues, the lower leaves and shoots die because of loss of light. These disintegrate to form humus and so a peaty compost appears in which other plants can gain a foothold. Patches of the mat may also die out, but there is now formed the rudiments of soil in which other plants can gain a foothold.

Other species of *Raoulia* now appear to take hold: *R. hookeri*, *R. haastii*, *R. glabra* and *R. australis*. *R. haastii* is the most important colonising species. This is not a carpeting plant like *R. tenuicaulis*, but builds itself up to form a cushion as it ages. Only the surface of the cushion is alive, for it is 'stuffed' with peat derived from the decaying leaves and stems of the plant.

The surface of the cushion is composed of closely packed, tiny leaves which are quite firm and rough and retain wind-borne seeds which may fall on the cushion. During the rain storms and mountain mists these seeds will germinate, and the young roots will penetrate the living outer layer of the cushion to get to the moisture-laden peat beneath. From time to time, patches of the cushion will die out so that more plants are able to find pockets in which to grow, and so colonisation continues.

Whilst *Raoulias* are the earliest colonisers, more or less in the order mentioned, other plants, too, are coming in such as species of *Epilobium*, *Helichrysum*, *Muhlenbeckia* and also grasses.

As soil forms, the range of other plants continues to increase until eventually shrubs arrive. As the soil builds up, the new plants tend to take over and the *Raoulias*, which are not adapted to withstand competition, will tend to die out. In the same way later colonisers will give way to other plants as fertility builds up and shrubs and eventually trees produce shade and modify still further the environment.

This change from desert gravel to an area of alpine scrub doesn't happen overnight, but takes several years, and there is always the possibility that an exceptional storm will flood the whole valley and wash everything away, so that the whole process has to start all over again.

Whilst this information is interesting, the alpine enthusiast will want to know whether this group of plants is of garden value.

As mat-forming plants, *raoulias* can hold their own with others of similar habit. It is mainly for their foliage effect that they are grown, for although they flower and flower freely, individual flowers are small,

but these are produced in such profusion that a mass of yellow or cream flowers completely changes the colour of the plant.

In this country the different species flower from April to July, and good seed is often produced which when ripe blows readily in the wind.

Their colour is rarely constant but changes with the seasons and the environment. Most are hardy out of doors in this country and none are difficult to grow provided that they have suitable conditions. They are mostly plants for the scree or for growing over a rock face and they are sometimes planted in troughs. When planted near a path, they will quickly grow into the gravel where they will thrive in the hard conditions even if walked upon, yet they will die out in the bed in which they were planted where the soil is too rich.

It has already been explained how these *raoulias* grow in nature, and under cultivation they can too easily be killed by kindness. Give them the toughest conditions and poorest soil possible and they will thrive ; with a rich soil and competition they will sulk and fade away.

Raoulia tenuicaulis is a rapid grower, forming mats of soft textured foliage with tiny leaves. In spring, when there is plenty of moisture, the leaves are bright green and, if the soil remains moist or if the plant is growing in shade it will retain this colour but the mat will be loose. As the summer progresses, the soil dries out and the mats are baked by the sun. The foliage turns silver although the young shoots invariably remain green. In June and July the plant is covered with a mass of tiny white flowers. During the autumn there is a gradual loss of the silver colouring until by winter the leaves are almost green again.

R. hookeri is also a mat former, but the secondary shoots tend to form rosettes, so that the centre of the mat is quite different from the perimeter. The foliage in the spring is a medium green which becomes lighter as the season progresses and by midsummer it is a light yellow ; the flowers are of a medium shade of yellow.

R. haastii, unlike the other species, forms cushions. With age these can be nearly a foot in height. The spring foliage is a bright green which deepens in colour with time, so that by midsummer it becomes olive or bottle green. This deepening of colour continues until in the winter it is brown ; the flowers are a creamy white.

R. glabra although a mat former does not remain flat, rising with age one or two inches above the surrounding ground. It is of loose growth and the secondary shoots form into loose rosettes. The leaves

are a rich green which fade in colour as the season advances, until by midsummer they are yellowish-green or buff-coloured ; the flowers are white or creamy-white.

R. australis is the best known species and is probably the only one that is at all widely grown in Britain. In spring the foliage is a light yellowish-green which changes to a silvery-grey in the summer, but the plant changes colour yet again when the yellow honey-scented flowers appear in June.

Apart from this last species, these are not plants which are readily available and some searching amongst specialist growers may be necessary to find them. Seed is sometimes available, again from specialist sources or from seed exchange lists.* The seed should be sown on a surface of sharp sand overlying a gritty seed compost. After germination, give plenty of light at all times and ensure that there is adequate air movement, since stagnant conditions are fatal.

All these species are easy to propagate by taking a small piece of the mat from the perimeter and potting in a very coarse sandy mix with the surface covered with sharp sand. A regular supply of young plants should be maintained for the mats have a habit of dying out in patches from time to time.

* Membership of the Canterbury Alpine Society (Secretary : Mrs. Hannen, 157 Hackthorne Road, Cashmere Hills, Christchurch, New Zealand) entitles one to a number of packets of seed from an extensive seed list which includes a section devoted to New Zealand natives. Some of these species of *Raoulia* are sometimes included.

Rock Gardening - “from the ground up” - VI

by HENRY TOD, Ph.D., S.H.M.

BEFORE leaving the question of constructions it is perhaps worth while to mention one other rather unusual one. The late Walter Ingwersen, speaking at the 1936 Conference, suggested a design for a rock garden which would be suitable for inclusion in a more formal garden on a flat site. I have never seen or heard of one of this lay-out, but it is an interesting idea and, while it is included in the Report of the Conference published by the Royal Horticultural Society, it merits being brought forward again as the Report is, I suspect, not well-known nowadays.

He proposed that a free-stone wall or, in Scots parlance, a dry-stane dyke, should be built in a square or a rectangle with gaps for access in each side. Inside this enclosure and backing on the wall would be built rock banks and, if the whole area were large enough, one or more of these banks could be brought forward to fall to path level and then rise again to give an isolated raised bank toward the middle of the enclosed space. He also suggested that a pool with a concealed tap could be made in this central area at, say, the foot of a scree running down from the backing wall, widening as it reached ground level. This pool could supply water for the (fairly extensive) watering which would frequently be required on these raised rock beds. As the beds would be raised above the normal ground level this type of construction would have the advantage quoted for Dr. Curle's "snakes" and the "table-top" type of bed of requiring less stooping to tend the plants. The outside of the walls could, obviously, be planted up and would provide pockets for crevice plants facing to all the compass points. Further, in such a construction, the separate rock banks could be of differing soil types—limey, peaty, gritty, heavy and so on—and they, too, would have differing exposures to north, south, east and west, or intervening points.

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By some odd mental quirk I put, in the diagram of wall construction the "angles of slope" or "batter", but failed to make any clear mention of them in the text. The stones themselves should, as far as possible, slope "back and down" just as described for the stone in the rock bank, and for the same reason, to conduct rain water into the soil backing the wall.

The two angles marked in the diagram are actually those for a dry-stone wall and a peat wall as discussed below. For a "rock bank" type of construction the slope would obviously be much gentler, for both the angles on the diagram are much steeper than the natural "angle of rest" assumed by soil falling freely. For this reason any soil slope steeper than this will be unstable.

For a dry wall the backward slope of the wall-face should be 2-3 inches for each foot of height. This is necessary for the stability of the wall which, if vertical, might by the pressure of the soil behind it, be forced forwards and so fall—and frost can only too easily produce the same effect. When the wall is of peat blocks the slope should be

3-5 inches for each foot of height and for the same reasons. With peat the danger of collapse is considerably greater—proportionately to the lightness and softness of peat as against the heavier and firmer stone of the dry wall. Walls with these “batters” should be stable enough for a person of average weight to stand on the level surface above the wall with no danger of the wall collapsing.

With regard to planting in dry walls or peat walls, the ideal is to plant up as you build, in which case the roots of the plants can be suitably disposed in the soil behind the wall. This, while the ideal arrangement, is a counsel of perfection, for two reasons. Firstly, one may well not have nearly enough plants immediately available, and secondly, plants may (and do) die and will require to be replaced.

Two other items have been pointed out to me in this connection. On page 95 of the fifth article in this series I suggested that the wall should be built and then the soil content filled in. Here there are two fallacies. Firstly, in a dry wall of the type under consideration soil takes the place of mortar in a “built” wall (but not, of course, in a true “dry-stane dyke”, so that to some extent the term dry-wall is a misnomer) and secondly, if the wall is built with a batter as described it might well fall *inwards* before the in-filling was completed. Also it is possible that settling of the soil might produce cavities in the soil behind the wall, leaving the plant roots in air pockets.

For these reasons I would modify my text to say that as each course of stone or peat is laid, the soil mixture should be filled in behind it and tamped well down—but not too firmly, or the drainage of the soil may be seriously impaired by undue compaction—and some brought forwards as a “mortar” on which to lay the next course of the wall and, of course, gaps should be left into which the plants to grow on the face of the wall can be introduced.

In this connection two very useful tips given to me by General Murray-Lyon should be quoted. The first is to place a stone *loosely* in each unplanted gap. This will keep the soil mixture from dribbling out of the hole and when the time comes to plant in it, the stone is withdrawn, the plant roots inserted and spread out, and moist soil gently worked over and among them so as to fill the hole. The second is a very ingenious solution to the very real difficulty in getting the plant roots well back into the soil mixture behind the wall. Spread out the roots of the plant to be inserted on a sheet of shiny paper and then fold the paper over the roots. Now slip the bundle so formed into the hole in the wall, getting the end of the paper well back into

the soil mixture. Unfold the paper, hold the roots with the fingers or a stick and gently pull out the paper (hence the need for *shiny* paper to allow the paper to slip out). Soil should then be cautiously worked in around the roots and the whole lot made as firm as possible—for this the soil should be damp but still crumbly. When one is dealing with a dwarf shrubby plant to be grown in and on a wall there is a serious problem to be faced ; if one plants as one builds, such a plant may well be damaged in the subsequent construction above it ; if one waits until the wall is completed, one is faced with a root-system which is usually quite extensive and this takes quite a bit of trouble to get into a relatively small hole. Probably some temporary shield of wire netting held firmly over the plant and against the wall could be devised so that the plant was protected from injury in further building (and then removed) would be the best solution, for the second possibility, namely planting after the wall is completed, really does present quite serious difficulties, for if the gap left is large, the plant may well be badly loosened by wind-rocking, and jamming it firm with inserted small stones may injure the stems.

Before leaving the subject of walls, something should be said about peat walls. These have been mentioned several times, but nothing has been included on their construction.

The peat wall garden is most easily constructed on a slope which should face between east and west, through north, preferably north-east or north-west. This is because most of the plants that thrive in a peat wall do not tolerate exposure to the noonday sun. If, further, some light moving shade from small trees or tall thin shrubs can be arranged, this will also be valuable. If no slope is available, the peat wall garden can be built up against a dry wall which will then face south and will suit sun-lovers as mentioned earlier.

To build the peat wall most of the authorities recommend blocks of soft sphagnum peat. This may be the ideal, but it has two weaknesses ; firstly, it is more expensive and secondly, it breaks down fairly rapidly. I built the first section of my own peat walls using sphagnum blocks, then I realised that to complete the length I aimed to build would cost more than I could possibly afford. Accordingly I ordered a load of ordinary “burning peats” which are about ten inches long by two or three inches thick and four to five inches wide. These are usually described as “quite unsuitable” *but* the section built with burning peats is still intact after twenty years, while the section with sphagnum peat blocks had broken down completely in five years.

Further, the peats are covered with seedling plants and run through with runners of shrubs such as *Gaulnettya* which are growing above them. It would hardly seem to me to be "unsuitable".

The soil should be cut out and levelled into "terraces" as indicated in the diagram on page 40 of the fourth article in this series, April 1970, and the peat blocks built up into a wall against it, giving it a backward slope for stability as mentioned earlier. Each wall is best kept to not more than twelve inches in height, for after all, even burning peats are not completely hard, especially when really damp.

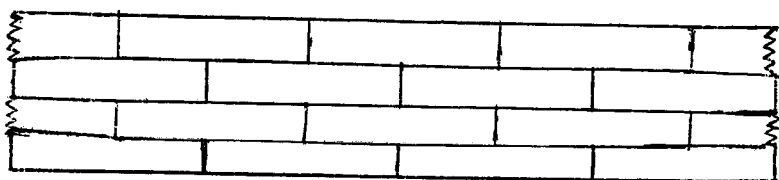


Fig. 64. Peat Wall.

The blocks should be built just as in a brick wall as shown in fig. 64, i.e. the adjacent ends of the blocks should be over- and under-laid by the middle of another block. Peat is deposited usually in layers so that the blocks will split longitudinally and care should be taken that the layers lie horizontally and *not* vertically. If, by mischance, the latter should occur, the block may "peel" under the influence of freezing and thawing, so this is to be avoided.

If there is any doubt as to the stability of the wall, thin canes can be driven down through the blocks at intervals to anchor them, but canes should quite definitely be used. A friend of mine used nice straight hazel wands driven down through the blocks—and his peat walls developed into a beautiful hazel thicket for nearly all of them rooted—bamboo canes do not do this !

A dressing four inches deep of peat moss litter should then be put on to the "terraces" and dug well in to get a thorough mixing of the peat and the soil. In my opinion there is no need to use special "horticultural peat" (another heresy !) for, compared with the cost of a bale of ordinary peat moss litter, it is relatively expensive. Using the latter I grew successfully most of the more difficult Ludlow and Sherriff primulas as well as *Omphalogrammas*, *Nomocharis*, *Incarvilleas*, *Cremanthodiums* and, of course, dwarf *Rhododendrons*.

It must, however, always be remembered that this incorporated peat will not last "for ever" as mentioned earlier, and the dressing

must be repeated at, say, ten- or twelve-year intervals at the most. I did not do this—and lost most of my best primulas as a result !

Peat is notoriously difficult to damp once it becomes really dry. The peat moss litter, well broken down, or the peat blocks may be very dry when they are received. If they are laid out in a thinnish layer or one-block deep for the peat blocks and *on their edges* in damp misty weather they will absorb moisture fairly readily. Blocks lying flat tend to shed the water and take much longer to get damp. One other tip is that if an egg-cup-full of any ordinary household detergent is mixed into a two-gallon bucket or can of water, and this solution is watered onto even very dry peat, it will usually damp it successfully and do no harm to the plants.

Probably the best plan of all in constructing peat walls is to build them and mix in the peat in the autumn and then leave them unplanted until the spring, by which time the winter's snow and rain—and particularly mist and drizzle—will have damped the peat blocks and the peat-soil mixture, and without the necessary output of energy required in the summer.

A Botanist in the Anatolian Mountains

by FRIEDERICKE SORGER, Ph.D.

IN 1962 I travelled to Turkey for the first time. As a botanist, I have been interested in the plants of this country, after travelling a lot in Greece, Crete, Italy, and the southern parts of France and Spain.

From Istanbul I went to the southern coast ; here I came to the small, charming town of Antalya, with a large sandy shore which extends to the foot of the steep mountains of the western Taurus. Turkey is a mountainous country, surrounded by two enormous ranges. In the north, the Pontus, in the south, the Taurus with elevations over 3000 m. In the east the ranges join and here you find the highest peaks which are over 4000 m. The inner part of the country is a high plateau with a height of about 1000 m which includes extended steppes and cultivated land. The mountains which rise suddenly from Antalya made me curious about the plants which would be found there.

Our next place was Konya ; to the west of it lies the enormous Lake Beysehir, at whose western end is the beginning of the Anamas range. This district is hard of access, therefore I decided to look at it. Our way led us through extended steppes and cultivated land for hours. After passing Ankara we came to the Black Sea and its spacious rainwoods. *Rhododendron ponticum* was in full bloom, and *Clematis viticella* with big violet flowers grew into the shrubs. *Hypericum calycinum* with big yellow flowers of up to 8 cm diameter covered the ground ; it looked like wonderland. It is easy to understand why many botanists have gone to this part of the world, but this has been my reason for excluding this district from my schedule.

After my first Anatolian journey I knew which parts of the country would be my objective. I started my preparations and worked over the collected material. It has been hard work to determine about a thousand dried specimens. To classify Turkish plants is not too easy. Peter Davis of Edinburgh is working on a Turkish flora in eight volumes of which only two* have been published at the time of writing. So you have to use the old "Flora Orientalis" by Boissier published in 1867, which is written in Latin. I studied this work thoroughly. procured maps and made up my schedule for the second trip.

In May 1963 I started for the south of Anatolia, especially for the mountains west of Antalya. The Base camp was Gömbe, a small village at 1150 m altitude, surrounded by three mountains. In the south Susuzdag (2100 m), in the west Akdag (3024 m), and in the north Yumrudag (2741 m). I have been lucky enough to have fair weather. When it rains, one cannot pass the road leading to Gömbe ; to make our good luck complete, a bridge giving access to the village had been completed three days before we arrived. It was easy to get a guide, because on arrival we were surrounded by all the male inhabitants of the village, but we saw no women except those who were hiding with their faces behind the windows. It was not easy to make ourselves understood ; we used sign language and a few Turkish words. But it did not take long and people soon found out that my partner—I went with my brother-in-law and his son—was a medical doctor. As a result, everyone from grandmother to the baby went ill and when we came back from the mountains, tired and exhausted, he had to visit his patients.

A guide took us to the Susuzdag first. The northern slope had wonderful trees of *Cedrus libani* up to 30 m and *Juniperus excelsa* up

* Volume 3 has now been published

to 20 m high. There I found a new species ; it was named *Ononis macrosperma* Hub.-Mor. by Dr. Huber-Morath. At 2000 m altitude we entered a zone of spiny cushion plants, which is typical for sub-nival regions of the Anatolian mountains. Many cushion plants, most of them prickly, cover the rocky ground. In bloom the vegetation makes a wonderful, picturesque sight, because it consists of different species. Red dominates, mainly by *Onobrychis cornuta*, which although only 10 to 20 cm high, often covers an area of two sq. m. In those red cushions grow yellow *Tulipa biebersteiniana*. The graceful *Fritillaria cilicico-aurica* grew at the foot of steep rocks which were blue from *Omphalodes luciliae*. The family of the Papilionaceae had several interesting members here. *Astragalus alindanus*, a low-growing species, with yellow globular heads, filled the rock fissures, the leaves were hidden by the rock. There was *Astragalus angustifolius* also, a plant which forms white flowering cushions, to be seen on most of the Anatolian mountains. A very rare *Astragalus* occurred at this height as well as at lower altitude namely *A. microrchis*. The habit of this yellow-flowering species is very similar to *A. pinetorum*, a plant very common in Anatolia. Sometimes *Genista albida* covered the rocky soil with its silvery shoots. Endemic to this part of the country is *Ebenus boissieri* with golden-yellow flower heads and silvery leaves, growing in loose rock shingle. *Euphorbia pestalozzae*, another scree plant, is endemic here. I found it on Susuzdag and on the nearby Akdag. Cushions of *Saponaria pumilio* showed a wonderful red and made a good sight. This species is very similar to our *Silene acaulis*. Very common are *Draba bruniifolia* ssp. *heterocoma* var. *nana* and *D. bruniifolia* ssp. *bruniifolia*, *Arabis caucasica* with its big white flowers and the endemic *Thlaspi papillosum*. I have also collected *Thlaspi kotschyianum* which was previously only known in East Anatolia. This plant is very similar to the more common *T. perfoliatum* and has very often been taken for this. I also found it on the mountains to the west of Lake Beysehir. *Alyssum mouradicum* with broad egg-shaped silvery leaves made a wonderful sight. *A. comtemptum* occurred here, but I found it more often on lower places on this mountain. This species has not been collected in western Anatolia before.

The situation on the dry southern slope of the almost treeless Yumrudag is quite different. Here *Chrysanthemum praeteritum* ssp. *massicyticum* with white felty leaves and big white flower heads dominates on higher sites. The ground was covered with *Aubrieta deltoidea* and some *A. canescens* ssp. *canescens*. Where the snow region began

at about 2000 m *Crocus biflorus* and *C. crewei* grew. Both species are very similar, they differ mainly in the anthers which are yellow in *C. biflorus* and dark red in *C. crewei*. *Scilla bifolia* var. *taurica*, *Eranthis hyemalis* and *Anemone blanda* were still in flower (late May). In rock fissures grew small cushions of *Aurinia rupestris*.

On reaching Akdag, masses of the high yellow-flowering *Phlomis grandiflora* made us enthusiastic. Among them we found one *Tulipa* sp. in seed, presumably *T. montana*. Bulbs of it gave red flowers freely in my garden.

At 1800 m camels grazed near a small lake. We put up our tents and continued to collect. Two endemic Dianthi were in flower, *D. brevicaulis* ssp. *setaceus* (red flowering) and *D. eretmopetalus* (white flowering). In the screes big, red flowering spiny cushions of *Acantholimon acerosum* and *A. lycaonicum* occurred and the endemic, big flowered *Minuartia dianthifolia* ssp. *dianthifolia*. I also found a big *Cephalaria* there, a new species, which has been named *Cephalaria sorgerae* Hub.-Mor. by Dr. Huber-Morath in the meantime. Among rocks *Papaver spicatum* flowered, a high-growing species with silvery leaves and orange-red blooms. I found two sub-species of this plant, *P. spicatum* ssp. *spicatum*, with glabrous capsules and *P. s.* ssp. *luschanii* with hairy capsules. *Teucrium montanum* which is at home in our Alps grew here also, around the lake (*Teucrium montanum* var. *parnassicum*). In higher altitudes *Ranunculus brevifolius* grew. I first took it for *R. hybridus*, to which it is very similar. Besides there were some more Astragali, three species of *Asyneuma* and a great number of other plants.

In 1964 I went to the district west of Lake Beysehir. Along the western shore, with *Juniperus foetidissima*, a small winding road leads to a small village. The eastern shore falls steeply to the lake, with its rich flowers of *Nymphaea alba* and *Nuphar lutea*. The northern bank has extended sites with the yellow-flowering *Iris pseudacorus* and purple *Orchis laxiflora*. Along a stream we went to a small waterfall around which we found *Paeonia mascula* ssp. *mascula*, *Primula vulgaris*, *Galanthus elwesii*, etc.

When we reached Mount Dedegöldag (2980 m) we came by a rocky slope covered with an abundance of plants. Here I was lucky enough to find, close to seven known species of *Astragalus*, an eighth, a yellow-flowering unknown one. This has been named by Dr. Huber-Morath *Astragalus sorgerae* Hub-Mor. At the foot of a steep rocky face, covered with *Ferulago trachycarpa*, *Seseli peucedanoides* and *Chrysanthemum isabellinum*, we found the big leaves of a *Colchicum*



Photo—R. D. Nutt



Fig. 65—*Galanthus nivalis* 'Green Maid' at
Thornsett, Dore, Sheffield

Fig. 66—*Galanthus* 'Merlin' at Thornsett,
Dore, Sheffield



Photo—R. D. Nutt





Photo—R. D. Nutt



Fig. 67—*Galanthus* 'Colesborne' at
Thornsett, Dore, Sheffield

Fig. 68—*Galanthus* 'Hill Pöe' at Thornsett,
Dore, Sheffield



Photo—R. D. Nutt





Photo—R. D. Nutt



Fig. 69—*Galanthus* 'Allen's Perfection' at Thornsett, Dore, Sheffield

Fig. 70—*Galanthus* 'Curley' at Thornsett, Dore, Sheffield



Photo—R. D. Nutt





Fig. 71—*Rhododendron williamsianum*

Forrest Medal, Dumfries.

sp. about 25 cm long and 6 cm wide. I took the bulbs to my garden ; when they flowered next autumn, they turned out to be *Colchicum speciosum*. The sub-alpine meadows had the big flowering *Cerastium macranthum* and at a height of 1900 m there was a 20 cm tall *Alyssum cephalotes*, which had only been found on Honaz Dag in Western Anatolia. At about 2200 m we again met an abundance of plants. Next to *Astragalus* and *Acantholimon*, the low-growing *Campanula compacta* with dark blue flowers was predominant. In the screes we found the familiar *Aster alpinus*. Among a great number of *Minuartias* which occur here, *M. pestalozzae* roused my special interest. At first I took this species for an undeveloped *Dianthus* in view of its dense, spiny cushions.

Cicekdag belongs to the Anamasdag district to the west of Lake Beysehir. Cicekdag means "Mountain of Flowers". This name was a challenge to me and so I had to climb it. At 1500 m we found an overwhelming mass of flowers, which I had never seen before and I had never expected to find. Here I really did not know what to do first—collecting, taking pictures or just looking ! I brought home more than 150 different species from this mountain. How great was my joy when Dr. Huber-Morath, who was so kind as to work up my material, notified me that I had taken home another two plants, as yet unknown. These were *Verbascum adenocarpum* Hub.-Mor. and *Celsia sorgerae* Hub.-Mor. The belt of dense forest above this zone, consisting of *Cedrus libani* and *Juniperus excelsa*, is very poor in different species. Above this we found *Asphodeline rigidifolia* in masses with *Rindera lanata* (a silvery, grey plant) and *Anacyclus formosus* with white flowers of 4-5 cm diameter. In vertical cliffs grew *Arabis aubrietoides* ; this was a new site for this species. On the plateau near the summit (2200 m) the big white flower heads of *Centaurea reuteriana*, pressed to the rocks, roused my interest.

I very much hope to find more mountains with such interesting plants, in Turkey.

Botany for the Alpine Gardener - part III

The Ericaceae and Vacciniaceae

by Dr. MAVIS R. PATON

THE ERICACEAE is very widely distributed over the surface of the Earth, in fact representatives are found everywhere except in tropical regions and true desert areas.

In Britain, everyone is familiar with heather-covered moors and this social habit is common to the other genera. The family grows most richly in two widely separated countries ; one is the Eastern Himalaya/Western China region and the other is Cape Province, South Africa.

The plants are never soft herbs but they vary from small creeping shrubs to large branching trees. The leaves are often protected from wind and sun in a variety of ways : some are thick and waxy, some are hairy or bear scales. Others are able to roll the edges inwards, presenting less area of leaf surface to the sun and so reduce water loss. These features evolved to conserve moisture are rather strange in a family found mostly in temperate and wet climates, and are usually associated with desert conditions.

The basic type of Ericaceous flower has a bell-shaped corolla ; the stamens normally 8 to 10 in number, occasionally less. The pollen is shed through pores in the top of the anthers. The pollen grains are not shed singly but cling together in groups of 4. (In *Rhododendron*, these grains are loosely held intact by sticky strands which can be seen quite easily.) Many of the flowers produce honey from a fleshy disc forming the top of the *superior* ovary. Typically there are many seeds produced in 4-5 compartments in the ovary ; this develops into a dry capsule or a fleshy berry.

This large family is sub-divided into 3 main Sections, identified by the characters of the flower and fruit.

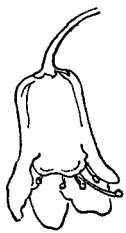
Section I RHODODENDRON In which the fruit is a capsule and the seed often winged. The genera include :

1. *Rhododendron*. Stamens usually protrude beyond the corolla.

SECTION I

RHODODENDRON

R. CAMPYLOGYNUM



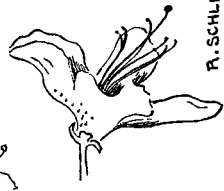
R. SARGENTIANUM



R. CHRYSSEUM



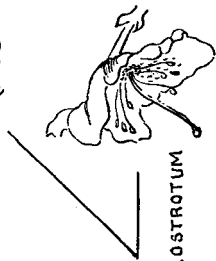
R. SCHLIPPENBACHII



R. SEMIBARBATUM

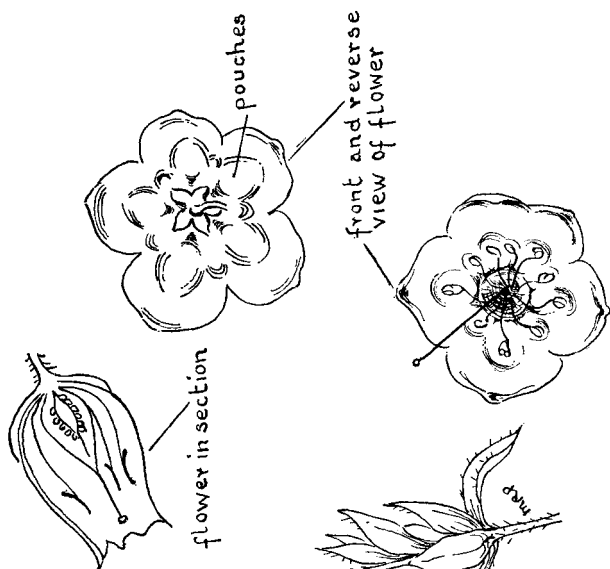


R. CALOSTROTUM



VARIATION IN FLOWER SHAPE IN THE GENUS RHODODENDRON

Fig. 72



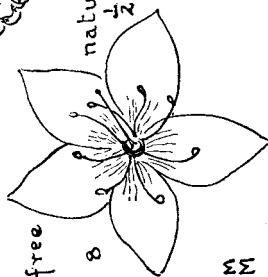
KALMIA GLAUCA



DABOECIA CANTABRICA



PHYLLODOCE CAERULEA



petals free
stamens 8

LEIORHYNCHUM
BUXIFOLIUM

Fig. 73

- 2. *Ledum*. Petals free from one another.
- 3. *Phyllodoce*. Corolla bell-shaped ; stamens 10.
- 4. *Leiophyllum*. Petals free ; flowers arranged in a raceme.
- 5. *Kalmia*. Stamens held in pouches of the corolla and are released by insects which become covered with pollen.
- 6. *Daboecia*. Bell-shaped corolla, toothed at apex.

SECTION II

ARBUTUS

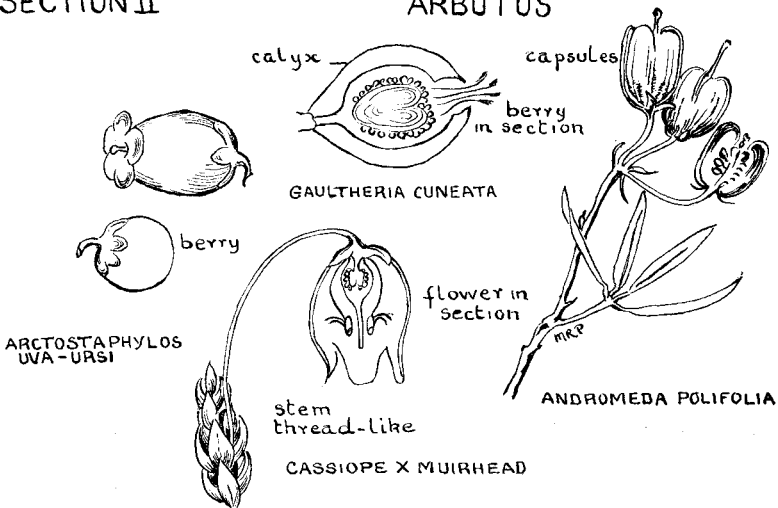


Fig. 74

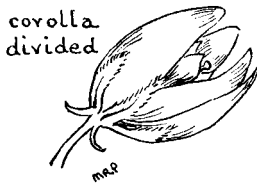
Section II ARBUTUS Where the fruit is a berry or a capsule. Seed

never winged. Anthers with peg-like appendages.

- 1. *Arbutus*. Tree habit ; strawberry-like fruits.
- 2. *Arctostaphylos*. Some species of tree habit. One seeded fruit.
- 3. *Gaultheria*. Calyx becomes the fleshy berry.
- 4. *Pernettya*. Berry *not* formed by the calyx.
- 5. *Andromeda*. Corolla cup-shaped ; narrow leaves.
- 6. *Cassiope*. Closely over-lapping leaves on the stems.
- 7. *Epigaea*. Corolla salver-shaped. (Trailing arbutus).

SECTION III

ERICA



CALLUNA VULGARIS



ERICA CARNEA

Fig. 75

Section III ERICA Where the corolla does not fall when the flower fades. It is "ever-lasting".

1. Calluna. Corolla divided nearly to the base.
2. Erica. Corolla bell-shaped, shortly lobed.
3. Bruckenthalia. Petals 4 lobed.

The other genera in this section are mainly South African and are tender plants.

The family Vacciniaceae was formally a section of Ericaceae. These plants are now placed in a family of their own because the flowers have an *inferior* ovary.

The genera include :

Vaccinium, Gaylussacia and Oxycoccus. In all these the fruit is a berry. In this family are found well-known plants with edible fruits such as the cranberry, bilberry and the American blueberry.

One of the largest and most diverse of all the genera in the family Ericaceae is the genus Rhododendron. It shows more variation in habit and in flower shape than any other. The plants may be small and creeping, substantial shrubs or even large trees. The leaves also vary considerably ; they are very small in the Lapponicum series : extraordinarily large in the Grande series. Some exhibit different forms of covering (scales or hairs, especially on the under surface) whereas others have none at all.

The flower shape can be narrowly tubular at one end of the scale or wide open and deeply divided at the other. The number of stamens is not constant and may be as few as 5 or as many as 20 or more. The generalization that these do not project beyond the corolla also has exceptions.

Even among the individuals in one species there is variation and

this would indicate that this group of plants is still progressing in evolution and that their characteristics are not yet fixed and well defined. This is why the genus *Rhododendron* is one of the most interesting and, at the same time, the most difficult to master.

Primulas at Howgate - part II

by W. A. BRUCE ROBERTSON

THERE ARE many named colour forms of *Primula denticulata* and those that were acquired during the garden construction period were planted in any space available. Most of these have now been shifted to open ground beds, but one planting of 'Pritchard's Ruby' still remains in its original position. Although most plantings of *Primula denticulata* go back after a number of years, this planting is still reasonably sound and does not yet warrant shifting to another position.

Two other *Primula* plantings have done particularly well: *Primula sieboldii* and *sieboldii alba*. Both of these were very small portions when planted, but expanded rapidly when once rooted into the adjacent peat walling blocks. *Primula sieboldii* is one of the older Asiatic Primulas and has a reputation for lack of winter hardiness. This has not proved to be the case in this garden. This *Primula* is very floriferous, carrying umbels of rosy purple flowers with a lighter eye on 9 in. stems.

Many of the larger growing Primulas help to form the background to the peat walls and *japonica* 'Etna', *yargonensis*, *alpicola violacea*, *tsariensis*, *pulverulenta*, *rosea* and *luteola* are placed here in different positions. *Japonica* 'Etna' can only be reproduced by division, but all the others can readily be produced from seed.

Primula alpicola violacea as well as *alpicola* and its other hybrids all prefer semi-shade and all make good woodland plants. Plants grown in an open sunny position remain smaller, down to 6 ins., but in ideal conditions they grow up to 20 ins. The flowers are funnel-shaped, farinose, about 1 in. across and carried in a many-flowered umbel. The leaves are elliptical, 2 ins. to 4 ins. long, carried on stalks slightly longer than the leaf blades. This *Primula* comes from S.E.

Tibet and Bhutan, and was a Kingdon-Ward introduction. The flowers of *alpicola* are yellow with *alpicola violacea* a deep violet shade. Both appear to come true from seed.

Primula tsariensis also comes from S.E. Tibet and Bhutan and has fairly large flowers of rich bluish-purple with a contrasting yellow eye. The flowers are carried in a 2- to 5-flowered umbel on $\frac{3}{4}$ in. long pedicels. The umbel scape is about 6 ins. high. Most of the leaves are elliptical, crenate and vary between 3 ins. and 5 ins. in length. The taller-growing form, 9 ins. high, with darker purple flowers, is var. *porrecta*.

Another farinose *Primula* requiring semi-shade is *pulverulenta*, and in a good position will produce a scape 3 ft. high carrying several flower whorls. The flowers themselves are deep red with purple or darker red eye. This *Primula* has established colour forms such as 'Bartley Strain' as well as being the parent of many good flowering hybrids. *Chungulenta* (*chungensis* x *pulverulenta*), 'Excelsior' (*cockburniana* x 'Unique'), 'Inverleith' (*bulleyana* x *pulverulenta*), 'Ladybird' (*pulverulenta* x *bulleyana*), 'Lissadel', 'Red Hugh' and 'Unique'.

A *Primula* from the East Caucasus is *luteola*. This *Primula* has lanceolate elliptical leaves 4 ins. to 9 ins. long, narrowed to winged stalk. The flower scapes are white farinose above and vary between 6 ins. and 12 ins. in height. The flowers are of a strong yellow, something over $\frac{1}{2}$ in. in diameter and set in many-flowered umbels on $\frac{3}{4}$ in. pedicels. *Primula luteola* is a late flowering species requiring good drainage. The plants here are not long-lived, but this one is well worth growing.

Where the constructed beds run in line with the lawn edges there are open beds varying in depth from twelve to thirty-six inches and a considerable number of Primrose colour variants are used to give good spring colour to this edging. A wide range of colour is provided by *vulgaris* 'Wild Rose', 'Old Port', 'Lilac Time', 'Romeo', 'Theodora', 'Iris Mainwaring', 'Tawny Port', 'David Green' and 'Lingwood Beauty'. Plantings of some of these are used elsewhere in the garden, but the more permanent plantings are those which back on to the peat walls. Several of the *Juliae* hybrids are used in this edging, 'Lady Greer', 'Groenkens Glory', 'McWatts Claret' and 'The Pilgrim', as well as *Primula altaica grandiflora*, an old variety from the Caucasus, and two of the Irish Strain, 'Garryarde Crimson' and 'Guinevere'.

Four other *Primulas* have recently been added to the edging backing on to the peat walls as the plants in question were going back badly in

their previous positions. These were *vulgaris heterochroma*, 'Jenny', x *woronowii alba* and x *Edithae*. It is now hoped for better results.

A number of the taller *Primula* types are used in the deeper sections of the lawn edging beds, *Primula chionantha*, *waltoni*, 'Red Hugh', *polyneura*, and its var. 'Highdown', *melanops* and *sikkimensis hopeana*. *Primula waltoni* is somewhat difficult to grow and requires careful cultivation. The soil must be well enriched with leaf-mould. When well grown the flower scapes should be about 2 ft. high carrying clusters of port wine red flowers. *Primula melanops* belongs to the Nivales section and has foliage similar to *chionantha* but with flowers similar to *sino-purpurea* except that the deep Tyrian purple flowers have a much darker eye. The flower scapes are farinose above, growing some 9 ins. to 12 ins. high and carrying 6 to 12 fragrant flowers on short pedicels. The leaves are farinose on the reverse, either white or yellow. This *Primula* comes from Szechwan and may be found listed under the synonym of *leucochnoa*.

Sikkimensis hopeana has white flowers and is more slender than the type. This sub-species comes from Bhutan and S.E. Tibet and requires a damp soil, but good drainage is essential. Propagation is by seed. The alpine variety, *pudibunda*, however, is smaller and more desirable; *pudibunda* is found in Nepal, Sikkim and Tibet.

Most of the *Primulas* in the garden are located in the open beds and a number of them would no doubt do better in other positions, but these are not available. Fronting some of the open beds are *Primula x pubescens* 'Mrs. Wilson', 'Kingscote', and 'Mrs. Freeman', as well as others listed under the names of *oenensis*, *auricula balbisii*, x *Margicula*, *amoena* and *rubra* 'Boothman's var.'. *Oenensis* has remained stationary for years and has never flowered.

Two of the Marginata varieties, x *rheiniana* and 'Clears Var.', as well as *viscosa* 'Crimson Wave', are similarly used. Two plantings were made of *Primula* 'Veronica' and the deep purple-blue flowers make a good contrast with the strong reddish coloured eye. Another promising *Primula* of similar type is 'Craddock White', which has a good contrast between the dark glossy leaves and the white flowers. 'Craddock White' is recorded as having bronze foliage, but the plants here do not have this character. It could be that the plants grown should be named otherwise. Two of the double Primroses also flower profusely in these beds, 'Marie Crousse' and 'Our Pat'.

A number of *Primulas* of doubtful hardiness here and which had been retained in the propagating house for some time were planted

out two years ago and these have all now stood two winters without protection ; these were *PP. paxii*, *latisecta*, *griffithii*, *vittata*, *bellidifolia*, *palinuri* and *muscarioides*. The only losses so far have been in the *muscarioides* planting. *Primula palinuri* is a species from Italy which was reported to be of doubtful hardiness and when planted out here a well drained position in full sun was selected and this *Primula* seems to be every bit as hardy as the group of *Auriculas* which are planted adjoining. The position of *palinuri* is helped no doubt by the fact that there is a dwarf wall behind the planting which gives protection and extra warmth in winter. *Primula palinuri* has deep yellow flowers carried in a many-flowered umbel on a 6 in. scape. The flowers are funnel-shaped, $\frac{1}{2}$ in. across, nodding on $\frac{1}{2}$ in. pedicels, and are delightfully Cowslip scented. This *Primula* is farinose and flowers here late March or early April. *Primula palinuri* makes a good alpine house plant.

Primula latisecta was introduced from Tibet in 1925 and, while making a good alpine house plant, does just as well in the garden, being much hardier than its appearance would suggest. A 6 in. scape carries a four-flowered umbel of rose flowers on $\frac{1}{2}$ in. pedicels in April or May. The flowers are 1 in. across and each has a white eye. The leaves are sub-orbicular, $2\frac{1}{2}$ ins. long, and the whole plant is softly hairy. *Primula latisecta* should be planted in a fairly shaded and sheltered position where the foliage can receive some protection from water as this tends to damage the heart of the plant.

Primula bellidifolia is another species which requires special treatment. Some protection from rain is required outwith the growing season, but the soil must be kept moist at all times. It is also necessary to provide good drainage and plenty of granite chips should be added to the compost. This Primrose has violet or deep blue flowers with white eyes, carried on a 3 in. scape. Propagation is by seed, which must be sown as soon as collected.

The success with *Primula sieboldii* induced me to acquire and plant a number of hybrids which appeared in the trade catalogues under various names—'Rose Dew', 'Madam Butterfly', 'Alba Rosea', 'Blue Form', 'Clarkaeflora' and 'Fantasy'. Of this lot 'Madam Butterfly' looks particularly promising, the crimson-purple backs of the petals contrasting well with the white fronts. Two other *Primulas* recently acquired were whorl types named 'Rowallan Rose' and 'Inverewe'. Both appear to be good forms but will require to be propagated by division as I am advised neither set viable seed.

In the shadier parts of the open beds *Primula alpicola luna*, *calderiana*, *secundiflora*, *chrysopa* and *saxatilis alba* are all well established. *Primula secundiflora* grows some 9 ins. high and has an umbel of violet-purple, hanging flowers. The clumps expand rapidly and regular division is required. Each umbel has between five and fifteen flowers which appear in June and July.

Primula chrysopa is another Kingdon-Ward introduction which should be grown in partial shade. The flowers are of a clear mauve shade and as the plants are not long-lived regular reproduction should be made from seed. This species is sometimes listed under the pseudonym of *Primula gemmifera*.

Saxatilis alba is a single plant which turned up in a pan of *saxatilis* grown from seed and I hope that this will not be lost. Three plantings were made of *Primula reticulata* from different sources and all have turned out dissimilar. One of these, which could have been a cross with *sikkimensis*, has already been discarded and another will soon follow. The remaining planting, however, is of an exceptionally good form and any further propagating will be made from this planting.

Plant Notes

The Editor is astonished at the number of requests he has received from members for the revival of this feature. He would welcome contributions for future issues.

ERYSIMUM ALPINUM 'MOONLIGHT'

A FAVOURITE plant is the vigorous perennial wallflower which I presume to be a form of *Erysimum alpinum* 'Moonlight'. This plant is vigorous with bright green leaves and a low, almost creeping habit compared with other wallflowers. It has bright lemon-yellow, scented flowers about $\frac{3}{4}$ in. diameter in early summer with the unopened buds chocolate brown in colour. The effect is striking and adds a welcome warmth in either a rock garden or an open bed. For a large part of the rest of the year the foliage is an attractive green.

Because of its habit it is inclined to root easily and propagation may be either by "Irishman's cuttings" or by stem cuttings. Seed

pods form but seldom ripen and it is probably a self-sterile form like so many Crucifers. However, an example set seed in my mother's garden in Hertford last year and I have succeeded in growing two young plants from this seed. Neither flowered this year, so I have no idea of what to expect, but the prospect of something different is exciting, since the two progeny are quite different in habit, one being a bit like its parent in vigour without quite the spreading habit, and the other is a dwarf by comparison, being very compact, clearly a different plant from its parent. I have these potted in 10 in. pots and hope they will produce an interesting exhibit for one of the summer Shows next year.

B. A. K.

IBERIS GIBRALTARICA

Iberis gibraltarica forms a low compact matted woody shrub of a maximum height of 1 ft., with dark green leaves, but, whilst more or less evergreen, has much less foliage than *I. sempervirens*. Flowers in rosettes typical of the genus are *very* attractive, opening white and then acquiring a mauve tinge. This effect varies from plant to plant. I have an example nearly white and another where the colour is a most attractive reddish-purple. These plants carry flowers in profusion and for long periods. Several of mine are currently in flower and have been blooming since mid-June till mid-October; this is helped by removal of dead heads before the seed pods swelled ripe. It appears to be hardy, one specimen having survived two very severe winters in a cold garden in England, and is still flourishing. It tolerates some pruning but, being woody, too much can be disastrous.

Propagation seems best from seed, which sets well and germinates easily, whereas cuttings and layering do not appear to be very satisfactory. Seedlings look weak and spindly, but grow into healthy compact shrublets when put outside and produce excellent and showy plants for a sunny aspect. It wilts on transplanting and so I have not been able yet to exhibit it.

B. A. K.

TWO BUGLES

Ajuga reptans, the common Bugle, is a native of most of the European mountains, including those of Scotland.

It is not wildly exciting, but it is quite useful as ground cover amongst Rhododendrons and other shrubs. It is stoloniferous and

rather invasive, so it should not be used amongst smaller and choicer plants. The flower stalks may be up to 4 or 5 inches tall, the terminal flower spikes are usually blue, but there are white and pink forms. If you like variegated leaves you can get a form known as 'multicolor' which has white and pink blotched leaves.

Ajuga pyramidalis is less common and quite distinct. It is not stoloniferous and, as the name suggests, it grows in the form of a pyramid which is 3 or 4 inches high. The leaves are rounded and blue-tipped. The flowers are violet and they are backed by conspicuous bracts of a reddish-purple colour.

It is not invasive and makes an attractive little plant in a moist peat bed. It too is a native of Scotland.

M-L.

HEATHERS FOR FOLIAGE

SOME heathers are valuable as foliage plants quite apart from their flowers. What makes them specially valuable is the fact that their foliage is, in most cases, particularly brilliant in winter and spring when colour is not so abundant in the garden. There are numbers of such cultivars of *Calluna vulgaris* nowadays.

Three which are new or comparatively new are the ones I wish to mention. 'Spitfire' grows to about 12 inches, and has golden foliage, changing to bronze-red in winter. Flowers pink in August-September.

'Sunset' is about the same height and its foliage changes from golden yellow in summer to orange in winter. Flowers pink in August-September.

'Blazeaway' is rather taller—18 inches. It changes colour from golden-green in summer to a fiery golden flame in winter. Flowers mauve September-October. All these coloured foliage heathers must be grown in full sun to develop their full brilliance. Cultivation as for other callunas, i.e. peaty well drained soil.

M-L.

GENTIANA ORBICULARIS

Gentiana orbicularis, sometimes known as *G. favratii*, has a far-flung habitat. It is to be found in the Pyrenees and in the Swiss Alps. I have found it in quantities in the Upper Engadine, for example. It is also found in Asia Minor, the Caucasus and as far east as the mountains of Northern Persia.

It forms tufts of small rosettes up to two inches or more in height. It might be described as looking like a smaller and neater version of *G. verna*. In fact, in the past some botanists have described it as a form of *G. verna*. The leaves are often almost circular—hence the name. The flowers are an intense blue in colour.

In the wild it is usually found on limestone, but I have found it does well in an acid soil so long as it is gritty and well drained. Actually I grow it in scree to which some humus in the form of peat or leaf-mould has been added.

It is a most attractive little plant and it is surprising that it is not more often seen in gardens. I would say it is as easy to grow as *Gentiana verna*, so I don't know why it is not grown and offered by nurseries.

The seed has, however, been offered at times in seed lists.

M-L.

TULIPA LINIFOLIA

THIS VERY lovely scarlet tulip has not too good a reputation in many rock gardens as it tends to "disappear" for no obvious reason. I have, admittedly, a garden which is "good for bulbs", but still I thought this note worth sending to the *Journal*.

Some eight years ago (perhaps more) I planted out four or five bulbs in a semi-scrée mixture at the edge of my rock garden where they flowered well. I collected the seed for three years or so for the seed exchange. The following year I was "caught on the hop" for the seed ripened, the capsules opened and a gale blew up, all in my absence, and I lost most of the seed.

This year (1970), to my surprise, I saw little clumps of scarlet right along the edge of the rock garden and up the slope—and found that they were self-sown *T. linifolia* from the lost seed. The greater number were down-wind from the original planting and those up on the bank probably represented a swing of the wind from west to south-west. These latter were growing up through a creeping *Cotoneaster* and *Penstemon* 'Six Hills' and made quite a striking effect.

Oddly enough this is the only species tulip to naturalise or self-sow in this way, for *Tt. batalinii*, *pulchella*, *tarda* (*dasystemon*), *kaufmanniana* and *eichleri* have never done so over quite a long period of time.

H. T.

Photographic Competition

The Editorial Committee have decided to organise a photographic competition for Black-and-White photographic prints. The First Prize will be £5, with prizes of £3 and £2 for Second and Third. The Regulations are :—

1. Plants must be suitable for rock garden, cold greenhouse or frame.
2. The competition will not be confined to members of the Scottish Rock Garden Club, but is only open to amateur photographers.
3. An individual will be encouraged to submit as many entries as possible.
4. Office-bearers and officials of the Club (other than the editor) may compete.
5. The Judges, who have not been selected or approached, will *not* be members of the Scottish Rock Garden Club. They will be asked to judge on photographic merit and not on rarity.
6. Photographs must be *taken* by the competitor, but not necessarily with his own camera.
7. Prints need not be produced by the competitor. There is no reason why they should not be done commercially.
8. The plant need not belong to the competitor.
9. Plants may be photographed in the wild or in cultivation.
10. Unmounted glossy prints in black and white, not smaller than 8 ins. × 5 ins. nor larger than 11 ins. × 9 ins., must be submitted. Prints will not be returned to competitors.
11. The name of the plant must be written on the back of the print without causing an impression on the surface.
12. Entries will close on the day of the Annual General Meeting of the Club in 1971.
13. Copyright will remain with the photographer, but the Editor reserves the right to publish in the *Journal* all entries submitted.
14. Prints must be adequately protected to prevent damage in the post.
15. Photographs should be sent to the Hon. Editor, P. J. W. Kilpatrick, Slipperfield House, West Linton, Peeblesshire.

Obituary

EDWARD DARLING, Honorary Vice-President

THE Scottish Rock Garden Club lost one of its longest serving administrators and most successful growers by the death of Mr. Edward Darling of Port Glasgow on 15th October 1970. Mr. Darling, who was in his eighty-seventh year, first became interested in dwarf native plants in his early 'teens and then later in the new and exciting plants sent to this country by Forrest, Ward, Sherriff and Ludlow amongst others. This interest in rock garden plants remained with him until his death, although failing health in the last few years prevented him from taking any active part in his garden, which was kept going by the devoted attention of his wife who throughout their long and happy married life had been a help-mate in all his gardening activities.

The Club was formed in 1933 and Edward Darling's name appears in the first list of Office-bearers available to me. That was contained in *Journal* No. 1 published in 1938, when he was shown as a member of Committee. Then came the war years and perforce the Club became moribund. With the end of the war, activities were resumed, but it was soon evident that, if the Club were to survive, vigorous action and a new outlook would be necessary. In 1947 changes in the Office-bearers were made and a reconstituted Committee was appointed. Edward Darling became a Vice-President with the late Major Alan Walmsley as President, the Club entered upon a period of expansion and the foundation of our organisation as we know it today was laid. Membership in 1947 was 320, by 1951 this figure had grown to 1500, and today it stands at 3000. In all the decisions and action taken Edward Darling played a prominent part. In recognition of his exceptional services to the Club over the years he was appointed as Honorary Vice-President in 1964.

Although Edward Darling was heavily committed nationally in the Club's affairs, he will perhaps be remembered most for his entire involvement in the activities of the Glasgow and West of Scotland Group. He it was for many years who organised meetings and outings for the Group, acted as Show Secretary and wrote Show Reports when the need arose. He was no back-seat driver : he had always to be in the thick of things himself. By his example he was never short of willing helpers. Edward Darling had a persuasive way and always

when calling for some particular effort there was a characteristic little smile, a merry twinkle in his eye and a dry apposite quip. Who could deny him what he wanted ?

As a plantsman he was first rate. He genuinely loved his rock garden plants and winning prizes was a secondary and incidental matter. Often he chose to put up a non-competitive exhibit as he did at the International Rock Garden Plant Conference Show in Glasgow in 1951. This exhibit of well grown plants occupied 54 square feet of staging and was awarded a Certificate of Merit. He did not shun competitive classes altogether and as far back as 1938 it is recorded that he won the Dr. William Buchanan Memorial Rose Bowl for six pans, amongst which was *Rhododendron imperator*, adjudged to be the best plant in the Show and awarded a Forrest Medal.

Edward Darling was generous with advice and practical help. Many a member of the Club had reason to be grateful to him for gifts of plants, cuttings and seed. The example he set is one which could be followed to the advantage of the Club. Those of us who knew him intimately will long cherish his memory and our warm sympathy goes out to Mrs. Darling and family in their great loss.

D. L.

Show Reports

SRGC AUTUMN SHOW

THE SECOND Autumn Show was held in the Old Town Hall, Musselburgh, where the helpful co-operation of the Burgh Officials was again outstanding, and the Provost spent an hour meeting Club officials and seeing the plants at the beginning of the Show.

The entries were marginally higher than in 1969, due in part to the keen interest and support from N.E. England, together with Edinburgh, Fife, Roxburghshire, East Lothian, Peeblesshire, Glasgow and N. Northumberland. Musselburgh Floral Art Group again filled the foyer with some very beautiful floral arrangements.

The standard of the entries was extremely high, particularly in Section II.

The Forrest Medal was awarded to an outstanding plant of *Cyclamen neapolitanum album* exhibited by Mrs. Boyd-Harvey, who also won the Mary Bowe Memorial Trophy for the best aggregate in Section I. The Silver Cup for the best plant in Section II was awarded to a very beautiful plant of *Campanula morettiana* shown by Mr. Merelie of Ponteland, Newcastle-upon-Tyne, who also won the Bronze Medal.

The Peel Trophy for three pans of Gentians was won by Mrs. I. Simson Hall. The Logan Home Trophy was won by Mr. Hector Macluskie, and the Wellstanlaw Cup by Mrs. Isobel Simpson with a charming flower arrangement.

Gold Medals were awarded to Ponton's Nursery for a display of rock plants which was colourful and of wide interest ; and to Miss Aitchison from Spindlestone Nursery, Northumberland, for her built-up rock garden display with a good range of plants, some of which were unusual. Her old friends were delighted to welcome Mrs. Mencil again at a S.R.G.C. Show and great interest was shown in her hand-painted china which she had brought from Cheshire.

The "gate" was more than twice as big as in 1969, but the numbers of Club members visiting the Show was small. This was disappointingly in contrast to the great support and co-operation shown by the members of the Committee and so many good friends who made it a happy and memorable Show.

RUTH TWEEDIE

DUMFRIES

THIS SHOW was held on May 15th and 16th and was very successful. This Group has suffered the loss of a number of major exhibitors within the last few years and this caused a marked drop in the number of entries. Characteristically, however, the standard of the exhibits was very high, for this has always been one of our best Shows no matter what its size may be.

This year the dwarf rhododendrons in the Show, usually very good, were really outstanding. The Forrest Medal was awarded to one of the finest plants of *Rhododendron williamsianum*, shown by the Show Secretary, Mr. N. M. Brown, that I have ever seen. It was a perfect hemisphere of bloom some four feet in diameter by, perhaps, fifteen inches high (fig. 71). There were so many really good rhododendrons that they cannot all be detailed, but mention must be made of the plant, exceptionally well-flowered, of *Rh. ludlowii* shown by Dr. M. E. Gibson and the one of 'Carmen' shown by Mrs. Drummond of Mersehead—both of these were really outstanding.

Two other really striking plants were shown by Mrs. Lewis of Southwick, a *Cyathodes colensoi* two feet across and in full flower, and the most completely flowered specimen of *Andromeda polifolia compacta* I have seen. It flowers well enough normally, but this was quite astonishing in its wealth of bloom. As in the last two Shows the Cassiopes were of very good quality and these were a main feature along with a very wide range of rock plants and dwarf shrubs in the display from the Crichton Royal Hospital Gardens which gained a Certificate of Merit. Altogether a really good and interesting Show on which the Show Secretary and the members exhibiting must be congratulated.

HENRY TOD

EDINBURGH

THE SHOW was held in the Napier College of Science and Technology on the 14th and 15th April, and in spite of the very late season the entries were very encouraging, over 100 up on the previous year, and double the number of exhibitors.

In the six pan class, which was won by Mr. A. D. Reid of Aberdeen, there was a beautiful plant of the very rare *Cassiope wardii*, in excellent condition, which also won the Forrest Medal. The Carnethy Medal also went to Aberdeen, and was won by Mr. H. Esslemont, and in-

cluded a very good plant of *Draba mollissima* and an *Androsace ciliata* fully 7 ins. across and absolutely smothered in flowers. The Elsie Harvey Memorial Trophy for three pans new, rare or difficult plants was also won by Mr. Esslemont with a *Saxifraga florulenta*, that rare spiky New Zealander *Aciphylla dobsoni*, and the seldom seen and very attractive plant which used to be called *Ptilotrichum reverchonii*, from the Sierra Cajorla in Spain, and now has the name *Hormathophyllum reverchonii* wished upon it.

Mr. and Mrs. Baillie of Longniddry showed a very unusual *Saxifraga* x *Prosenii*, an Engleria hybrid of unknown parentage, having the most attractive coloured flowers of a pinky orange shade. Mr. J. B. Duff of Glenfarg had two pans in Class 2, in perfect condition, as always, *Ss. chrystale* and 'Bridget'.

Class 14, Diapensiaceae, a most beautiful *Shortia* was shown by Mr. C. M. Simpson, Bearsden, *Shortia grandiflora* 'Snowflake', which lived up to its name and was pure white.

The Cooper Bhutan Drinking Cup also went to Aberdeen for the best primula in the Show, and it went to *P. allionii*, fully 1 ft. across, and reputed to be of great age, in full flourish. Also in the primula class was a very good pan of *P. leucophylla*. Mrs. Dyas from Aberdeen also showed a very good form of *P. allionii*.

In Class 23 Mrs. Simson Hall showed an unusual plant, *Helleborus dumetorum*, with beautiful plum and green coloured flowers. Also in the same class Mrs. Tucker had a good pan of *Ranunculus crenatus*.

In the bulb class there were several interesting exhibits. Mr. Crossland of Torphins, Aberdeenshire, had a particularly lovely pan of that tiny *Crocus corsicus*; what an attractive flower it has. Mrs. Simson Hall had a good pan of *Fritillaria crassifolia*, and Mr. J. B. Duff *Cyclamen coum album*, and in Class 35 a beautifully flowered *Pleione pricei*. Class 37 (compositae) had Mr. and Mrs. Baillie's large and beautifully symmetrical plant of *Helichrysum coralloides*.

Sempervivum and sedum classes had very good entries. Mrs. Aitchison of Edinburgh had a particularly attractive pan of *Sempervivum arachnoideum*, of a lovely silvery-grey.

Mr. A. D. Reid had two well-flowered rhododendrons, in spite of the late season, in full bloom, *R. keiskei* of a luminous yellow, and *R. pumilum*, a delightful rose pink. Mrs. Neilson showed some of her fern collection. Class 54 had a very good form of that very variable plant *Kalmiopsis leachiana* M. le Lepiniec form, and Mr. D. Livingstone had a good plant of *Arcterica nana*, which usually tends to have bells

of a greenish tint, but this plant had creamy flowers.

Class 63, plants grown from seed, was as usual one of the most interesting in the Show. It included *Dionysia aretoides*, *Saxifraga florulenta* and *Androsace pyrenaica*, and an excellent pan of that very attractive Siberian fritillaria, *F. pallidiflora* with its nodding yellow bells, shown by Mrs. Simson Hall, which was sown in 1962.

Section II was particularly good. It was a pleasure to see the benches filled with so many fine plants. The Henry Archibald Rose Bowl was won by Mr. J. D. Mann, a fairly new exhibitor, who had several excellent plants on show. His three pans were *Scopolia carniolica* var. *Hladnikiana*, an interesting plant of the nightshade family. It had rough leaves and attractive lurid-looking pendant golden bells, *Dentaria digitata*, a crucifer with good mauve flowers, and to complete the trio a colourful pan of *Primula rosea*. The same exhibitor had a pan of that lovely asiatic primula, *P. gracilipes*, and in another class well-flowered pans of *Pp. aureata* and *pubescens* 'Rufus'. Mr. D. C. Graham had two excellent well-flowered pans, *Primula* 'Beatrice Wooster' and *P. x Goeblii*.

Mr. W. T. Meikle included in his three pan class of bulbs two very attractive tulips, *Tulipa kaufmanniana* 'Caesar Franck', and a particularly attractive flower and colour form especially for the flower arranger, *Tulipa kaufmanniana* 'Shakespeare'. Mr. D. C. Graham had two fritillarias, *Ff. citrina* and *pinardii*. Other excellent plants in this section were a pan of that small golden erigeron *E. aureus*, *Sedum farinosum* of a delightful powdered pink, and a very good rhododendron, shown by Mr. F. J. Harris, *R. imperator*. Miss L. Gray showed *Daphne blagayana*, not easy to show in a pan, and Miss Jean Wood had two double primroses of most exquisite colours, which were Barnhaven seedlings.

Mrs. Isobel Simpson won the cup for her flower arrangement, done in a wine glass and all in greens and yellows, and her daughter got second with a charming selection of spring flowers. There was an excellent entry for this class, which is such an attractive part of the Show. The Boonslie Cup was won by Mr. Hector Macluskie, with a very nicely planted miniature garden, including a very good *Saxifraga oppositifolia*; second was Mrs. Aitchison, also with a very well planted exhibit.

In the junior class Miss M. V. McLeod won with a conifer, a sedum and a primula. In Class 115 Malcolm Small had a good hebe and a primula, and in Class 116 Miss M. V. McLeod won with a *Chamae-*

cyparis plumosa cyano-viridis.

As a change from flowers in pots and pans there was a most interesting display of stamps shown by Mr. J. P. Maule of Balerno. He showed a selection from his collection of flower stamps, and it proved a very popular attraction, and caused quite a lot of interest.

Perhaps the most beautiful exhibit in the Show was a pan of *Soldanella pusilla*, shown by Mr. H. Esslemont, which had been collected in Yugoslavia by the Misses Logan Home several years ago, and for sheer beauty and delicacy was difficult to beat.

Our thanks must go to the many people who worked so hard to make the Show a success, and to the people who brought their plants to show, for without them there could be no Show, and we had exhibitors from as far afield as Aberdeen and Glasgow.

S. Maule

B. B. Cormack

Dr. HENRY TOD

Members will have noted with satisfaction the award by the Royal Caledonian Horticultural Society of the Scottish Horticultural Medal to Dr. Henry Tod. The Club will wish to congratulate him on this recognition of his outstanding services to horticulture.

Joint Rock-Garden Plant Committee

MUSSELBURGH—18th SEPTEMBER 1970

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