Editorial Copy

# The JOURNAL of THE SCOTTISH ROCK GARDEN CLUB



VOLUME XII, Part 2
No. 47

SEPTEMBER 1970

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

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

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## PUBLICATIONS

Stocks of many numbers of the *Journal* are held, and sell at from 2/- per copy, post free, depending on scarcity. There are now a few copies available of the following : Nos. 15, 21 and 27, which were previously out of stock.

The availability and price list will be sent on request.

Still available, but in short supply, is "Dwarf Conifers" by H. G. Hillier, 11/3 post free.

The Club will welcome the opportunity to buy (or be gifted) old *Journals* providing they are in good condition.

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# An Amateur's Way with Rhododendron Cuttings

by DR. I. S. HALL

Rhododendrons are a fascinating genus whose attractions may easily reach the stage of an obsession. Even before this happens, however, the urge is often felt to increase the stock of plants by propagating from cuttings and seed. When this occurs, rhododendrons have really taken hold.

To the addict the fact that cuttings of some species will take anything up to fifteen years to flower means nothing. The fascination lies in getting them going and, of course, showing off the results for the admiration of one's equally rhododendron-minded friends. To be successful at this game a start should be made in the early twenties so that there is some expectation of seeing the results of the labour. Why anyone should start an interest in rhododendrons when approaching the allotted span passes comprehension and can only be a reflection of the attractions of these beautiful shrubs.

It is easy to read one of the books dealing with the propagation of rhododendrons and to imagine rows of sturdy plants all growing happily. Unfortunately it doesn't always work that way and, in spite of having read everything readily available on the subject, success has often proved elusive.

After having made practically every mistake, and having suffered disappointment after disappointment, some principles seem to be emerging and, strangely enough, they correspond to many of the things which have been written, but with an important difference. All these clear and easy-to-follow instructions have to be interpreted in the light of local circumstances, and that is just where the rub comes . . . and the mistakes.

Unlike the whole-time professional grower whose livelihood depends on the results, the amateur cannot give continuous attention to what must remain a hobby. A reasonably efficient system has been evolved which does permit of the occasional game of golf, and it was thought that others might profit from some of the failures and possibly therefore be able to cut a few corners.

CONDITIONS :

Most gardeners know that the two essentials for rooting any type of cutting are an even temperature and a constant level of humidity. It is the achievement and maintenance of these conditions which are likely to defeat the amateur.

Generally speaking the temperature available controls the speed of rooting, and the higher the temperature the more moisture is required, up to complete saturation. Many rhododendrons will not root unless they are given these conditions of high temperature and high water content and even so some of the more temperamental ones refuse to root.

EQUIPMENT :

The writer has gradually built up a system which provides a range of temperatures and degrees of moisture, and has experimented with various types of rhododendrons under different conditions. At one end of the scale is a wooden box with a sheet of glass over it, and at the other a propagating case, in a small greenhouse, with constant bottom heat and a mist jet. These and some other types of equipment which have been tried and could be adapted to the facilities available to any gardener, are described below.

For a few cuttings the simplest container consists of a pot enclosed in a plastic bag, the plastic being held well above the cuttings by two hoops of wire. The mouth of the bag is tied close and an elastic band just above the rim of the pot constricts the bag and causes any water which condenses inside to run back into the soil. A good diagram of this method can be seen on p. 130 of "The Small Rock Garden" by E. B. Anderson (Pan Books). It is now possible to obtain plastic pots with fitted cloches of clear plastic which serve the same purpose.

A larger number of small cuttings may be put in a wooden seed box with a close-fitting glass lid to prevent evaporation. In this case the top of the compost must be as near to the glass as is compatible with the size of the cuttings, because the smaller the volume of air, the less the leaves will transpire.

If possible, these pots or boxes should be placed in a closed frame shaded from bright sunlight in summer and protected from frost in winter and the humidity should be kept constant. The time taken for rooting will be considerably longer under these conditions than if bottom heat can be provided ; nevertheless, the majority of the easier species should root without too much trouble. Amongst those rooted

without heat have been *R. mucronatum* and *R. primulaeflorum.*

From these 'cold' methods we come to the use of heat, which not only speeds up the rooting of easy cuttings but also enables one to tackle more difficult species.

A frame with a warming cable gives a soil temperature of 55°F. (13°C.). At first this was watered by hand, sometimes several times a day in warm weather, but the frame is now equipped with an automatic drip watering system operated on a simple siphon principle. This provides the essential constant conditions and allows the gardener to take a holiday once in a while. The frame is covered with Netlon mesh on sunny days and with sacking in cold weather to retain the heat.

A great many small and medium-sized species have been rooted by this method, including : *Rr. racemosum,* 'Blue Tit', *lepidostylum, hirsutum* fl. pl., *glaucophyllum* var. *luteiflorum, oreotrephes,* and *davidsonianum.*

The most sophisticated method which has been used is a propagating case 30 × 20 inches on a shelf in the greenhouse, which gives a bottom heat of 65°-75°F. (18°-24°C.). The height of the case has been increased by a light wooden framework 12 inches high, surrounded by polythene, in order to insert a mist jet. The mist supply can be worked by hand according to the weather or, if it has to be left unattended for a week or two, by a time clock which gives a few seconds of mist every hour. At first a layer of peat was put over the heating wires, but this tended to encourage moss, liverwort and even ferns to appear ; it has now been replaced by sharp sand on which the pans of cuttings are placed and which has proved entirely satisfactory.

Species raised in this frame include : *Rr. crassum, russatum, lindleyi, cinnabarinum* var. *roylei, brachysiphon* and *diaprepes.*

It may be of interest to know that all the equipment described above is obtainable from horticultural suppliers.

COMPOST :

The next point to be decided is the material in which the cuttings are to be rooted. Many materials have been recommended, such as peat, sharp sand, pumice, vermiculite in various combinations :

e.g. 1 part fine horticultural peat to 2 parts sharp sand
1 do. do. do. 2 parts No. 4 pumice
1 part peat, 1 part sharp sand, 1 part vermiculite

Whatever is chosen should be adopted as standard. It is a great mistake to chop and change for then nothing can be learned from

failures. If the variables are kept as few as possible, the differences in behaviour of various species may be understood.

The mixture adopted here is 1 part fine peat to 1 part sharp sand. This is varied slightly as required. A softer type of growth might like a little more peat, a harder one a little more sand, but this will be a matter of experience and it is better not to be in a hurry to make changes.

POTS :

The modern plastic pots save a lot of time but are more difficult to manage water-wise than clays. More drainage is required and they do not need as much watering since there is no evaporation through the pot.

On the other hand, for long-term use the clay pots, in the writer's experience, have the advantage that if they are sunk in well moistened peat in a glass-covered box or frame they will survive a surprising amount of neglect because they will soak up moisture from the damp peat and this has the effect of keeping the humidity constant.

TAKING THE CUTTINGS :

So far we have not touched the most important point of all for successful propagation—the time to take the cuttings.

Unfortunately this is a most difficult thing to decide, for there are few reliable guides. Some say that the smaller the leaf of the rhododendron, the later in the year the cutting should be taken, but this can be no more than a generalisation. The most important thing is to take the new wood just when it is ripe enough, which takes years of experience and many failures to learn.

For a beginner who has some plant he is specially anxious to propagate, the best way is to take one or two cuttings each fortnight or each month over a wide period until he finds the time at which they root the best. He can then note his results for future reference.

Some rhododendrons seem to root better without heat and without too much moisture ; amongst these the types with thin, small leaves appear to fall. The larger-leaved and softer types seem to prefer close conditions. One is constantly having surprises and disappointments, as when two apparently similar cuttings are given identical treatment and one thrives while the other fails. Possibly the two shoots had not ripened at the same time ; even two cuttings from different aspects of the same parent bush might not be in comparable condition. This

illustrates the complexity and difficulty of standardising propagating techniques.

Now for the cutting itself. How long and how big should it be ? There are different opinions as to what constitutes a good cutting, but on the whole thinner, longer cuttings seem to take more easily than thick, short and sturdy ones. On the other hand, they must not be spindly and weak ; very often the most suitable shoots will be found away from the vigorous front of the bush.

The length of the cutting varies according to the type. In some of the dwarf rhododendrons it may be difficult to find a cutting an inch long, whereas in well matured bushes of large types it is easy to take them up to six inches long.

When removed from the parent plant the cuttings should be placed immediately into polythene bags. It is a great mistake to walk around the garden with a bunch of cuttings in a hot hand and it is essential to keep them shaded until they are inserted in the potting medium. If there is to be a considerable time lapse before they can be potted, it is better to stand them in water to keep them turgid.

Immediately before potting the cutting should be re-cut with a very sharp knife or razor blade and shortened if necessary. The top growth of larger species should be reduced to two or three leaves. A 'heel' is not necessary, in fact it is probably a disadvantage since it prevents proper 'wounding' of the stem of the cutting. This means the removal of a vertical strip, about half to one inch in length, of the outer layer of the stem to expose the cambium layer, from the cells of which the new growth eventually comes. The wound should not be deep enough to penetrate the woody centre.

Finally, the stem of the cutting is moistened and dipped in hormone rooting powder, when it is ready for insertion in the compost. It must be pushed into the compost and pressed firmly into position to ensure that the stem is in close contact with the mixture, leaving no air gaps to cause the cutting to rot.

HARDENING OFF :

Once the cutting has formed roots there are further problems to be faced. Where high temperature and humidity have been used the roots have been absorbing and have to become used to taking in nutrient solutions before the plant will grow. The plant has to be toughened by gradual weaning from the soft conditions in which it has been living. The professional with elaborate equipment does this

part of the operation by use of an automatic 'weaning unit' which reduces temperature and moisture so that plants gradually become accustomed to normal conditions. The do-it-yourself amateur must imitate this process with what ingenuity he can command. One effective way is to remove the pan from the propagating unit and put it in a polythene bag on the greenhouse bench or in a frame, making sure it is shaded. The bag is opened for lengthening periods each day and in this way the plants are gradually acclimatised to ordinary conditions.

Naturally, where conditions of rooting are nearer normal, with lower temperature and humidity, less weaning is needed. Where the cuttings are in a box the glass lid should be raised a little each day until the cuttings become accustomed to the fresh air.

To prevent any interruption in the growth of the young plants they may now require feeding. Sand and peat do not contain any great store of food and if it is inconvenient or inadvisable to pot on the rooted cuttings, a little weak liquid fertiliser, preferably one of the seaweed derivatives, may be given.

POTTING ON :

It is at this stage, in the writer's experience, that many rhododendrons turn up their toes and fade out. That famous propagator in the Royal Botanic Garden, Edinburgh, L. B. Stewart, used to say that it was easy enough to put roots on anything, the trouble came in persuading the plants to grow.

The potting mixture is of considerable importance ; it should have plenty of drainage material and yet hold moisture without becoming waterlogged, since these young plants dislike soggy conditions. The mixture must be fairly acid, having a pH of 5.5 or even 4.5, and the following proportions have been found satisfactory :

2 parts turf loam, lime free
1 part coarse sand
2 parts granulated peat
1 part John Innes compound No. 2 or 3

The figures refer to parts by volume ; handfuls, trowelfuls or pailfuls, not parts by weight.

Following the work of Dr. Henry Tod reported in the S.R.G.C. *Journal* of April 1968, the writer has made comparisons between the above mixture and the same with the addition of chopped sphagnum, which have shown interesting results. Where sphagnum has been included the plants seem to be superior in health and growth. Whether

this is due, as Dr. Tod suggests, to something in the sphagnum, or to the physical properties imparted to the mixture, remains to be discovered, but it looks as if sphagnum does do something for rhododendron cuttings.

Throughout this stage it is important that the cuttings are never allowed to dry out, and equally that the soil never becomes sodden. Protection will be required during the first winter, in a frame or cold house, as cold drying winds spell disaster to young plants. The following Spring the plants may be transplanted to the open ground.

# Wild Flowers of the Upper Mid-west

by MATTIE E. JENSEN

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WISCONSIN is truly representative of the Upper Mid-west because most of the wild flowers of that region grow here. There are great heavy woodlands, both deciduous and evergreen ; marshes, bogs and swamps ; sandy rocky hillsides and hilltops, and even a few remains of the virgin prairies that once covered most of Illinois and parts of southern Wisconsin.

We have the same situation here that is true all over the world, that of the decline and even extinction of rare and fragile species. Concerned citizens are trying desperately to save our native flowers that are so threatened by the spread of cities, airfields, highways, and industrial complexes.

I was born on a Wisconsin farm, have lived on various farms here and have a deep, abiding and passionate love for the out-of-doors and its beauties. I remember as a small girl, wandering through a heavy fern-filled oak grown hillside on our farm and finding for the first time a blossoming Showy Lady's Slipper (*Cypripedium reginae*). I was familiar with the smaller yellow Lady's Slipper (*Cypripedium parviflorum*) and as this was my first glimpse of this tall, gorgeous beauty, I was literally struck dumb with awe and admiration. Later on I was to find a large patch of the same on a neighbouring farm, but I had been admonished by my father that I must never pick any

of the orchids. The owner of the farm was a native Norwegian and he told me that these beauties were known in Norway as Virgin Mary's Shoes.

The first Spring flower to appear in Wisconsin is the skunk cabbage (*Symplocarpus foetidus*), so named because of its overpowering odour. It attracts flies and bugs with all the power of a bit of carrion. Another member of the arum family is the beautiful Jack-in-the-pulpit (*Arisaema atrorubens*). Its habitat is heavy, rich woods and it appears from April to July. The flower spathe pushes through the soil along with the leaves, which are two in number and thrice compounded. Clusters of bright red berries follow the blossoms.

One of the best represented flower families in the Mid-west is the crowfoot family (ranunculaceae) and the earliest of these is the Pasque Flower or Crocus (*Anemone patens*). This is often in bloom for early Easter, hence the name pasque ; pale lavender blossoms, often furry, grow on high hill tops, prairies and, though becoming scarce now, are often found along railroad rights of way.

The marsh marigold (*Caltha palustris*) is sometimes called the cowslip, and abounds in marshes or bogs. The flowers are a deep, golden yellow, and marsh areas are often a patch of gold during April and May. The leaves of this species make excellent greens.

The hepatica (*Hepatica triloba*) shares with the common buttercup and the pasque flower the title of being the earliest of our Spring flowers. It too pushes through the last of the snowdrifts to grace the vernal scene. The pale blue and pink flowers precede the liver-shaped leaves.

The delicately beautiful anemones are also represented by the woodland anemone (*Anemone quinquefolia*) and by the rue anemone (*Anemonella thalictroides*) which blossom somewhat later in the Spring. Both are small, white and delicate and grow in thickets and woodlands.

The May apple (*Podophyllum peltatum*) bears one large, solitary white flower in May, between two large green spreading leaves on a stalk rising to ten or twelve inches high. This blossom is succeeded by a large wrinkled, lemon-coloured fruit. Country children are often tempted to bite into this fruit, but rarely take more than one taste, because it is acid and sickening in flavour.

The dicentra, known in domestic gardens as the "bleeding heart", is represented in our Wisconsin woodlands by the "Dutchman's breeches" (*Dicentra cucullaria*) and "Squirrel Corn" (*Dicentra canadensis*). Both are white, blossoming in May, and leaves are fern-like.

The flowers of both species are borne in racemes and vaguely resemble upside down pairs of loose breeches. I have four or five plants in bloom in my wild garden at this moment, as well as some well-grown blossoming plants of Jack-in-the-pulpit.

The bloodroot (*Sanguinaria canadensis*) flowers in May in open woodlands and alongside brushy roadsides. The sap of the stem is blood-like and hence its name.

The lily family (liliaceae) is represented by more than eighty species east of the Rockies. During May and June there are many species blooming in rich heavy woods and also in lush meadows. A member of the lily family that is far from fragrant is the onion species (*Allium tricoccum*), known as wild leek or wild onion. This is found in heavy woodlands during May and June. The flowers are borne on an umbel six to twenty inches high, greenish-white in colour. Country children like to chew them for the pungent flavour.

The most beautiful of the family are the true lilies of which there are four in our range ; all are of an orange-red, flowering in July or August. The day lily (*Hemerocallis fulva*) is a European import found in abandoned fields or along roadsides.

The turks cap lily (*Lilium superbum*) is the most beautiful and striking of all the native lilies and the most prolific. The plant, sometimes six feet high, will bear as many as forty of the bright orange recurved blossoms. This lily is found in rich meadows and on banks of streams.

The meadow lily or Canada lily (*L. canadense*) also loves marshy or boggy situations. It is a tall species, but never bears more than a dozen yellow blooms.

One lily that delights in heavy woods or brush-covered pastures is the wood lily (*L. philadelphicum*). It bears as many as four erect flowers, not pendulous as is true of the other, both spotted inside the perianth with chocolate brown. All of these transplant easily and flourish in domestic gardens.

The trout lily (*Erythronium americanum*) is also known as the dog tooth violet and in some localities as the adder's tongue. The single flower is borne at the top of the scape from six to ten inches high and is a pale yellow. The two leaves are at the base and are mottled in white and reddish-brown. It thrives in damp rich woods in May and June.

A lovely member of the lily family is the false spikenard (*Smilacina racemosa*) and also closely resembling it is the false Solomon's seal

(*Smilacina stellata*). Both of these are much valued for wild gardens, and transplant easily if planted in a damp location. Both have a long zigzag stem, many light-green deeply ribbed leaves and feathery terminal flower clusters.

The Canada mayflower (*Maianthemum bifolium*) false lily-of-the-valley is a member of the lily family. It is found growing in abundance in pine woods. The two or three broad leaves are seated on the stem to a white flower cluster, and this is succeeded by a bunch of dull red berries.

A wood-loving plant is the true Solomon's seal (*Polygonatum biflorum*). The stem varies from two to six feet, and the bell-shaped flowers, greenish-white, hang from lance-shaped leaves that alternate along the stem.

The genus trillium is a member of the lily family. All their parts are arranged in threes : three leaves, three petals, three sepals and a three-parted stigma. These unusually beautiful plants are in real danger of becoming extinct, because it kills the plant to pick the blossoms. One often sees people coming home from woodland jaunts with arms full of these delicate blossoms. The flowers are white and in some species purple and bloom during May and June. The large-flowered trillium (*T. grandiflorum*), the nodding trillium (*T. cernuum*) and the purple trillium (*T. erectum*) are found in our range.

The amaryllis family (amaryllidaceae) has only one representative here in Wisconsin, the yellow star grass (*Hypoxis hirsuta*). The blossoms are literally little yellow stars peering from the green grass in which this dainty species grows. The narrow grass-like leaves can barely be distinguished from the pasture grass in which they grow.

The marshes and swamps turn blue in May when the large blue flag (*Iris versicolor*) bloom there. As children we used to wade out into the squishy depths from bog to bog, filling our arms full of these large bluish-purple blossoms so delicately veined. A small member of the iris family, blue-eyed grass (*Sisyrinchium angustifolium*) has grassy leaves and six-petalled small flowers. These are found in May and June in grassy meadows and on grassy hillsides. Plants with pure white blossoms are found rarely, and are regarded as treasures by dedicated wild flower gardeners.

The pulse family (leguminosae) is represented by several species and one of the most beautiful is the blue lupine (*Lupinus perennis*). In springtime this plant covers the hillside pastures, waste lands and roadsides with a blue sheen. Lupines were also common on the wide sweeps

of the prairies and the buffalo or bison fed on the leaves and bloom.

One family whose name is synonymous with Spring is the violet family (violaceae)—blue, yellow and white. The most common and widespread is the common blue violet (*V. cucullata*) and is found everywhere and even invades cultivated gardens.

The Canada violet (*V. canadensis*) is a blue species that is branched. The leaves spring from the stems and the flowers are borne at the angle of the leaves. Another blue or almost purple violet is the bird's foot violet or Johnny-jump-up as it is locally known (*V. pedata*). It has a bright orange centre and its leaves are cut into five to eleven parts, all sharply pointed, hence the name bird foot. This species grows on hillsides, hill tops, dry meadows and along railroad embankments. I have seen hillsides and prairie areas painted a glowing purple when covered with Spring's offering of bird's foot violets.

The sweet white violet is the most diminutive of the genus, fragrant and altogether charming. The plant is stemless with leaves and blossoms springing directly from the root. It is commonly found in swamps and low damp areas. The tallest of the violets is the downy yellow violet (*V. pubescens*) and it grows in dry woods and sometimes on the banks of streams. The plant can grow to a height of eighteen inches, it branches and the leaves and stems are hairy. The flowers are a bright yellow and rather large.

We have several members of the heath family (ericaceae) native to the Upper Mid-west. The pipsissewa or Prince's Pine (*Chimaphila maculata*) grows in rich woodlands. It has only one stem and the shining, green leaves are arranged about in two whorls. Flowers are white, one to five, and nodding on a final whorl above the topmost leaves.

The shin leaf or lily-of-the-valley (*Pyrola elliptica*) is also found in heavy woods. The racemes of white flowers rise on a solitary smooth scape from a flat group of basal leaves during May.

An exceedingly odd member of the heath family is the Indian pipe (*Monotropa uniflora*). This pale, ghostly plant is found in dimly lighted woodlands. It bears one pale flower on a leafless stem. It is a parasite getting its sustenance from living roots and decaying vegetable matter.

Wisconsin is too far north for the laurels, azaleas and rhododendrons, but we have one heath that bears fruit, the wintergreen (*Gaultheria procumbens*). The plant is an evergreen, two to five inches high with several shining green leaves, clustered at the top of the stem. Underneath the leaves two or three waxy white flowers are borne,

followed by a couple of sweet, aromatic berries. These are one of Mother Nature's dearest gifts to country children.

I shall never forget my first sight of the trailing arbutus (*Epigaea repens*). When I was nine, we moved from southern Wisconsin to another farm in the north. Arbutus is not found in the extreme southern part of the state, but is still found in protected spots in the north. A neighbour brought a fragrant bunch of it to us and told where they grew. They blossom very early and literally emerge from the snow along with the skunk cabbage and hepatica. In New England, it is known as the mayflower and legend has it that the Pilgrims were the first Europeans to see the arbutus.

Labrador tea (*Ledum groenlandicum*) is an evergreen shrub, growing from one to three feet high, found usually in bogs or damp thickets. The leaves are green with a rolled back edge and covered underneath with a rusty, hairy wool.

We have a member of the primrose family here in Wisconsin, the beautiful shooting star (*Dodecatheon meadia*), which grows on prairies and in open woodlands. The leaves grow in a tuft at the base of the solitary flower stalk, which is sometimes twenty inches tall. The blossoms are a deep lavender, the stamens project from the throat of the flower, the five anthers forming a conspicuous cone. Blossoming time is from May to June.

The most beautiful of the gentian family (gentianaceae) is the fringed gentian, very rare, and becoming more so as its habitat is being curtailed. There are four petals, fringed and violet-blue. Bumble bees are attracted to this species and are responsible for the setting of the seed. Fringed gentians grow in marshes and moist woods. It is possible to obtain seed of the species and, though the seed is slow to germinate, it can be raised in home gardens.

The other gentian species native here is the bottle gentian (*G. andrewsii*) and it is as remarkable in its way as the fringed species. It is peculiar because the five parts of the corolla remain closed. The sturdy bumble bee fertilized this flower too, by forcing his way into the closed lobes to get at the nectar. The flowers are a deep blue and are found in moist woodlands often on the banks of streams. Both the fringed and bottle gentian bloom in September and October.

Blazing from the dry fields and pastures in the hot Mid-west August is that colourful member of the milk weed family, the butterfly weed or pleurisy root (*Asclepias tuberosa*). This species grows from one to three feet high. The beautiful flowers grow in flat clusters at the top

of the plant. This species transplants easily to gardens and is offered in nursery catalogues.

The downy phlox (*Phlox pilosa*) is covered with fine, downy hairs, has narrow lance-shaped leaves and dainty pink flowers, borne in flat-topped clusters at the summit of the one- or two-foot stalks. This is found in May and June on dry hillsides or prairies.

The beautiful Oswego tea or bee balm (*Monarda didyma*) is common in woods of this state, but we have the lavender variety. Bees and humming birds and butterflies flutter around this tall mint to get at the great store of nectar.

The turtle head (*Chelona glabra*) is a moisture-loving plant common in swamps and wet meadows with a beautiful pink and white blossom with a fanciful resemblance to a turtle head.

The beautiful Scottish harebell (*Campanula rotundifolia*) is native here and is loved by all Americans. It is found usually on rocky hillsides and on the sides of mountains.

One of the loveliest of our native wild flowers is a member of the lobelia family (lobeliaceae), the cardinal flower. This is not too common but is easily grown from seed or by transplanting, and is not in danger of disappearing, which is sadly true of some others of our most beautiful wild flowers. I have seen the cardinal flower often and remember my first sight of a great area of these gorgeous beauties growing in a swampy area along the Mississippi River. The stem grows to a height of two to four feet, the leaves are lance-shaped, and the flowers terminate in a raceme at the top of the stalk, showy and deeply scarlet.

We have two insect-eating plants here in Wisconsin and both of these are inhabitants of bogs and swamps but are not related. The pitcher plant (*Sarracenia purpurea*) is a bog species that has one or two browning purple blossoms borne on stems, springing from a basal group of pitcher-shaped greenish leaves, containing water and a sticky substance to attract insects. The insects are caught by downward-pointing hairs, drowned and, after decomposition, are absorbed by the plant.

The round-leaved sundew (*Drosera rotundifolia*) prefers moist situations and has a basal group of round hairy leaves coated with sticky hairs to catch insects. The leaf folds over the insect and digestion takes place. The flowers are small, white and borne at the top of the single flowering stalk. Both of these insect-eaters bloom all summer long.

Common members of the composite family but exceedingly colour-

ful ones are the golden rods which begin to bloom by the middle of July and keep on until early frost. The early golden rod (*Solidago juncea*) grows tall, from two to four feet high, in dry soil. The Canada golden rod is tall, too, and the flower clusters are plumy instead of flat, like the early golden rod. Another *Solidago* is the lance-leaved golden rod with lance-shaped leaves, flat-topped clusters of flowers and blossoms from August to October.

The pearly everlasting (*Anaphalis margaritacea*) is the largest-flowered and prettiest of the everlastings, with large white flowers and exceedingly fragrant. It is often picked and dried and used to scent linen cupboards and chests.

There are several organizations and foundations that have been formed throughout the United States whose chief aim is conservation of our vanishing flora, and one of them is the Nature Conservancy dedicated to preserving natural areas as living museums. They provide money for the purchase of valuable tracts of land that are in danger of being destroyed by modern urban growth. The local area raises the money and pays back the loan.

The Wisconsin Chapter has provided the means to save a tract of virgin wet (meaning water underneath it) prairie along Lake Michigan. It is called Chiwaukee Prairie. It has to be burned annually after the flowers have died down for the winter, to prevent scrub trees from springing up and destroying the flowers. The Indians did this before the white man came to this area. It is a sea of colour at different times of the year. At present eighty-one acres are owned by the Conservancy, and more territory is being negotiated for. There are 280 varieties of plants growing there—none introduced.

Close by the Chiwaukee Prairie site is an old forty acre farm that has not been pastured since 1935. The land is traversed by a small stream and is heavily wooded with an infinite variety of trees, bushes and flowers. The sisters who own it have deeded it to a Foundation deeply interested in conservation, but they will live there and have it for their home for the rest of their days. This truly beautiful farm is called Hawthorn Hollow.

## HONORARY SEED EXCHANGE MANAGER

Members are reminded that the new Honorary Seed Exchange Manager is Dr. Lucy M. Dean, Sararoga, 9 Ledcameroch Crescent, Bearsden, by Glasgow.

# Our Shows: Calling Potential Exhibitors

by DAVID LIVINGSTONE

IN HIS article "Our Shows—an Appeal, an Explanation and a Challenge" in the April 1970 *Journal*, Dr. Henry Tod again directed attention to a subject which requires ventilation. The aim of the Club is "to create an interest in Rock Garden plants, to spread a knowledge of such plants and to encourage their cultivation". There is no distinction drawn between "ordinary" rock garden plants, whatever "ordinary" may mean and it can have a different interpretation for any half dozen members, and new, rare or difficult plants. It is rightly the aim of the Club to encourage members to grow *all* kinds of rock garden plants and our show schedules recognise this fact because special provision is made in only a very few classes for "rare, new or difficult plants". This special provision is, of course, an attempt to attract to the show bench plants which might not otherwise be seen by members and to encourage others to grow plants recently introduced to cultivation. "Ordinary" plants may, therefore, be entered in all other classes including six pan classes subject, of course, to the particular requirement of each class.

It seems to me that the fear, if such it is, of potential exhibitors of "ordinary" rock garden plants that it is a waste of time putting such plants on the show bench, may arise from the Rules for Judges which in the vast majority of classes lay down that 40 points shall be awarded for difficulty in cultivation and 10 for rarity in cultivation. This is a matter which will be the subject of consideration by the Advisory Committee and of a report to the Council of the Club. There may be a case for a less heavy "weighting" in favour of difficulty and rarity, but even as the Rules stand and as Dr. Tod pointed out in his article "ordinary" plants well grown and flowered have won the Forrest Medal against competition from rarer and more difficult plants. Let those of faint heart take note, find courage and get their "ordinary" plants in good condition to the show bench. Having thus started, some at least will, I feel sure, be tempted to be more venturesome.

There is a solid basis for my optimism. Readers will find the necessary evidence in the report of this year's Glasgow Show which

records the success of Mrs. D. M. Stead and Mrs. Betty Ivey not only with "ordinary" plants but with more difficult subjects to which thus early in their exhibition career they have already graduated. I agree with Dr. Tod that an alpine house is not essential for success as an exhibitor of rock garden plants but used sensibly in conjunction with a cold frame or frames it can be of great advantage in extending the range of plants grown and, of course, for providing cover in winter and early spring under which one can work and have the pleasure of enjoying one's plants in flower out of the cold and inclement weather which is our usual lot in the early months of the year. But, except for the rare and more difficult plants, rock garden subjects are better out of doors for the greater part of the year. I find that the Crittall or Pluie type of cold frame with glass walls built up on bricks with the pots plunged to their rims in concrete sand is ideal. The tops can be left off from the beginning of May to the middle or even to the end of October and the glass walls can be brushed over with "Summer Cloud" or some other shading material to prevent scorching through the glass during May-August or September. A double span roof frame 5 × 4 feet will hold something like 90 pots varying in size from 2½ to 6 inches. From a frame of this size it is surprising the number of exhibition quality plants which can be produced. I join with Dr. Tod in exhorting members to have a go and to this end I am prepared to let members who wish to take up the challenge have a list of suitable plants with which to start. I was indebted myself to the late Dr. William Buchanan some forty years ago for a list of plants suitable for a beginner and I still grow some of the twelve he recommended, notably among them *Primula pubescens* 'Mrs. J. H. Wilson' which kindled in me a life long interest in the genus primula. One last point. Dr. Tod's correspondent mentioned in the penultimate paragraph of his article must have been joking. Do we really want to see on our show benches huge pans of say Aubrieta and Polyanthus ? By all means "ordinary" plants but in as wide a range of species, varieties and genera as possible. And do we want huge pans ? There is a case for restricting the size of pan to give the man or woman with comparatively little space a chance. Fine specimens in six-inch pans can be produced. Have a look at the International Rock Garden Plant Show at Harrogate next April for proof. In two Sections of the Schedule for that Show the size of pans has been restricted to 6½ inches. Let's have the views of beginners or potential exhibitors and remember my offer to supply a list of recommended plants.

# Rock Gardening - "from the ground up" - V

by HENRY TOD, Ph.D.

IN THE last section I discussed the use of dry walls as features of construction, but there are several points which still require consideration about walls.

Firstly, they provide the nearest approach to the crevices in the rock faces of the mountains so they are ideal for plants that have these as their natural habitat. Next, the neck of the plant is quite free from lingering moisture as it "runs back" into the wall nearly horizontally and, if the wall faces the sun, the real sun-lover gets as much of a baking as it can in our climate. Whatever the exposure the roots are in the cool depths of the stone and the soil behind—again conditions that the plants like. One rather ingenious construction that I saw in General Murray-Lyon's former garden in Edinburgh consisted of a south-west to south-east-facing scree bed, sloped up against a north-east to north-west-facing wall. This wall provided cool, partly shaded conditions for rock plants like ramondas, haberleas and some of the primulas which preferred such sites, while the scree had hot, dry conditions for others*.

Much has been written about the use of raised beds of acid soil for lime-haters in calcareous parts of the country. It is fairly obvious that a bed excavated in a limey soil and then filled with an acid mixture will work well enough for some time, but ultimately the lime-rich soil water will percolate through the acid mixture and firstly neutralise it and then render *it* limey too. If, however, the bed is raised above soil-level there is much less chance of this happening, but, and this is the real snag, most lime-haters are also inhabitants of relatively damp soil and a raised bed will naturally drain rather quickly and dry out easily, so the greatest care must be taken to avoid drought conditions in anything except wet weather. This is a point which, I think, is often overlooked with serious results—and it arises not only in the "acid beds on limey soil" but also in *any* raised beds that are above the natural soil level.

*Since this was written, Gen. Murray-Lyon has said that it would be advisable to place a sheet of impermeable material such as polythene between the scree mixture and the soil behind the wall to minimise the movement of moisture from the damper to the drier mixture.

It is often thought that if liberal amounts of peat and/or leaf mould are worked into the soil it will retain enough moisture to avoid this trouble. This increase in water-retention is very real, but, and here is the difficulty, organic matter of any sort gradually is oxidised, i.e. burned away, in the soil so that the water-retention gradually falls and conditions become drier and drier. This was brought home to me very abruptly when the late John Renton told me that he thought that the movement of water through the soil in the Branklyn garden had altered ; he suggested that some springs in Kinnoul Hill had broken out elsewhere, leaving his garden too dry for many of the plants to be happy. I took a soil sample from each of various areas—and on analysis it showed that, in each case, the organic matter content had dropped to well below 5%. This was some twenty-odd years after Dorothy and John Renton had developed Branklyn—and the liberal amounts of peat and leaf-mould that they had worked into the soil had gradually oxidised away—hence the dryness. The organic matter was no longer there to hold the moisture in the soil and the problem was solved by a heavy dressing of peat worked into the beds—the garden recovered. No springs had moved but the soil just could no longer hold the moisture.

This, of course, applies even more forcibly to raised beds of any sort and the trouble is that the change is so gradual that it is only too easy to miss the results—and blame either the plants or your own technique in growing them. If a light top-dressing of either peat or leaf-mould is gently worked in each year into raised beds it will help to stabilise conditions and avoid this trouble developing.

Perhaps the fullest development of the raised-bed idea was evolved first, I think, by one of our earliest Presidents, the late Dr. A. O. Curle. His garden had a most surprising feature which he called his "snakes". I have a vivid memory of visiting him (I was about thirty at the time) and being rather taken aback at these odd constructions winding their devious ways through the garden. He said to me, "When you're my age you will appreciate the advantages of bringing your rock garden up to waist-level—you do not need to bend to weed it or see your plants close to". His construction consisted of two parallel dry walls some three feet or so apart with (I imagine) a suitable compost filled in between them, the surface being liberally covered with chips to cut down moisture loss. When I saw them the top of these "snakes" fairly blazed with rock plants growing superbly and in full flower, while the gaps between the stones of the walls made ideal homes for

crevice plants. This was about thirty years ago and I have heard that he had a lot of difficulty with this drying-out problem as mentioned above and subsequently most of the "snakes" were demolished and replaced by much lower raised beds near the house. I rather suspect that the "table-top" rock gardens much discussed nowadays derive from these early "snakes" of Dr. Curle's.

These have been described by Mr. E. B. Anderson and Miss Valerie Finnis in lectures to the Club, but for the benefit of any who did not hear either of these most interesting and instructive talks I will recapitulate their construction.

A wall is built up to whatever height is desired, using any suitable —or available—material. This wall is so constructed as to enclose a space of the required size and the soil mixture is then filled in to level with the top of the wall. Stone can then be worked into the surface to produce features as desired. As I recall, Mr. Anderson showed slides of such beds made up inside walls of either brick or cut stone, while Miss Finnis added to these walls of rough stones, logs or heavy off-cuts from logs. Where brick or cut stone is used, the sides are not planted, cover being provided by "curtains" of creeping rock plants growing down from the edge of the soil in-fill.

This raised-bed concept can be useful in another way for the in-fill can be of completely differing types in different beds. Thus one bed might contain a very light sandy mixture, another rich peaty material, a third a harsh poor scree mixture, a fourth be lime-rich and so on. In every case, however, watering must be attended to very carefully, for drying out is really a very serious problem. For the like of bulbs that require a summer baking, this can be helped, to the limit of our climate, by withholding watering and letting our often meagre supply of sunshine do what it can to produce the desired ripening in drier conditions—and if it is wet weather, a light propped over the surface will keep conditions reasonably dry.

When beds—or for that matter, "pockets"—of soil of different composition to the natural soil are made up in a garden, it should always be remembered that the soil has an inevitable tendency to attain equilibrium and what may be called a "steady state". By this I mean that if a bed of acid, peaty soil is made up in a lime-rich garden, the limey soil-water will move into the peaty mixture, neutralise it, hastening the breakdown of the organic matter until ultimately it will become much the same as the surrounding soil. Similarly, a lime-rich bed in an acid garden will also be neutralised and lose its

lime gradually until it, too, becomes acid. The tendency is generally toward more or less uniform conditions to become established in the soil.

The only way in which this can be prevented is by "walling-in" the altered section of soil, but this introduces all sorts of problems of drainage—flooding or drought—and if the drainage is good, there will be once again the problem of the percolation of the soil-water, but upward this time. The raised bed is the only real solution, always provided that watering is attended to carefully.

One other point in constructing a rock garden must be watched meticulously. If it is desired to have a part of the rock garden lime-rich for lime-lovers, it *must* be at the lowest level. I saw one beautifully-laid-out rock garden where Asiatic gentians and some ericaceous plants were going yellow and gradually dying out. The owner was seriously worried and could not understand what could have happened. On close examination I found that, above these ailing plants, pinks and various other lime-loving plants were flourishing, and I found that this upper section had been made up with limestone and a lime-rich soil mixture, while the acid soil for the lime-haters was lower down with neutral or acid rock. As the rain fell, the limey soil-water had moved down with dire results—and it had not taken long, just about a year or so, I gathered, for trouble to begin. If, now, the situations had been reversed, little harm would have been done, for it takes much longer for a limey soil to become acid than vice versa.

The best solution, however, would have been to keep the two sections well apart (it was a big rock garden) and, personally, I query the real need for very limey, alkaline conditions at all. In my experience, and I know many who have found the same, lime-*lovers* will grow happily in normal soils, and even in moderately acid ones, while lime-*haters* will start to fail in neutral or very slightly alkaline conditions. Many, in fact, will begin to show signs of ailing before neutrality is reached, but these are the very lime-sensitive ones.

I have, in general, equated alkaline with lime-rich soils here, for in this country the normal alkali in soil *is* lime, i.e. calcium carbonate. In some areas, however, the limestone is dolomitic, that is, a double carbonate of magnesium and calcium and this alters the whole problem. My own research has shown that lime-haters, e.g. rhododendrons, will grow comfortably in strongly alkaline soils if the alkalinity is due to magnesium, and it seems most probable from my results that the real trouble in lime-rich, i.e. high calcium soils, is that the uptake of

magnesium is hindered by the high level of calcium present, so that the "lime-hater" in a limey soil suffers from magnesium deficiency. When the limestone is really dolomite, however, this difficulty is less and this, most probably, is one of the reasons for the occasional existence of good rhododendron gardens in limestone areas—almost certainly the limestone is actually dolomite, i.e. magnesian limestone.

No plant can grow normally and healthily without calcium and the lime-haters are no exception. On analysis they show perfectly normal calcium contents in their tissues, yet they will most probably be growing in such low-lime conditions that a normal plant would fail completely. The solution seems to me to be that the "lime-hater" has such an abnormally efficient mechanism for the uptake of calcium that when calcium is present in the soil in quantity it "swamps" the uptake of the other nutrients and, in particular, magnesium—hence the development of magnesium deficiency which shows itself as yellowing of the leaves, that is, chlorosis.

If a lime-rich bed is being made up for the "lime-lovers" it is best to raise the calcium level by the use of finely ground limestone, but to maintain the lime level a moderate amount of much coarser limestone, for example chips of varying size, should also be mixed in with the soil. While the ground limestone will produce the lime-rich conditions quickly, the coarser material will maintain them as it will break down more slowly over a much longer period. It must be realised that there is a constant loss of lime from the soil by leaching by rain and soil water and this has to be replaced from a more slowly available source, i.e. the coarser material.

Exactly the same considerations exist in the case of peat beds. As it was pointed out earlier, organic matter, whether as peat, leaf mould or any other organic substance, is oxidised away steadily and the lighter the soil to which it is added, the more rapidly is it "burned up". For this reason one of the most effective forms in which peat can be added to a soil to produce a "peaty mixture" is as peat moss litter, since this contains relatively fine material, rather coarser particles and also small lumps. This gradation in size will give a more prolonged effect as the coarser the material, the more slowly will it break down—exactly the same effect as occurs with the limestone. As a result, if finely ground peat is used, the effect of the peat will "cut out" fairly suddenly, if a mixed particle size is used, the effect will wear down much more gradually.

# Rhododendron in the North

A Review by J. R. MATTHEWS

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THIS IS the title of a publication prepared by F. Cyril Barnes and T. Scott Forsyth for the Northern Horticultural Society, Harlow Car, Harrogate. It is an impressive work insofar as it deals in great detail with the results of a three years' survey (1967-70) of the genus Rhododendron as represented in northern gardens, most of them situated in the north of England, others in the south of Scotland. The survey was undertaken by members of the Rhododendron Group of the Society, but other growers, equally enthusiastic, have contributed to the scheme.

The authors enliven their work with frequent quotations not only from gardeners who took part in the survey, but from poets and other writers, and this must be my excuse for quoting, with permission from the Editor, from an editorial in "The Field" of 22nd May 1969 dealing with Chelsea and the real Britain. "The real Britain and the people of all classes who compose it are not much interested in the mutual recriminations and all-round accusations of politicians or even in politicians themselves. What they are interested in is the prosecution of their own affairs and enthusiasms such, for instance, as gardening." And it is difficult to think of any great horticultural exhibition without being convinced that gardening is still both an art and a science, and is perhaps an inherited instinct. It is also an adventure and a challenge, and Rhododendron is but one genus which invites the challenge. That it has been met by many growers in the North is clear from the detailed reports which are here analysed from many different angles and presented along statistical lines.

Part 1 of the survey treats of the Rhododendron environment as encountered in the North, reference being made to such factors as situation, aspect, altitude, climate, atmosphere, wind, shelter, soil and culture. In general terms, therefore, this portion of the report, occupying less than one third of the whole, is essentially ecological. Altitude and slope are clearly of considerable significance, raising questions of hardiness and frost resistance, and wind proves to be one of the most important factors of all. If gardeners in the North

resent frost, they certainly hate wind. Generally speaking, however, dwarf species and dwarf hybrids are more tolerant of exposure and prove, on the whole, the more suitable members of the genus for the rock garden. On the other hand, members of the Grande Series are the aristocrats of the genus as are those of the Falconeri Series. They are all predominantly woodland plants.

Among the thirty-two gardens included in the published survey (many more took part) there is, not unexpectedly, considerable variation in soil conditions, which in turn affect cultural methods, but there is general agreement about the need for a high level of humus in the soil, usually maintained by mulching with organic material, sometimes twice a year. In one garden the soil shows an almost incredible acidity at pH3.6, while the optimum range would appear to lie between pH4.8 and 6. But the authors conclude that the basic essentials of the rhododendron garden are decent wind shelter and a richly organic acid soil.

Part 2 of the survey is devoted to the detailed plant reports submitted by gardeners who shared in the work. Of 497 species named in the *Rhododendron Handbook*, which is accepted as the standard work of reference, 283 are included in the survey, and of these 256 grow in 'High' gardens, i.e. above 400 ft., and 207 in 'Low' gardens, i.e. below 400 ft. The total number of plants involved is 2998, of which 1687 are in 'High' and 1311 are in 'Low' gardens. So the 'Highs' seem to outdo the 'Lows'. These figures are quoted in order to give some idea of the task undertaken by the authors ; nor is this all. For every species listed in Table 1, covering pages 32-70, particulars are given with remarkable brevity about such features as age of plant, size, time of flowering, behaviour, hardiness, etc., all set out in 17 columns per page. In this manner are given the vital statistics of Rhododendron.

Many of the comments made by contributors to the survey are interesting and sometimes amusing. A few examples must suffice. "In spite of natural soil conditions, rhododendrons have been freely and successfully moved about, using peat liberally—especially 50-odd year old 'Cynthias' and 'Pink Pearls', which now occupy the most draughty and difficult sites and never fail to flower freely. Some of these were bulldozed out for site clearance, cut down from 15 ft. to 2 ft. and the stumps planted. All survived to reward the effort." Regarding *R. hippophaeoides* comes the comment, "indestructibly tough and floriferous ; must be respected even if flower colour can

be awful." And concerning *R. kotschyi*, "Rabbits love it."

It would be surprising if a genus of some 500 species with an altitudinal range almost from sea-level to the upper limit of vegetation did not include a considerable number of "alpines", and, indeed, there are numerous dwarf species eminently suitable for the rock garden. When F. Kingdon Ward published his delightful little book on Rhododendrons in 1949, now a classic, he gave a list of his first choice of a dozen species for the small rock garden and claimed *R. leucaspis* "facile princeps." Nearly all of them are to be found in this survey, scattered through six or seven of the thirty-eight Series with which the survey deals. So also are some of the species described by A. D. Reid in a recent article on Miniature Rhododendrons which appeared in this *Journal*, April 1969. Among those specially mentioned are *R. imperator*, *R. impeditum* and *R. cephalanthum* var. *crebreflorum*.

But when an opinion poll was taken among northern gardeners for the genus as a whole regarding popularity, eleven species were chosen as "Top of the Pops." The list is interesting and runs as follows : *racemosum*, *impeditum*, *pemakoense*, *calostrotum*, *williamsianum*, *campylogynum*, *keleticum*, *augustinii*, *ciliatum*, *cinnabarinum* and *leucaspis*. *R. racemosum* is generally grown as the dwarf form and only two of the others—*augustinii* and *cinnabarinum*—make plants of any height. In an enumeration of evergreen hybrid varieties, described in order of popularity, 'Praecox' comes first followed by 'Blue Diamond', 'Elizabeth' and 'Pink Pearl'. The survey concludes with a list of hybrid azaleas, "where the work of the hybridist has most nearly reached its limit."

There are doubtless good reasons why only three of the gardens participating in this great survey are mentioned by name. The others are anonymous. Harlow Car occupies a central position in the analysis, midway between 'High' and 'Low' gardens, and contains by far the largest collection of rhododendrons within the survey area.

It is a fortunate circumstance that this account of a popular genus should have appeared in good time for the Fourth International Rock Garden Plant Conference at Harrogate in 1971 and I venture to guess that some members of the Conference will attempt to break through the anonymity surrounding at least some of the gardens in the North, and see for themselves what northern gardeners can do.

The authors are to be congratulated upon the production of a laborious piece of work and their report should be in the hands of every rhododendron grower, for it contains a wealth of information.

They write no prologue to their work, which must have been a labour of love, but they end with an epilogue which concludes with these words: "In humility and gratitude we dedicate this work to the memory of Barbara Clough, a great plantswoman."

# Copyright

by P. J. W. KILPATRICK

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WHEN I took over the editorship of the *Journal* I found that the phrase 'Copyright Reserved' appeared on the cover. This has been repeated since before the Copyright Act of 1956, and to me it appears to need clarification. Do members and contributors to the *Journal* know what this means ? I for one do not understand it.

The purpose of this article is merely to "fly a kite", and the views expressed are purely my own as a layman and have not been discussed with any Office-bearer or Member of Council. I have, however, permission from the Council to ventilate the subject and to ask for the views of members. I would like to know what members feel is the commonsense view so that legal opinion can be taken to give effect to those views.

This is particularly directed to those who have contributed in the past or who may contribute in the future. If you agree with my ideas I would be glad if you would write to me, but if you disagree or have reservations, would you write to another Office-bearer or a member of Council (but not one of those who are due to retire in 1970). You will find their names and addresses at the beginning of this *Journal.*

The matter will not be discussed by the Council before 1st January 1971, but will probably be raised at the first Council meeting after that date.

What is Copyright ? Copyright is the sole legal right to reproduce, to publish or to make an adaptation of any literary work.

Under the Copyright Act 1956, Copyright exists automatically, without registration, in any original literary work if the author is a British subject or if the work was first published in Britain. Copyright also exists in a translation from a foreign language. It also covers the dramatic and film rights, but this is unlikely to affect our contributors.

Copyright exists during the lifetime of an author and for fifty years after the end of the year in which the author dies.

The owner of the copyright is the author, unless he is employed by a newspaper or similar organisation which commissions him to write an article in the course of his employment. This qualification does not apply to the Scottish Rock Garden Club, which does not pay for contributions. If an author writes a book he normally signs a contract with his publisher setting out the financial considerations and may transfer the subsidiary rights or may retain them.

In my view, since no money passes to the author, the copyright remains with the author who is at full liberty to issue a series of articles in book form, if he can find a publisher prepared to publish. I think that as a member of the Club, he should acknowledge the fact that the material was originally published by the Club, but the Club should expect no financial reward. The difficulty arises when another society wishes to reproduce material which has appeared in the Club's *Journal.*

If the author is still alive and is in membership of the Club, no difficulty will arise for the matter can be referred to him. It is when the author cannot be traced that problems arise.

This may sound rather an academic point, but in the six months that I have been editor I have had to write to the Royal Horticultural Society and to a commercial publisher on the subject of copyright material. Furthermore, I am still being asked for permission to reproduce historical material written by my grandfather, who died in 1928.

What happens if the Club is asked for permission to publish material and the heirs of the author are not known to the Secretary or the Editor ? In most cases the wishes of the author would probably be that the permission should be granted.

Would it be a fair proposal to suggest that any author who wishes to retain control of copyright should notify an official, nominated by the Council (presumably the Secretary or the Editor), who would keep a register of such names. The author would have to give an address of a permanent nature, such as a lawyer or a bank, which could deal with any question after his death.

If the author does not register, would it be proper to allow the Scottish Rock Garden Club to give permission provided

(i) that the author's name is given

(ii) that the fact of original publication in the *Journal* is mentioned

(iii) that no fee is charged by the Club

Now what about photographs ? The position is that a photograph is copyright for fifty years after the end of the year in which it is published. Would you agree that similar conditions should apply ? Blocks of illustrations are kept for a period of years and would be available to authors wishing to publish in book form.

Under the Universal Copyright Convention, International copyright can be obtained by using a symbol of a 'C' within a circle together with the name of the copyright owner and the date of first publication.

I would suggest, therefore, that subject to legal advice, we should in future print in the *Journal* the words

© The individual contributers 1971

which would clarify the position. The lawyers may feel that this is too vague and that the names of *all* contributors should be given. If we omit the words given above, copyright will exist in this country and probably in the Commonwealth but *not* in America. Would the loss of American copyright affect contributors ?

If members and particularly past and future contributors would express their ideas on this subject to a member of the Council for 1971, this can be discussed, legal advice taken, and the result published in a future issue of the *Journal.*

# Primulas at Howgate

by W. A. BRUCE ROBERTSON

---

EACH YEAR the garden here takes on a more mature look, the proportion between garden construction and planting attaining a better balance. The bare look which the beds retained for some years after planting has now disappeared. This bareness was particularly noticeable in the winter months when all the bulbs and herbaceous plants had died down. Today the miniature shrubs and conifers have matured sufficiently to give both shape and colour in this off season.

The various beds here contain about ten thousand plantings, with between four and five thousand of these being rock plants and alpines. Included in this, however, are numerous plantings of miniature bulbs

of which I am particularly fond. All plants grown outside here are left unprotected in the winter and it has proved surprising what can be grown successfully under these conditions. The altitude here produces very sharp conditions in the winter and this sometimes seems too long for gardening purposes as frost has been recorded never less than twenty-seven weeks in the year, and several times over thirty weeks.

Of all the plants grown in the garden, the genus *Primula* has one of the largest representations, there being suitable plants in this genus for all types of position, in full sun or shade, and everything in between. There are so many species and varieties of Primulas available that it would be possible to have a garden planted out with Primulas only. This would be quite feasible as there are Primulas available to give a continuous display.

With Primulas there have been both successes and failures and as long as the successes can cancel out the failures, growing them is worthwhile. One of the unexpected successes was with *Primula reidii* and *reidii williamsii*, plants of which grew and flowered outside for several years.

*Primula reidii* comes from North-West Himalaya and has ivory-white globular flowers, ¾ in. across, carried 3 to 10 flowers in a head on a 4 in. to 6 in. white farinose scape. The leaves are oblong lanceolate 3 ins. to 6 ins. long and are in themselves decorative. The plants inside here flower in mid-May, while those grown outside flower some three or four weeks later. The inside plants reproduce themselves from self-sown seedlings.

In looking round the garden there is actually no position where Primulas are not located ; they are established in the troughs, on the high drainage beds, in the screes, in the open ground, on the peat beds and in a large number in the gravel beds. The conditions in the troughs and in the high beds are roughly similar and those doing well here are x *biflora, apennina, bauhini, integrifolia, carniolica,* x *berninae* 'Windrush', *dechsmannii* and *viscosa alba. Primula apennina* has rose to violet flowers, ¾ in. across in 1 to 8 flowered umbels on 3 in. scapes. *Apennina* flowers March/April. Leaves are lanceolate up to 3 ins. long and slightly glandular. *Integrifolia* comes from the Pyrenees and from rosettes of bright green leaves it puts up stems between two and three inches high and on which are carried either two or three rosy lilac flowers. This Primula can best be increased by division in the autumn.

The flowers of *Primula carniolica* are rosy purple with a white throat and a very neat appearance. The umbels of 3 to 8 flowers are



Photo—The late D. Wilkie
Fig. 26 (opposite)—
*Primula edgeworthii*

Photo—The late D. Wilkie
Fig. 27 (overleaf)—
*Primula parryi*

Photo—R.B.G., Edinburgh ▲

Fig. 28—*Trillium grandiflorum*

Fig. 29—*Trillium grandiflorum* ' Flore Plenum '

▼ Photo—R.B.G., Edinburgh

carried on 3 in. to 8 in. scapes, the flowers themselves having short pedicels and blooming in May. The Primula has shining leaves, 1 in. to 3 ins. long, ovate to lanceolate, with taper to a winged stalk.

In addition to the aforementioned, some of the smaller Auricula hybrids are also grown and both 'Clare' and 'Thunderstorm' are now well established.

*Primula pusilla* was originally planted out here and grew well for three years, both flowering and setting seed, before vanishing. This will have to be retried elsewhere.

Innumerable types of Primula can be grown successfully in scree conditions, all those of the Marginata, Pubescens and the Auricula types being suitable, at least so it has proved in this garden. The screes here have different aspects giving a selection of exposures for planting. In the sunniest position and growing in among a group of the smaller alpines are *Primula minima*, x *bilekii* and *glutinosa*. *Primula minima* has been obtained from different sources and there appears to be considerable variation, particularly in the size of foliage; it might possibly be that those with the larger leaves are hybrids. *Primula* x *bilekii* is a miniature Auricula, a hybrid between *minima* and *rubra*, with stemless flowers of deep rose which sit on very small rosettes of toothed leaves. The plant attains little more than one inch in height and the flowers, which can practically cover the foliage, are about three-quarters of an inch in diameter. This is easy to increase by division after flowering.

*Primula glutinosa* proves somewhat difficult to flower here and is also slow to increase. This Primula has blue-violet fragrant flowers about ¾ in. across, and flowers in May. The leaves are glandular viscid, about 2 ins. long, oblong lanceolate, slightly toothed at apex and tapered to a short stalk. One or two flowers on very short pedicels are carried on 3 in. scapes. A white form of *glutinosa* was grown here, but died some years ago, and replacement has not yet been found.

In the more open positions *Primula pubescens* 'Faldonside', 'Albo Cincta' and 'Rufus' do well, particularly 'Rufus', which has stayed compact and been well covered with flowers each year. This Primula is also of a particularly good colour, a strong brownish red. Of the *Marginata* varieties, x *caerulea* and 'Highland Twilight' are located here as well as the hybrids 'Jenny', 'Freedom' and 'Blairside Yellow'. The most floriferous of all the Primulas in the garden has undoubtedly been 'Freedom'. This plant grows so rapidly that it requires to be broken up regularly to maintain it in peak flowering condition.



Photo—R.B.G., Edinburgh
Fig. 30 (opposite)—*Trillium sessile*

Part of two of the screes do not get full sun and in one position *Primula frondosa* is grown and in another *Primula chungensis*. *Primula chungensis* is also grown in an open bed, but it does not do any better in that position. *Primula chungensis* comes from South-East Tibet and is of the candelabra section. This is a strong Primula, growing to about 18 ins., with red-tinged stiff stems and whorls of golden yellow flowers in June. The scape has 2 to 5 whorls of about 10 flowers each and is farinose. Leaves are up to 9 ins. long, toothed, oblong ovate, but narrower at base.

The peat beds, with light soil on top and peat buried below, appear to be the ideal position for a large number of Primula types. A number of the smaller Primulas, *limnoica*, *darialica*, *siberica*, *scotica* and *dinarica* are grown as frontage plants and the only one which has given some difficulty is *scotica*, which has disappeared two or three times without reproducing itself. It would appear that the various positions where this has been tried out have not been quite suitable. *Primula scotica* comes from North Scotland and should be perfectly hardy in this garden. This Primula is a very desirable miniature, having dark purple flowers about $\frac{1}{4}$ in. across with yellow throat. These are carried up to 6 flowers on a 4 in. farinose scape. The spatulate, finely toothed leaves are either white or yellow farinose beneath.

*Primula limnoica* comes from Upper Burma and is somewhat similar to *denticulata*, but the scape is yellow farinose against white farinose. The leaves are also narrower and set with short hairs.

*Primula darialica* has rose to carmine flowers $\frac{1}{2}$ in. across on $\frac{1}{4}$ in. pedicels, there being 2 to 5 flowers on each 2 in. to 4 in. scape. Leaves are spatulate, up to 3 ins. long and denticulate. This primula comes from the North-East Caucasus.

*Primula siberica* has a wide range extending from Alaska through Siberia and down into Tibet. Flowers may be anything from lilac to pinkish-purple. These are $\frac{3}{4}$ in. across with yellow eye and are carried in umbels of up to 10 flowers, on scapes up to 9 ins. high. The flowers themselves have longish pedicels up to $1\frac{1}{2}$ ins. Leaves are ovate up to 4 ins. long with similar length stalks, the leaves being somewhat fleshy.

Other types of smaller Primula—*gracilipes*, *whitei*, *edgeworthii* (fig. 26), *scapigera*, 'Pandora', and one going under the title of 'Rankin 16'—are grown in the more sheltered and shaded positions of the peat wall terraces, but in this garden these only prove half-hardy and have to be replaced regularly. A planting of *gracilipes*, however, has done particularly well here, these having grown strongly in the same position

for eight years. One of this group which might be termed troublesome is *whitei* which, although producing plenty of crowns, always gets lifted out of the ground in the winter by the frost and has to be regularly replanted. *Primula* 'Pandora' is a hybrid, *edgeworthii* x *scapigera*.

A large number of 'Primrose' types are grown and there is no doubt that these are all worth growing for their colour value, 'Blue Horizon', 'Juliana Pam', 'Frank Neave', 'E. R. Janes', 'Edith', 'Garryarde Crimson' and 'Ideal' being some of these grown. There is one which I particularly like with its yellow flowers and tinted stems and which goes under the name of Buckland Primrose. A number of 'Primrose' variants are also grown in these beds, Alba Plena, Bon Accord Gem, Lilacina Plena and different colours of Hose in Hose.

So many colour forms of the common Primrose are recorded as well as many of the variants, Jack in the Green, Jack-a-Napes, Hose in Hose, Gally Gaskin and double varieties, that it would take considerable space to hold a substantial collection. Unfortunately many of the varieties which would be desirable to try have never appeared for sale in any of the gardening catalogues.

When sufficient stock had been built up of the shrubby *Primula suffrutescens*, these were planted out in a sheltered position where it was possible to get sun most of the day and these have never looked back. Last winter they took twenty degrees of frost without damage. Other Primulas doing well in similar positions are *columnae*, *woronowii*, *parryi* (fig. 27), *uralensis*, *farinosa* and *longiflora*.

*Primula parryi* is a North American of Section Parryi and is well worth growing for its rose to crimson-purple flowers which are produced over a long period. In this garden *parryi* grows twelve inches high and is propagated by division in the autumn. The leaves, which grow in tufts, are four to six inches long, and narrow.

# 4th International Rock-Garden Plant Conference

Inset with this copy of the *Journal* for Home Members is a leaflet regarding this Conference which is being held at Harrogate from 21st to 25th April 1971. Copies of this leaflet have already been sent to Overseas Members.

The leaflet gives the Programme of 7 Lectures and 9 Symposia, which have been arranged for the Conference, and states the names of the Speakers. The Programme, as you will see, covers a very wide geographical range. The leaflet also contains Booking Forms, both for the Conference itself and for the reservation of Hotel accommodation. Details are also given of the Tour of interesting gardens which can be visited before and after the Conference.

# Botany for the Alpine Gardener - part II
# The Lily, Amaryllis and Iris Families

by Dr. MAVIS R. PATON

MANY of the Spring and Autumn bulbs and corms which brighten our rock garden are found in these families.

The Lily is one of the largest, having some 3,700 species. This family is considered the most ancient in origin and the Amaryllis and Iris families are thought to have evolved later from this lily stock.

The typical lily flower can be illustrated by *Lilium candidum.* The parts of the flower are all important.

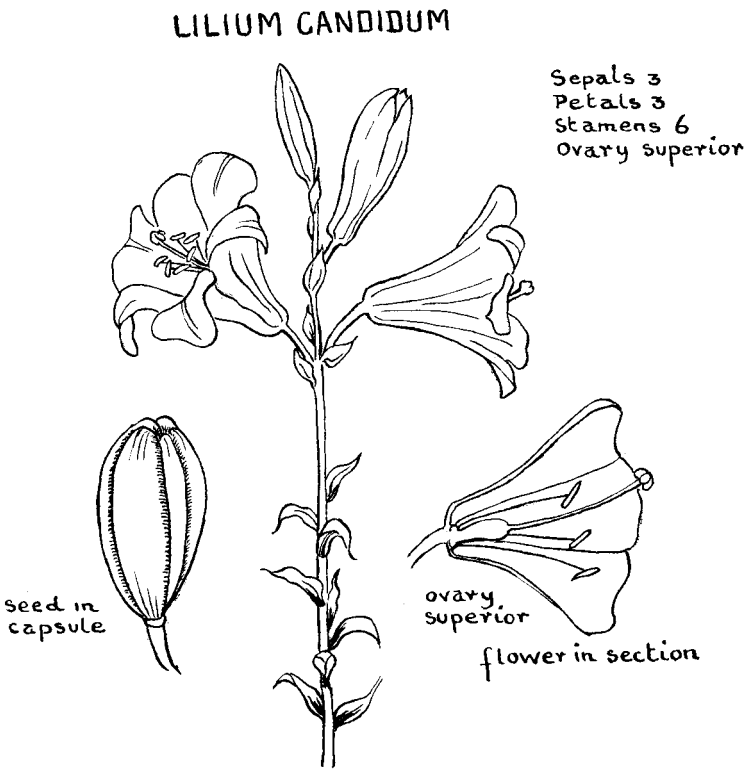


Fig. 31

Not all lily genera have bulbous roots : they can also have tubers, rhizomes or even fibrous roots. Leaves are not constant either : sometimes they clothe the stem, in others they are arranged round the base only. Also they vary from a very narrow strap to almost heart shape. It is the flower of this family which gives the typical lily character to the plant.

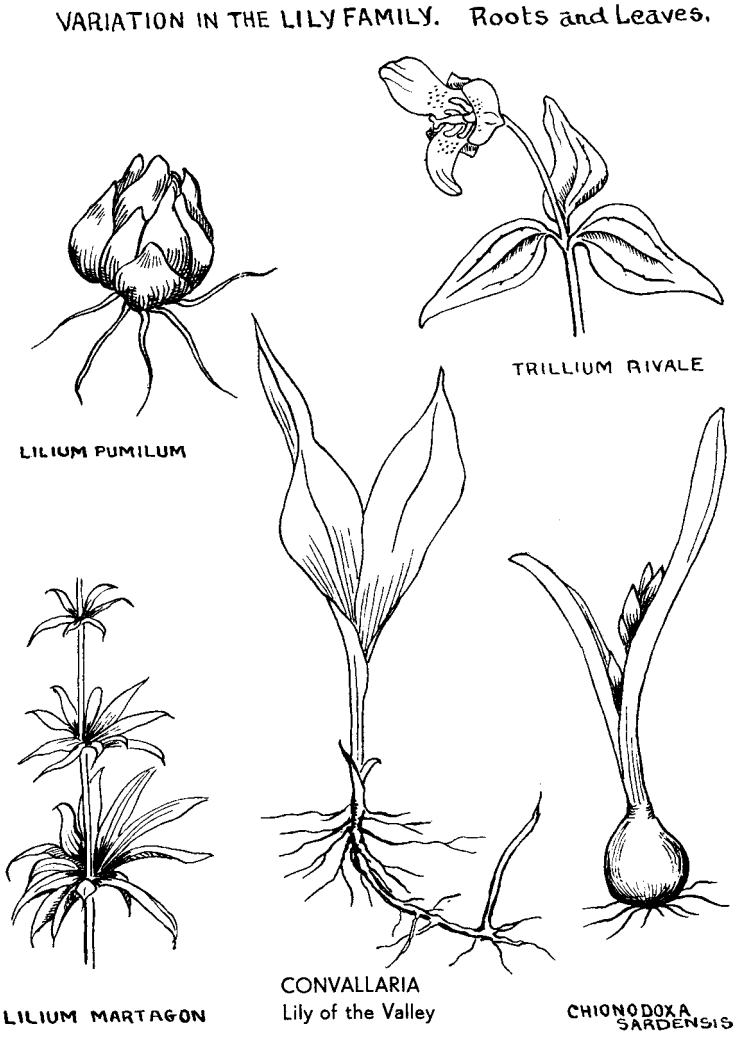
VARIATION IN THE LILY FAMILY. Roots and Leaves.
TRILLIUM RIVALE
LILIUM PUMILUM
LILIUM MARTAGON
CONVALLARIA
Lily of the Valley
CHIONODOXA SARDENSIS

Fig. 32

The genera of Liliaceae most commonly met with in rock plants are Allium, Chionodoxa, Colchicum, Erythronium, Muscari, Frittilaria, Hyacinthus, Kniphofia, Ornothogalum, Scilla, Trillium and Tulipa.

The flowers may look different at first sight, some having tubular trumpets as in Kniphofia and Muscari or reflexed petals as in Erythronium and Chionodoxa, but on close examination they all conform to the lily formula : sepals 3, petals 3, stamens 6. The fruit is generally a dry capsule, but it is a berry in "Lily of the Valley", for example.

The exception to this is the genus Allium and some authorities consider this has more affinity with the family Amaryllidaceae. Before discussing the case of Allium it would be better to study Amaryllidaceae and compare it with Liliaceae.

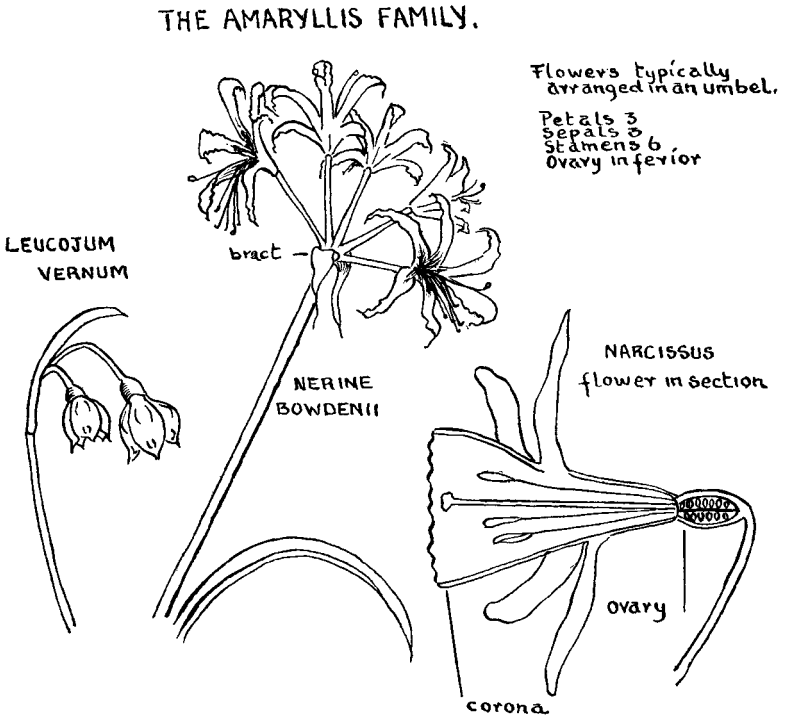


Fig. 33

This family is not so different at first sight but the arrangement of the flowers on the stem is a very diagnostic character—the flowers grow from the top of the stem, usually in a whorl and often clasped in a leafy bract—think of Amaryllis (the genus) or Nerine as being typical.

Now take a closer look at the individual flower. One notices that the petals and sepals are attached to the top of the seed case, that is to say the Amaryllids have an inferior ovary.

There are, however, some members of the family which do not conform so slavishly to this pattern. For instance, in Galanthus (the snowdrop) and Narcissus the number of flowers are reduced to one. Narcissus also exhibits a conspicuous *corona* which is the trumpet-part of the flower ; note that it is an integral part of the corolla, which has more typical petals on the outside.

Rhodohypoxis from South Africa and Tecophilea, the blue Chilian "crocus", belong to Amaryllidaceae.

To come back to Allium, there is good reason for taking this genus from the Lily family and including it among the Amaryllids, especially because of the arrangement of the flowers on the stem. However, according to the S.R.G.C. Show Schedules Allium remains in Liliaceae meantime.

Luckily, the last family, the Iris, does not present much difficulty, being a very uniform group. The family is distinguished from the last two by the reduction of the stamens to 3 *only* and always in having the *ovary inferior.*

Most people will recognise at sight the Iris genus itself, but note carefully the make-up of this flower : the striking irregular shaping of the petals and sepals ; the tripartite stigma looking like fringed petals arching over the stamens, all combining to give the Iris look.

The other genera are far more conservative with regular flowers. The main ones met with are Romulea, Morea, Sisyrinchium and Crocus. Apart from Crocus, one might think at first glance they were all small lilies, but close inspection shows the three stamens and the inferior ovary. The Crocus presents an unusual phenomenon in that the ovary remains below the ground, pushing up when the flowering is over and the seed ripens.

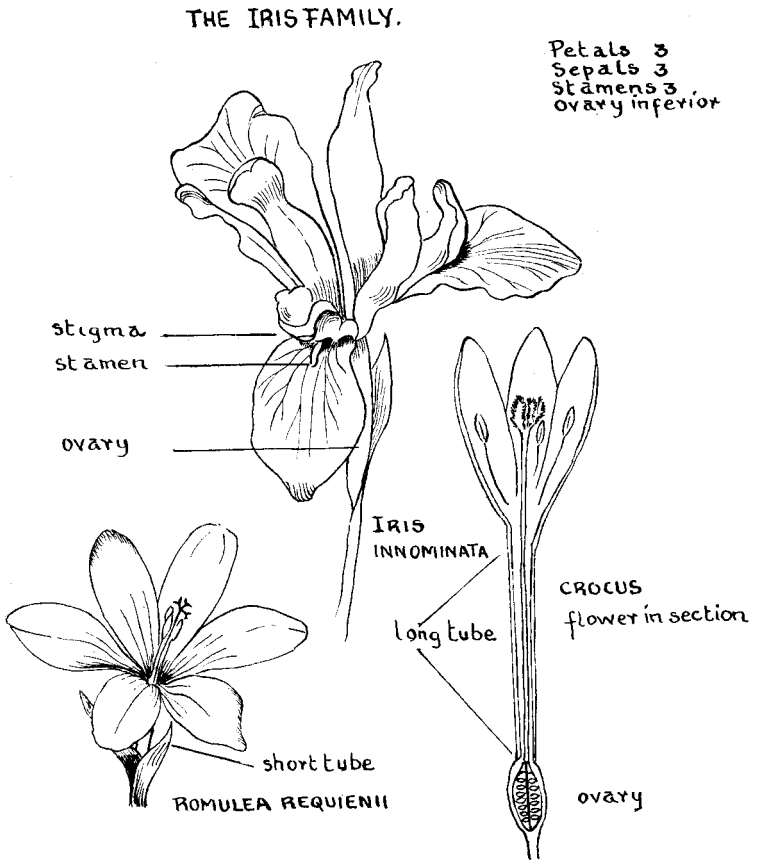
THE IRIS FAMILY.
Petals 3
Sepals 3
Stamens 3
ovary inferior
stigma
stamen
ovary
IRIS
INNOMINATA
CROCUS
flower in section
long tube
short tube
ROMULEA REQUIENII
ovary

Fig. 34

# How to join

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# The Scottish Rock Garden Club

# The Genus Trillium - III

by ROBERT J. MITCHELL

OF ALL the species whether they come from Asia or the Eastern or Western States of America, *T. grandiflorum* (Michx) Salisb. is the one most frequently grown because of its ease of cultivation and is ideal for rock gardens or damp, shady woodlands. Once established, and if plants are not disturbed, *T. grandiflorum* provides a most welcome display of pure white flowers in late April and May (fig. 28).

This is a very variable plant with an extensive distribution. Gleason, in the *New Britton & Brown Illustrated Flora* 1958, mentions that "plants with pink or rose, four parted, or double flowers (fig. 29) are often reported, the leaves are sometimes distinctly petioled". Miles in *J. R.H.S.* Vol. LXXVI, Pt. 9 1951, pp. 315-6, gives a note of his observations of two woodland communities of this species in Southern Ontario and the results are interesting. In his first woodland population, all the plants of *T. grandiflorum* were uniform, i.e. sessile leaves and white petals. Over the 10 acre site only one variant was found. However, in the second woodland under identical conditions and about a mile from the first population, only 25% of the plants were typical and the remainder were noted under the following headings.

(*a*) White flowers with petioled leaves.
(*b*) Green colouring on petals varying in width.
(*c*) Leafless plants but with enlarged sepals.
(*d*) Flowers with 6 or 9 petals. These doubles had green or green-striped petals.
(*e*) One plant with two very wide green-striped petals and three sepals.

I quote this article to illustrate how so many names can so easily be given to what is in actual fact a variant of one species. As it happens, a great many names have been given to these forms. This is particularly the case in *Gray's Manual of Botany*, 8th Edition, 1950, where no less than eight forms are listed.

The true *Trillium grandiflorum* grows from 12-18 ins. high. The leaves are sessile and broadly rhomboid in outline. The flowers have short peduncles and the flowers are held more or less erect, the petals being white, often fading to rose with age. The berry when it ripens is a deep red, becoming black. According to Gray the following

forms are distinct :—

*T. grandiflorum* forma *elongatum* Louis Marie—leaves and petals elongate.
forma *chandleri* (Farw) Vict.—without leaves.
forma *lirioides* (Raf) Vict.—leaves petioled.
forma *polymerum* Vict.—flowers in 4 or 5.
forma *dimerum* Louis Marie—leaves, sepals and petals in two's.
forma *striatum* Louis Marie—striped with green.
forma *viride* Farw—green petals.
forma *petalosum* Louis Marie—carpels and stamens changed to petals.

*T. grandiflorum* is featured in *Curtis's Botanical Magazine* Pl. 855 1805 as *T. erythrocarpum* Michx, which is now considered to be a synonym. *T. rhomboideum* var. *grandiflorum* Michx is also a synonym. *T. grandiflorum* has been in cultivation since 1799 and was reputedly found and introduced into this country by an Aberdeenshire collector, Francis Masson, who was sent out by Banks in 1797. David Douglas also found *T. grandiflorum* near Fort George, the Hudson's Bay Co. depot, in 1823.

It was not until 1957 that this species was granted an Award of Merit and in 1963 it was given a First Class Certificate, both going to the Crown Estate Commissioners. In 1966 a double form under the name 'Snow Bunting' was given an Award of Merit at Chelsea Show. This plant was grown by the late Major Knox Finlay and Mrs. Knox Finlay of Keillour. Double forms are rare, but some are of exquisite form—resembling a camellia flower.

*T. undulatum* Willd., The Painted Trillium, is one of the very decorative and garden-worthy species from North America, where it grows in the moist woods from Quebec and Ontario to New Jersey and Pennsylvania. It is also found in the Appalachian Mountains.

It is more difficult to grow than *T. grandiflorum* and must have well drained, though moist, strongly acid conditions in the woodland or peat garden where there is semi-shade. In these favourable conditions it should grow to a height of 8-15 ins.

The oval-shaped leaves are a brownish-green colour and have a short petiole. The 2 in. flower stems above the leaves are erect and the white petals, which have a crimson blotch at the base, have a wavy edge. This wavy margin is also present on the leaves.

The scarlet or red fruits are three-angled and are held erect, show-

ng them off to advantage. This coloration was the reason why the plant was at one time called *T. erythrocarpum* Michx. and as such it was figured in the *Curtis's Botanical Magazine* Pl 3002, 1830. The illustrated plant has since been identified as *T. undulatum*. The name *T. pictum* Pursh. has been found to be a synonym. (*T. erythrocarpum* is actually a synonym of *T. grandiflorum*.)

*T. undulatum* has been known since 1811 and various forms have been described. These included forma *cleavelandicum* (Wood) Fern. (syn. *T. cleavelandicum* (Wood) Fern.) which has enlarged sepals similar to the foliage-leaves in a whorl, and with 3-6 petals ; forma *polymerum* Vict. with leaves or flower parts in 4's or 8's, and forma *strictum* Louis Marie where the sepals are striped green and white.

*T. undulatum* flowers in late April and May and is a very desirable species for the garden, where it is particularly at home growing among Rhododendrons and Ferns.

*T. sessile L.* (fig. 30) has a wide distribution from Pennsylvania to Florida and Missouri, where it grows in rich woodland in moist conditions. Flowers appear from April onwards and in the northerly extremity flowering lasts until early June. The flowers are slightly aromatic and, as the name suggests, are sessile. It has been closely linked with *T. chloropetalum*, the West coast species (see *J.* S.R.G.C. Vol. XII, Pt. I, p. 19) for it has a similar habit and a variety of colour forms.

*T. sessile* has smaller leaves and petals than *T. chloropetalum* and is, if anything, smaller in all its parts. It has been in cultivation for a long time and is featured in *Curtis's Botanical Magazine* pl. 40, 1790. Paxton in his *Botanical Dictionary* 1868 mentions that it has been in cultivation since 1759. In *Curtis's Botanical Magazine* pl. 3097, 1831 *Trillium discolor* Wray is illustrated. This has now been renamed *T. sessile* var. *wrayi* Wats with *T. discolor* classified as a synonym, but it is interesting to note that the plant used to illustrate the *Botanical Magazine* was sent to Glasgow Botanic Garden in January 1831 by Dr. Wray himself. It was then treated as a glasshouse plant and flowered the same year.

*Trillium sessile* grows to a height of 12 inches with broadly ovate or rhomboid-shaped leaves which are often mottled. The flowers, which are maroon, are held erect and are sessile on the large leaves. *T. sessile* var. *wrayi* Wats (Syn. *T. discolor*, Wray) is similar in habit but the flowers are variable from deep purple to green, while in *T. sessile* forma *viridiflorum* Beyer the flowers are yellow-green. *T. macu-*

*latum* Rafin. and *T. longiflorum* Rafin., names given in 1840 in Autikon Botanikon by Rafinesque, are classified as synonyms of *T. sessile.*

Very similar to *T. sessile* and contained in what could be called the "sessile group" is the Prairie Trillium—*T. recurvatum* Beck. This species grows in the moist rock woodlands from Michigan to Iowa and Nebraska to Ohio. *T. recurvatum* is easily identified from the other sessile species by shape of the petal, the base of which is narrow and distinctly clawed. The other members have no claws, although may taper to the base. The leaves, which are elliptical or oval in outline, usually have purple markings and have a distinct but short petiole. The petals are held erect and are maroon to brownish-purple. The sepals are downward curving. Fernald in *Gray's Manual of Botany* 1950 mentions two forms with yellow-green coloured flowers.

*T. recurvatum* forma *luteum* Clute has greenish-yellow petals with red claws, while in forma *Shayi* Palmer and Steyerm the petals and stamens are yellow to yellow-green. It appears to be an easy plant to establish and it is therefore surprising that it is not grown so frequently in this country. It has no outstanding beauty but is none the less attractive in its own way.

The third of the sessile group of the Eastern species is *Trillium viride* Beck, which occurs like *T. cernuum* in two geographical forms according to Gleason. All grow in moist rich woodlands and while the variety *viride* is found in the midland states, the variety *luteum* occurs in the southern states. Various authorities have claimed that these two geographical forms are true species, but it now seems to be generally agreed that they are varieties of *T. viride.*

*T. viride* grows to a height of 9-18 ins. Its leaves are usually mottled but can be plain. Both sepals and petals are erect and spreading and the petals are narrow to the base but not clawed, which differentiates this species from *T. recurvatum.* It is also easily identified by the fact that *T. recurvatum* has reflexed sepals. The difference between *T. sessile* and *T. viride* seems to rest on the length of the stamens, which are half as long as the petals in *T. sessile* as opposed to one-third as long in *T. viride.*

Two geographical forms are recognised. *T. viride* var. *viride*, where the veins on the undersides of the leaves and the tops of the stems are pubescent. This plant grows in the Ozark region, which is the home of a great many trillium species. Two colour forms are recognised by Gleason and Cronquist of the northern form—the true *T. viride* var. *viride* with greenish petals, and the brownish-purple petals of what has

been called *T. viridescens* Nutt. *T. viride* var. *luteum* (Muhl.) Gl. (syn. *T. luteum* (Muhl.) Harbison) is the other geographical form and differs also by the stem and leaves being glabrous. This plant grows in the Appalachians south into Florida. Again two colour forms are recognised. The typical var. *luteum* with yellow petals, and the brownish-purple or rarely green petals of the so called *T. hugeri* Small.

*T. cuneatum* Rafin. is also supposed to be similar to *T. hugeri* and is quoted as being a species by Fernald in *Gray's Manual of Botany* with *T. hugeri* as the synonym. However, in referring to more recent floras of Eastern USA we find that *T. hugeri* is placed as a synonym of *T. viride*, while *T. cuneatum* is raised to specific rank.

*Trillium erectum* L. can be seen in a great many gardens on account of its ease of cultivation. Its geographical distribution is widespread, which accounts for the variance within the species. Its common names of Stinking Benjamin, Wet Dog, Ill-scented Trillium, Purple Trillium and Squawroot hardly endear this species to the grower, for it has a disagreeable smell. Indeed, it has as one of its synonyms the name *T. foetidum* Salisb. and has the unhappy reputation to be classified under Nauseous Flowers by McLean and Ivemey-Cook in a *Textbook of Theoretical Botany*, 1964 (fig 35).

*T. erectum* (fig. 36) has featured three times in *Curtis's Botanical Magazine* in pl. 470, 1799 as collected by Miller ; in pl. 1027, 1807 as the white flowered form *T. erectum* var. *album* Pursh. (fig. 37) ; and in pl. 3250, 1833 as the pale green-flowered form *T. erectum* var. *viridiflorum* Hook. This differs from the white form apart from the colour of the flowers by having also broader petals.

Fernald in *Gray's Manual of Botany* recognises several forms which are worth mentioning here for the record, but it could very well be the case that such variation could easily be incorporated under the description of the species. He gives the forma *viridiflorum* (Hook) Peattie which several authorities recognise, and forma *albiflorum* R. Hoffn. which is equal to the variety *album* (Michx.) Pursh. already mentioned. The unusual plant with at least one of its tripartite arrangement increased to four or more he names forma *polymerum* Vict. and the creamy white but sweetly scented plant he gives var. *blandum* Jennison. Colour forms also increase the numbers. For instance, the plant with petals which are purple at the base and whitish above is named forma *cahnae* (Farw) Louis Marie, while forma *luteum* Louis Marie has a clear yellow coloration. The distribution of this species is given from Quebec and Ontario to Pennsylvania and Virginia, and

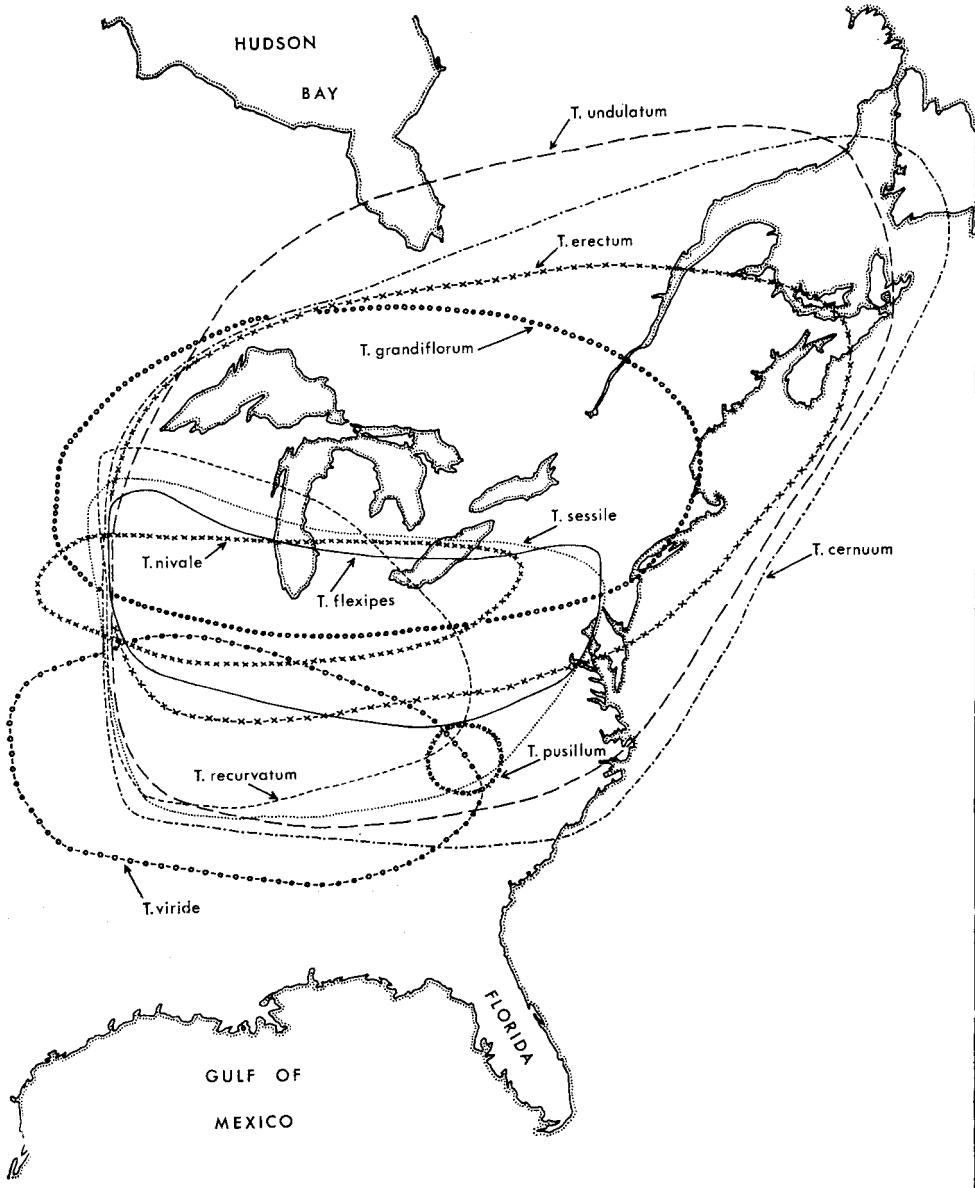


Fig. 35—Distribution of Trillium species in the Eastern States



Photo—R.B.G., Edinburgh
Fig. 36 (opposite)—*Trillium erectum*

Photo—R.B.G., Edinburgh
Fig. 37 (overleaf)—*Trillium erectum* var. *albu*

Photo—K. S. Hall ▲
Fig. 39—*Phyllodoce breweri*

Fig. 40—*Phyllodoce glanduliflora*
▼ Photo—K. S. Hall

the uplands of Georgia and Tennessee. It has been in cultivation since 1759.

*T. foetidum* Salisb., *T. obovatum* Pursh., *T. pendulum* Willd. and *T. rhomboidium* Michx. are listed as synonyms.

*Trillium erectum* has the habit of *T. grandiflorum* but is smaller. The petals are narrower and more pointed. They vary in colour from purple to white, yellow and green, but are normally brown-purple.

They vary from *T. grandiflorum* also by the fruit being three-celled, whereas in *T. grandiflorum* they are one-celled. The plants reach a height of 12 inches and are ideally suited to woodland or peat wall cultivation.

*Trillium nivale* Riddell, flowers earlier than most of the other species and should flower in Britain towards the end of March and April. According to A. Guppy in *J.* S.R.G.C. X, p. 133, this species can grow in neutral soil and is, according to Prof. Wherry in the article by E. B. Anderson in *Lily Yearbook* 1963, p. 102, suitable for limestone areas. It is ideally suited for rock garden culture, for it naturally frequents neutral soil on rocky ledges in shady woodland clearings. The dwarf Snow Trillium, as it is called, is a truly dwarf plant and is no taller than 5 ins., but the flowers, pure snowy white in colour, are of normal size and large in comparison with the leaves. It has been in cultivation since 1879. *T. nivale* is featured in *Curtis's Botanical Magazine*, pl. 6449, 1879 and is often mistaken for *T. rivale*, the Oregon "Brook Trillium", but this latter one does differ from it by its peduncle being twice as long and with stamens larger too. *T. nivale* is no more than 5 ins. high with the pure white flowers held well above the leaves on a 1 in. long peduncle. The sepals are shorter than the petals, which are elliptic or oval-shaped, 1-1¾ ins. long. The leaves are acutely pointed, but rounded at the bases and with a short but definite petiole. This plant is still uncommon in cultivation and is not an easy plant to grow. In the wild it is the earliest of the Trilliums to flower, often doing so before the snows have disappeared.

*T. pusillum* Michx. is another dwarf species, although slightly larger than *T. nivale*. Its flowers can be white, pink or rose-purple, and the stigma is prominent on a 2mm style which helps to differentiate it from the other similar pedunculate species. It differs from *T. erectum* in that it is a more slender plant, its leaves, oval to elliptic, are sessile but slender at the base and acutely pointed at the tip. The flowers are white to rose-coloured, whereas in *T. erectum* they are normally brown-purple. They are held clear of the leaves on a short pedicel.



Photo—R.B.G., Edinburgh
Fig. 38 (opposite)—*Trillium cernuum*

*T. pulsillum* is a rare plant and is normally found in damp to dryish acid woodlands of the coastal plains of Virginia and South Carolina and in Kentucky, where it grows to a height of 4-12 inches. It is also to be found in dry woodland slopes of the Ozarks, South Missouri and Arkansas according to Gleason, who maintains that this western group since they are more robust should be segregated into a new species *T. ozarkanum* Palm and Stey. *Index Kewensis Supplement* IX (1931-35) recognises this species which was described in *Ann. Missouri Bot. Garden* 1935, XXII, p. 504.

On the other hand, Fernald in *Gray's Manual of Botany* maintains that *T. ozarkanum* is a synonym, but goes on to give a var. *virginianum*, Fern, which apart from growing in Virginia, has sessile or sub-sessile flowers and with petals shorter than the sepals.

*T. pumilum* Pursh. is recognised as a synonym of *T. pusillum*.

*T. cernuum* L., the Nodding Trillium, has also a wide distribution (fig. 38). It is found growing in damp acid peaty woodlands and, although there are two varieties of this species according to Gleason and Cronquist in *Manual of Vascular Plants of North East USA and adjacent Canada*, they rarely overlap geographically. *Trillium cernuum* features in *Curtis's Botanical Magazine*, Pl. 954, 1806 and is reputed to have been found by Michaux, in mountainous places in Carolina. It was also found by Menzies in Nova Scotia. It has been in cultivation since 1758 but has not endeared itself to growers. It requires a moist acid soil similar to that in peat wall gardening. The leaves are similar to *T. grandiflorum* but the flowers are quite distinct. They are small, white and rose-pink in colour on a 1 in. long peduncle. The pedicels curve downwards to hide the flowers among the leaves. The plant reaches a height of 11 inches and blooms in April-May.

*Trillium cernuum* var. *cernuum* grows in a more eastern region and has more lanceolate and pointed petals, whereas in *T. cernuum* var. *macranthum* A. J. Eames and Wieg, the petals are broader and barely pointed. The anthers are large too. Fernald in *Gray's Manual of Botany* 1950 mentions a further forma *tangerae* Wherry with rose-coloured flowers and recurving tips to the petals.

Various authorities have stated that *T. cernuum* is very close to *T. stylosum* or *T. catesbei*, but it now seems to be accepted as a definite species.

*T. flexipes* Rafin. described in *Autikon Botanikon* by Rafinesque in 1840 appears to me to have preference over other names sometimes given to this plant. It appears under such names as *T. declinatum*

(Gray) Gleason and this name is cited by Gates in *Ann. Missouri Botanical Garden* 1917, and by Gleason in *Bull. Torr. Bot. Club* 1906. *T. gleasoni* Fern appears to be the accepted name of Gleason and Cronquist in their *Manual of Vascular Plants of North East USA and adjacent Canada* 1963 and in the *New Britton and Brown Illustrated Flora* of Gleason in 1958. *T. flexipes* Rafin. is accepted as a true species in *Index Kewensis Supplement* XI 1941-50 and in the *Supplement* IX 1931-35 *T. gleasoni* Fernald is recognised as being synonymous with *T. declinatum* Gleason—the authority being Fernald in *Rhodora* 1932 XXXIV 21. Now it so happens that Fernald, writing in *Gray's Manual of Botany*, 8th Edition, 1950, p. 445, cites both *T. declinatum* Gleason and *T. gleasoni* Fern to be synonyms of *T. flexipes* Rafin. This name is also accepted by Rickett in *Wild Flowers of the United States* 1966, Vol. 1, Pt. 1, p. 29, who also cites *T. declinatum* and *T. gleasoni* as synonyms. It is very close to *T. cernuum* at first glance with its nodding flowers held below the leaves, but the leaves are sessile, the peduncle is straight instead of curved, and the stamens are creamy white instead of pink. The flowers are normally white but can be pink or maroon as given by Fernald as *T. flexipes* var. *walpolei* (Farw) Fern. *T. flexipes* is a coarser plant than *T. cernuum*, being some 8-16 ins. tall. The leaves are 3-6 ins. long and broad. The petals are white and not recurved. As already stated, they can also be pink or maroon. Some writers have expressed the likeness to *T. erectum* and given the difference as the peduncle being held horizontal and not erect.

The ovary of *T. flexipes* is white or pinkish, which is similar to *T. cernuum*, but the ovary in *T. erectum* is brown-purple like the petals. *T. flexipes* comes from the Northern States of USA and grows like all the trilliums in damp, rich woodlands . This species has an agreeable scent.

## ERRATA

*Journal No.* 46 :

Page 3 line 17 for "Fiona Slack, Ph.D." read "Flora Slack, Ph.D."
Page 52 line 2 do. do.
Page 59 line 19 *Isopyrum thalactroides* comes from damp places in the Pyrenees, Alps and Apennines not from America.

*Conference Show Schedule* (green insert) :

Page 4, Points awarded to "open classes" (i.e. 18, 12 and 6 points) should read points awarded to "6 pan classes".

# Show Reports

## ABERDEEN

IT WAS a very heartening sight which greeted the Show Secretary, Mr. J. C. E. Pole, and his helpers on the morning of 7th May. The whole of the top table was devoted to the six-pan class, and more than half of the individual plants on this were potential Forrest Medal winners. In the event the Forrest Medal for the best plant in the Show was awarded to Mr. Fred Sutherland's *Cassiope lycopodioides*, a very well deserved and popular victory.

The six-pan class went to Mr. H. Esslemont, whose entry included *Androsace imbricata*, a colour variant of *Wulfenia orientalis*, and *Rhododendron* 'Chikor'. Mr. J. D. Crosland was runner-up, and his plants included *Paraquilegia grandiflora*, which also secured a Certificate of Merit, and exceptional specimens of *Trillium rivale* and the original form of *Kalmiopsis leachiana*. Class 2, for three pans, also had a large entry and resulted in another win for Mr. H. Esslemont. His plants this time included another Androsace, a genus which he grows so well, and a new Rhododendron hybrid with *R. sargentianum* as one parent.

Mrs. Maule, who brought her plants all the way from Edinburgh, is to be congratulated on the extremely high quality of the plants, of which a Cassiope hybrid and a Lewisia were notable, to secure second place, followed by Mr. J. D. Crosland, whose trio must include the most difficult, if not well nigh impossible to keep in good health, namely *Raoulia eximea*, *Haastia pulvinaris* and *Aciphylla*.

The class for a native Scottish plant, always well supported in Aberdeen, produced an excellent and aged specimen of *Salix boydii* to secure a first for Mr. A. D. Reid.

Looking over the remaining benches, the noticeable factor most evident was the extremely high quality and attractively grown specimens sufficient to fill more pages than the Editor is prepared to allow me, in description. For example, a well-grown plant of *Phyllachne colensoi*, which the writer does not recall having seen on the show benches previously, was put forward by Mr. J. D. Crosland. Mr. Aitken had an outstanding example, very well flowered, of the notoriously difficult *Eritrichium nanum*, and a gloriously scented and well-grown *Daphne petraea* 'Grandiflora' by Mrs. Dyas, which secured for

her a Certificate of Cultural Commendation. A rare large-flowered form of *Cassiope selaginoides*, which was introduced from the Ludlow and Sherriff Collection and still bears the collectors' number, namely L & S 13284, occasioned favourable comment from the judges and connoisseurs alike.

A great many varieties of Cassiopes occupied the benches. In many instances the differences were so slight as to raise the question whether the varietal names were warranted and indeed if the hybridists might not do well to call a halt in some developments.

A well supported Dwarf Rhododendron class brought a first ticket and a Certificate of Merit to Mr. A. D. Reid for a well flowered form of *R. hanceanum nanum*.

Some excellent pans of tulips secured prizes for Mrs. Maule, Mrs. Blair, A. D. McKelvie and I. Aitken.

Pleiones, as always, provided a splash of colour, and prizes for Messrs. Aitken and Crosland.

Primulas, always a strongly supported plant at Aberdeen, were represented by good pans of *P. aureata*, *P.* 'Marven' and *P. rubra* and secured prizes for Mrs. Dyas, Mrs. Maule and Mr. Crosland.

Mrs. Dyas produced an outstanding Androsace to head her class, whilst Mrs. Blair enjoyed a first with a Lewisia. Most points in this section were garnered by Mr. H. Esslemont who took the Walker of Portlethan Trophy by so doing.

Section II provided a battle for points between Mrs. E. Wilson and Rev. P. H. McKay and resulted in a tie which was resolved by awarding the Club Bronze Medal to Mrs. Wilson on having more first prize tickets. There were many excellent plants in this section and with more maturity may well give the present competitors in Section I a good deal more competition in the near future.

Tasteful and appealing trade stands from Messrs. Jack Drake, Inshriach, and Mrs. McMurtrie of Kintore resulted in Large Gold Medals being awarded by the Judges, who on this occasion were Dr. H. Tod, Messrs. J. L. Mowat and F. Sutherland.

An outstanding layout with examples of Primulas and Alpine Auriculas drew considerable attention and favourable comment and unhesitatingly a Certificate of Outstanding Merit from the judges to Mr. J. Aitken, who had in addition many prizes on the show benches, a combined feat which involved considerable labour and enthusiasm.

In addition, a feature we have grown to look forward to was the display by the Cruikshank Botanic Gardens which this year excelled

by providing, in addition to the Forrest Medal plant of *Cassiope lycopodiodes*, a pan of large flowered *Narcissus bulbocodium*, *Leucogenes leontopodium*, *Ranunculus amplexicaulis*, a superb *Microcachrys tetragona* and altogether a display which gave pleasure to the expert and tyro alike.

This year Aberdeen was a centre for a meeting of the Royal Horticultural Society's Joint Rock-Garden Plant Committee. Plants submitted by the competitors at the Show, although as is known this is not a condition, and plants other than from the benches, were put forward for consideration. Awards of Merit were made by the Committee to *Claytonia nivalis*, *Wulfenia orientalis* (subject to clonal naming), *Phyllachne colensoi* and *Orchis sambucina* f. *purpureus*. Awards of Preliminary Commendation were made to *Cassiope* 'George Taylor' and to *Helichrysum plumeum*. Certificates of Cultural Commendation were awarded to Mr. H. Esslemont for *Saxifraga florentula*, to Mr. Crosland for *Raoulia eximea*, *Haastia pulvinaris*, *Paraquilegia grandiflora pallida*, *Primula forrestii* and *Phyllachne colensoi*, and to Mrs. Dyas for *Daphne petraea* 'Grandiflora'.

In conclusion, the opportunity is taken to express our sincere thanks to the Directors of Aberdeen Journals for the help and assistance afforded prior to and during the Show in the provision of features, write-ups and photographs.

A. D. Reid

**DUNFERMLINE**

Entries at Dunfermline Show seemed to be about up to usual. In Class 1 (3 pans—for the Mrs. W. B. Robertson Challenge Cup) there were six entries, all very good. The Cup was won by J. B. Duff with *Daphne petraea* 'Grandiflora' (which gained a Certificate of Merit), *Lewisia heckneri*, and *Cassiope* 'Edinburgh'. H. Esslemont came second with *Androsace arachnoideum*, *Erinacea pungens* and *Glaucidium palmatum* 'Album', and third was J. D. Crosland with *Lewisia tweedyi* (Certificate of Merit) (fig. 45), *Fritillaria recurva* and *Kalmiopsis leachiana*.

First in Class 2 was H. Esslemont with *Cypripedium cordigerum* (Forrest Medal winner), and second J. D. Crosland with an excellent *Phacelia dalesiana*, while in Class 3 a very fine but rarely seen *Cornus suecica* in full flower came first for Mrs. B. B. Cormack, and in Class 4 Mrs. Simson Hall was first with an excellent *Dianthus* 'Whitehills'.

There were eight fine entries in Class 8, and J. B. Duff came first

with an excellent plant of a pure white *Lewisia cotyledon*. An outstanding plant of *Sedum arachnoideum*, shown by Mrs. A. Niven, was awarded 2nd in Class 10, and in Class 11 a good form of *Polystichum lonchitis* was a good first. Class 15 brought seven entries, first of which was *Rhododendron calostrotum* 'Claret'.

Good plants caught the eye throughout the classes in Section I, including excellent plants of *Raoulia mammillaris* and *Senecio candicans*, first and second respectively for J. B. Duff and Miss Thomson in Class 20 ; Miss Thomson had another excellent *Senecio candicans* in Class 61. In Class 26 Mrs. Maule came first with a very delightful pan of a little *Fritillaria* sp. collected in the Pindus Mountains.

The Bronze Medal for most points in Section II was won by Miss M. V. M. McLeod with two others very close in the running. Section IV (confined to Fife members) again brought out some excellent plants and keen competition, and included some fine old rock garden favourites that might very well be seen on the show bench more often. Miniature rock garden entries in Classes 28, 41 and 67 were all of a high standard, first in Class 41 being a most attractive garden on a slab of seamed and rugged limestone collected by Mr. Campion.

Altogether it was a most interesting and attractive Show and Mr. and Mrs. Campion are to be congratulated on their first Show as Joint Secretaries ; and they, I know, would wish thanks, to all who helped to make the Show a success, to be put on record.

J. L. MOWAT

## GLASGOW

THE GLASGOW SHOW was held in the McLellan Galleries on 1st and 2nd May 1970. Despite a prolonged winter and cold spring the number of entries in the rock garden plant sections was up on the previous year and the over-all quality was good, but the rhododendron section was not so well contested as one would have liked, mainly because of competition from a show elsewhere. We were delighted to have exhibits from Mr. Harold Esslemont, Aberdeen, Mr. J. D. Crosland, Torphins, Mrs. Sheila Maule, Balerno, Mrs. K. S. Hall and Mrs. B. B. Cormack both from Edinburgh. Unfortunately Mr. J. B. Duff, Glenfarg, could not be with us on this occasion and his well-grown plants were missed.

The Dr. William Buchanan Rose Bowl for six pans rock garden plants of different genera was won by Mr. Harold Esslemont with the

fine little white-flowered *Trillium rivale*, as yet rare in cultivation, *Lewisia tweedyi rosea*, very well flowered, and *Androsace imbricata*, its little grey cushion smothered with small white flowers. The writer was second in this class with the hybrid *Cassiope* 'Medusa', *Andromeda polifolia alba* which tends to be lax in its growth, but this is more than compensated for by the purity of its glistening white flowers, and the Japanese mountain woodland plant *Schizocodon ilicifolius* with much fringed pink bells which was given a Cultural Commendation. Mrs. D. M. Stead, Thorntonhall, who had just graduated from the "Beginners" Section, took third prize with very commendable plants, *Linaria tristis* 'Toubkal' from the screes of the High Atlas mountains which has curious greenish-white flowers with a dark maroon lip, *Celsia acaulis* with yellow flowers which last only a day or two, but there is a rapid succession of them to give a fairly long flowering period, and *Lewisia howellii*.

Mrs. Sheila Maule won the William C. Buchanan Challenge Cup for three rock plants rare, new or difficult in cultivation. Her three were a Matthiola species collected on Mount Olympus, *Trillium rivale* to which reference has already been made, and *Epigaea intertexta aurora* well covered with pink bells. Mr. Esslemont had to be content here with second place. His outstanding plant was *Cyclamen pseudibericum* under a Peter Davis number with large reddish purple flowers attractively marked with white and chocolate around the mouth. The flowers are scented and the dark leaves are lightly marbled. This species comes from S.W. Turkey and is suspect for hardiness in our climate and should not be subjected to severe frosts.

*Cassiope wardii*, shown by the writer, was judged to be the best in the class for one pan rock plant rare, new or difficult. It is a rare plant but in a peat or leaf mould compost it presents no more problems than do other species or varieties of this genus. It can be propagated by careful severance of the suckers which it throws up away from the main plant. The hybrid from it, *C.* 'George Taylor', can be more easily obtained and it too is a very fine plant with the same suckering habit as its parent. *Saponaria prostrata* with pale mauve flowers gained second prize for Mr. Esslemont and *Linaria tristis* 'Toubkal' was third for Mrs. K. S. Hall, Edinburgh. Mr. Bob Easton, Greenock, had the best rock plant native to Scotland in *Salix repens* which has slender branches and many small yellow catkins, and Mrs. May Lunn, Drymen, was second with the vigorous creeping willow *S. reticulata*. Mrs. Lunn went one better in the class for a plant with silver-grey foliage

with the New Zealander *Leucogenes leontipodium* and Mrs. Stead was second with *Celmisia hectori* from the same country.

The Sea Pinks are easily grown and very rewarding in flower, but they do not appear as often on the show bench as one would expect. It was, therefore, a pleasure to see *Armeria* 'Bevan's var.' and *A. caespitosa* take 1st and 2nd prizes for Mr. Bob Easton and Miss M. Nicolson, Bearsden, as "cushion" plants. Saxifrages were not as well represented as one would have liked, but Mr. Easton won with a nice young plant of *S. grisebachii* 'Wisley var.' with four flowering spikes.

It was interesting to note that two comparative newcomers to showing won the three and two pan classes for primulas. Mrs. Stead had *Pp. darialica, jesoana* and *melanops* and Mrs. B. Ivey, Dalry, 'Linda Pope' and 'Rufus'. In the one pan class Mrs. Maule took first prize with the still scarce yellow and orange *P. aureata.* Mr. Esslemont was second with a large well-flowered hybrid *P.* x *rubra* collected at Macunaga, Italy. Mr. R. F. Jewer, Greenock, was third with the strong growing blue-flowered *P.* x *hyacinthia,* a European hybrid of garden origin.

There is undoubtedly an increasing interest in the Cyclamen species but something will have to be done about nomenclature. There was no doubt, however, about the correctness of the name of the specimen *C. repandum* with long-petalled pink flowers carried well clear of the foliage which won for Mr. John McPhail, Greenock, who was also successful with the dainty *Aquilegia akitensis kurilensis* and *Douglasia vitaliana* which was well flowered, a tribute to the skill of the grower, because this European species can be shy of flowering. Mr. McPhail also won a first prize with the double-flowered Canadian Blood Root, *Sanguinaria canadensis,* a scarce and expensive plant which is difficult to get to the show bench in the right condition because the flowers last for a comparatively short period before the petals start to fall. In top condition, as this one was, this plant is a real beauty.

In the class for one pan Ranunculaceae Mrs. Stead won the red ticket with *Pulsatilla vulgaris* 'Red Cloak' from a good specimen of *Ranunculus montanus* 'Molten Gold' shown by Mr. Easton. There were also some very good pans of various forms of *Anemone blanda.*

Mrs. E. W. McLean, Bearsden, was again a prominent prize winner in the classes for bulbs which were hotly contested. Her winning exhibits included *Tulipa kaufmanniana* varieties 'Shakespeare' and 'Heart's Delight', *T. praestans* and *Narcissus* 'Beryl' and 'Little

Beauty'. Other Tulips to catch the eye were *T. linifolia* and *T. chrysantha*. Mrs. Maule won the three pan bulbous class with the dainty *Narcissus rupicola* with some 30 flowers on it in perfect condition and two unnamed Fritillaria species which she grows so well. Three other Narcissus warrant mention because of their excellence although on this occasion not winners of first prizes. *N. cyclamineus*, a long-lasting species, and *N. calcicola*, a multi-headed species with small cups now happily becoming more plentiful, both shown by Mr. J. D. Crosland, Torphins, and the Triandrus hybrid 'April Tears' shown by the writer. This hybrid was raised by Alec Gray and must rank as one of his best. It carries up to four clear yellow flowers on eight-inch stems and its bulbs increase rapidly.

Mr. McPhail was again amongst the first prize winners with outstanding pans of *Erythronium revolutum* 'White Beauty' and a *Lewisia cotyledon* hybrid with masses of pink flowers. Another outstanding Lewisia aptly named 'Rose Splendour' gained a second prize for Mrs. Maule. Mr. Jewer had managed to stage this early a *Gentiana verna* in character and in full flower to win the one pan class and Mrs. Stead again demonstrated her cultural ability by winning with *Anacyclus depressus*, a composite with attractive foliage and large daisy-like flowers.

Mr. Easton took two firsts with Sedums which he grows superbly. In the two classes he showed one which he had named *S.* 'Coral Carpet' but which the writer thinks was *S. obtusatum*. In the single pan class for stonecrops Mr. and Mrs. Alex. Todd, Bearsden, gained the premier award with the lovely monocarpic species *S. pilosum* and Miss Nicolson with the same species was a very close second.

Sempervivums, always attractive with their greatly varied colouring of leaves, were forward in good numbers and in excellent condition. Mrs. Lunn's three in oblong pans were outstanding, the most telling being *S. calcareum* 'Mrs. Guiseppii'. Mr. Easton's were not far behind with *S. ornatum* perhaps his best. Miss Nicolson won the two pan class but her plants were not named, perhaps an indication of the confusion which exists in the nomenclature of this genus. Mr. McPhail was first in the one pan class with one that also bore no name but appeared to be *S.* 'Jubilee'. Other sempervivums of note were *arachnoideum grayi, ciliosum* and 'Commander Hay'. There was further confusion in naming. Mr. McPhail won the two pan Cotyledon class with one of his plants labelled *C. persicum*, but there was another of the same kind amongst the sempervivums named as *S. persicum*. Which

is right ? The writer understood that many years ago it had been decided that this plant was only a monstrous form of *S. calcareum*. Perhaps Miss Muirhead of the Royal Botanic Garden, Edinburgh, could clear this up both for exhibitors and sorely tried judges*.

Rhododendrons were remarkably good considering the severe frost of the past winter (31°F. of frost on one morning in the Glasgow area) and the late frosts immediately before the Show. Dr. L. M. Dean, Bearsden, and Mrs. K. S. Hall each took a first prize, the former showing *R. pemakoense* and the latter the comparatively new yellow hybrid *R.* 'Chikor' raised by Cox. Mr. William R. M. Macdonald, Larkhall, gained a second prize with the hybrid *R.* 'Humming Bird'. This was an excellent plant full of crimson buds when it was judged, but the heat of the hall caused the flowers to open on the second day and many visitors then must have wondered why it was only second, but of course the judges have to come to their decision as they see the plant, not as it is likely to be the next day or the day after that. Hard luck, Mr. Macdonald !

The classes for pans of Ericaceae excluding rhododendrons were well contested. The writer was first in the two pan class with *Cassiope selaginoides* and *mertensiana gracilis* and Dr. and Mrs. Norman Holgate, Bearsden, second with *C. mertensiana* and the hybrid *C.* 'Medusa'. Mr. J. D. Crosland gained first prize in the one pan class and also the coveted Forrest Medal for the most meritorious plant in the Show with the rare and difficult *Orphanidesia gaultherioides*, which has large pale pink flowers over leathery green leaves. This shrub demonstrated again the skill of its owner. *Cassiope* 'Bearsden' literally covered with its little bells was second for the writer. The late Willie Buchanan who raised this hybrid would have been delighted with this plant.

Conifers were in good condition, the first prizes being taken by Mrs. Lunn, Dr. and Mrs. Holgate and the writer. Amongst the win-

*Miss Muirhead writes

" The plant which has long been known in cultivation as *Cotyledon* or *Sempervivum persicum* is in fact a fasciated form of *Sempervivum tectorum* var. *calcareum*. Under the title of *Sempervivum persicum* ? this plant was described and illustrated by the late Mr W. E. Th. Ingwersen, who suggested then that the correct name should be *Sempervivum tectorum* var. *calcareum* forma *monstrosum* (*Bull.* A.G.S. 18, 180-181, fig, p. 18, 1950). Since then it has been re-described by Mr R. S. Byles under the name of *Sempervivum tectorum* var. *calcareum* ' Grigg's Surprise ' (Nat. Cact. & Succ. Soc. Journ. 12, 470-472, 1957). In Flora Europaea 1, 355, 1964, this plant is again given the rank of species, from which it appears that the correct name should now be *Sempervivum calcareum* ' Grigg's Surprise '."

ning exhibits were *Chamaecyparis pisifera nana, C. obtusa nana gracilis* and *C. o. hypnoides, Picea gregoryana* and *P. mariana nana.*

Mrs. McLean was awarded first for a very good pan of the dwarf shrub *Polygala chamaebuxus* which was absolutely smothered with little purple and yellow pea-like flowers. *Jeffersonia dubia,* not often seen these days, was shown in good condition by Mrs. C. M. Allan, Strathblane, and won a first prize for her. Mr. J. H. McPhail, Greenock, worthily won the Crawford Challenge Cup for most first prizes in Section I. He and his fellow townsmen Messrs. Easton and Jewer contributed largely to the success of the Show.

In Section II, open to members who have not won a Bronze Medal or more than ten first prizes at any one Show, there were many plants which would not have been disgraced in the senior section. This augurs well for the future of the Show and for the Club. Great credit in the circumstances is due to Mrs. Betty Ivey, Dalry, who was awarded the Wilson Trophy and Bronze Medal for most points in the section.

In the three pan class in this section Mrs. Ivey won with excellent plants of a white-flowered *Lewisia cotyledon, Polygala chamaebuxus grandiflora,* and the rare and difficult *Anchusa caespitosa* which was just beginning to open its beautiful blue flowers. Other plants with which Mrs. Ivey won prizes were *Lithospermum oleifolium, Celmisia sessiliflora,* well grown and very silvery in foliage, *Saxifraga* x *chrysstalae,* an excellent hybrid from *S. grisebachii,* two wonderful pans of *Primula gracilipes,* one of which was given a Cultural Commendation, the beautiful American shrub *Kalmiopsis leachiana* 'M. le Piniec'. Dr. Lucy M. Dean, Bearsden, took firsts with a large well flowered *Rhododendron pemakoense* and a fine pan of *Sedum spathulifolium aureum,* the best of this "tribe". She also won prizes with *Saxifraga thessalica* 'Waterperry var.', a very dark coloured form, and *Fritillaria meleagris.*

Bulbous plants were Dr. D. M. Stead's strong point. His winning exhibits included *Narcissus* 'Sugarbush' and 'Orange Queen', *Erythronium revolutum* 'White Beauty' and the bronze and orange *Tulipa urumiensis.*

Two beautiful pans of *Rhodohypoxis* 'Margaret Rose' and *baurii* took first prize for Mrs. Dixon, Bearsden. How did she get them to this standard of perfection so early ? Another Bearsdenite and ardent worker for the Club, Mr. W. L. Morton, was also amongst the prize winners. His plants included *Carduncellus rhaponticoides* with stemless blue thistle-like flowers from Morocco, *Cassiope* 'Muirhead', *Lewisia*

*tweedyi rosea* and the fine conifer *Abies balsamea* var. *hudsonia.*

Other plants to gain awards were *Pulsatilla vulgaris, Primulas* 'Linda Pope' and *pubescens* 'The General' (Mr. M. G. Adair), *Lewisia nevadensis* (Miss H. M. McCallum), *Primula pubescens* 'Mrs. J. H. Wilson' and *Pulsatilla vulgaris slavica* (Mr. and Mrs. Jolly).

Mr. B. Kos, Barrhead, reigned supreme in all the classes for Auriculas as well as staging a fine non-competitive exhibit of them. Those which took the eye of the writer particularly were 'Sheila' (yellow), 'Alice Hayson' (velvety red) and 'Longdown' (green edged).

Mr. John Ponton, The Gardens, Kirknewton, Midlothian, was awarded a Gold Medal for a Trade built-up rock garden. Among his beautiful plants the following were noted particularly : *Cyclamen pseudibericum, Primulas* x *bilekii, nutans, pulverulenta* 'Bartley strain' and *sino-purpurea, Rhododendrons campylogynum,* 'Elizabeth' and *imperator, sanguinaria canadensis* double-flowered, *Androsace mucronifolia* and *Fritillaria citrina.*

Miss J. G. M. Izat, Grovemount Alpine Nursery, Montrose Road, Auchterarder, Perthshire, worthily gained a Gold Medal for a Trade exhibit of alpines in containers. Her plants were nicely set out in variously shaped fibre-glass troughs. Amongst the plants shown were : *Lewisia tweedyi* and *cotyledon, Narcissus* 'Little Witch', 'W. P. Milner' and *cyclamineus, Arcterica nana, Anemone vernalis, Saxifraga grisebachii* and x *apiculata, Daphne blagayana, Primulas* x *bilekii, hyacintha, rosea* and *pubescens* 'Nancy Blair', a new reddish-purple variety which looked as though it might have a future.

The Show Committee are indebted to both firms for their support. The principal awards in the rhododendron section went to Mr. W. D. Davidson and Sir G. W. Pennington Ramsden.

Once again our thanks are due to Glasgow Corporation's Parks Department for a splendid display of pot plants which greatly helped to "dress" the hall. Our indebtedness to the judges—Mrs. L. C. Boyd-Harvey, Major-General D. M. Murray-Lyon and Mr. Alf Evans must also be recorded for giving of their time and vast knowledge of rock garden plants to help us. And last but most certainly not least we must render a very special vote of thanks to our energetic and painstaking Secretary, Miss Margaret Thomson.

D. LIVINGSTONE

## PENICUIK

THE SHOW was held in Eastfield School on March 7th in very cold, but brilliantly sunny weather. Once again, up to four or five days before the Show it seemed likely that it would have to be postponed or cancelled as the frost was so steady and hard that it seemed likely that there would not be anything like enough entries.

The weather had the same effect as for the last three years when the "restricted section" was very hard-hit since everything in Modlothian and Peeblesshire was fully a month late. The "open section", however, was very well supported and the total entries were nearly back to normal, as was the number of competitors. It was particularly satisfactory to have a number of new competitors whom we were delighted to welcome.

This year the saxifrages were notably good, though rather late, while the bulb classes were well filled but again were on the late side. In general the pans were much more "even" with far fewer "blanks" and much less uneven flowering. There was a pleasant return of Primulas with several really good pans of Petiolarids.

Mr. W. A. Bruce Robertson of Howgate fairly "swept the boards", gaining the Forrest Medal and the Midlothian Vase for his pan of *Pyxidanthera barbulata* in good bloom and with young growth and more buds still to open. This is, I think, only the third time that this plant, quite notoriously difficult to grow—or even keep alive, let alone flower—has been shown. The first time, as far as I know, was at the 1961 Conference Show when it was exhibited by Mr. Harold Epstein of New York who brought it over by air to the Show. Mr. Robertson also won the Midlothian Bowl by a narrow margin, Mrs. Maule being half a point behind him !

A Certificate of Merit was awarded to Mr. Duff for a very fine pan of *Saxifraga burseriana sulphurea*, and another to Dr. Peter Harper for his plant of *Salix myrsinites jacquiniana*. This was a very neat little shrub fairly covered with its little red catkins, and was the exhibitor's first entry in any of our Shows—and his only one in this Show !

A Gold Medal was awarded to Ponton's Nurseries for a very pleasant display of a good range of plants in a peat garden, a feature which caused a lot of interest. The Adjacent Counties Medal was won by Mrs. Simson Hall of Barnton with the highest number of points for a very fine range of plants.

The Bulb Show of the Industrial Section of the Penicuik Society

was well up in number of entries and the quality was extremely good, and their teas were very much appreciated by the large numbers attending who had the hall packed almost to overflowing at times. Altogether this was a most colourful and successful Show, a result which was very far from being expected a week or so before the date.

HENRY TOD,

# 1971 Year Book

Members are asked to note that the *Year Book* for 1971 will be on an entirely new basis. Various items, such as the Constitution and Rules, the books available on loan and the List of Members will be omitted.

The Show Schedules will be printed as a separate leaflet, and will not be sent to Overseas Members, unless they specifically ask for them.

Members should therefore retain their copy of the 1970 *Year Book* for further reference.

## GIFT OF MEMBERSHIP

Reference was made on page 44 of the April *Journal* to the introduction of a "Gift of Membership" scheme.

What better Christmas Gift could one give to a non-member than a year's Membership of the Club ? Avoid the worry and scurry of Christmas Shopping. Just drop the Hon. Subscription Secretary a note of your friend's name and address, and leave the rest to him.

# Obituary

## MAJOR GEORGE KNOX FINLAY

I HAD the pleasant privilege of paying tribute to George and Mary Knox Finlay in the dedication of the Royal Horticultural Society Lily Year Book for 1969 and this was accompanied by a very happy and characteristic photograph of those remarkable gardeners. Now it is sad to record the dissolution, by George's death, of this wonderful and enriching gardening partnership which brought immense credit to the skills of horticulture in general and to Scotland in particular. For over forty years they worked together in growing plants first at Easter Moncreiffe and, after the Second World War in which they both served, at Keillour where they created one of the most outstanding gardens in the world in which they assembled and grew to perfection a superlative range of rare and beautiful plants. Of these and their legacy at Keillour it can be said, as of Wren, *Si monumentum requiris, circumspice.* Now Mary remains to carry on and she is assured of the utmost support and sympathy from her many friends.

George Knox Finlay (fig. 41) was dedicated to country pursuits from his youth, and though latterly his immense energy was mainly spent in gardening, he revelled in outdoor sporting activities. He retired from the Army in 1922 and went to Brazil to engage in cotton growing. In 1928 he returned to this country, married in 1929 and then his flair for gardening with his chosen and stimulating companion soon became manifest. It is indeed difficult to disassociate the individual accomplishments of the two, who were in every sense a perfect team, and the honours which have come to both have by them and others been regarded as recognition of their joint achievements. It is a rare satisfaction to me that I was able to commemorate them together in naming *Meconopsis* x *finlayorum* which occurred spontaneously at Keillour as a hybrid of *M. integrifolia* and *M. quintuplinervia.*

Keillour was bought in 1938 and the house stood proud and bare on a bold rocky bluff with deep ravines on either side. There was no garden. It was not until after the War in 1946—and not greatly discouraged by breaking his neck in 1945—that George undertook, mostly by his own personal labour and with his amazing capacity for prolonged hard work, the creation of the garden. Every season a new area was opened up and the garden increased by his skill in planning

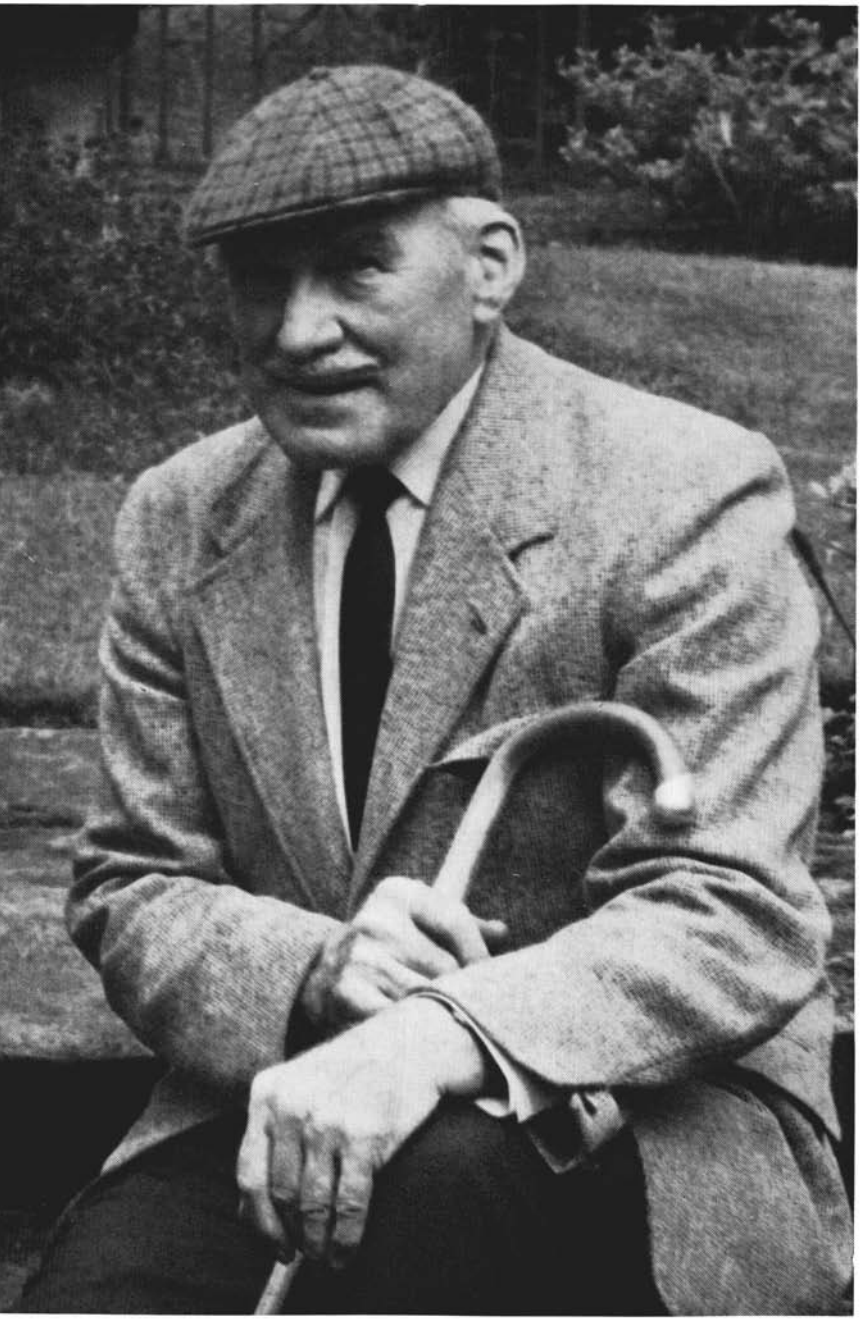

Fig. 41—George Knox Finlay

▲ Photo—K. S. Hall

Fig. 42—*Phyllodoce* x *intermedia*

Fig. 43—*Phyllodoce aleutica*

Photo—K. S. Hall ▼

Fig. 44—*Phyllodoce nipponica* ▲ Photo—K. S. Hall

Fig. 45—*Lewisia tweedyi* ▼ Photo—R. J. Mitchell

Photo—R.H.S.

Fig. 46—David Douglas

and design. He had a good eye for a plant and the knack of providing the right conditions for particular species. At the beginning of the planting operations at Keillour he searched the country around for "sawdust" from timber operations during the First World War. He claimed that when worms were present it was a good medium and results certainly proved this to be true. The influx of plants from the Ludlow and Sherriff expeditions was a great encouragement in the development of Keillour. Also Major and Mrs. Knox Finlay by their timely intervention were able to save many valuable plants from the late Mr. Andrew Harley's garden at Devonhall by bringing them to Keillour.

The delights and riches of Keillour are legion and no one can fail to be impressed by the wide representation of plants and the splendid cultivation. To me Keillour is supreme for its display of Himalayan genera. Where else can be seen, grown to perfection and in one garden, such clumps of Primulas with those of the *Petiolaris* section of particular note, large colonies of various *Meconopsis*, striking spires of *Lilium*, *Nomocharis* and *Notholirion*, swards of naturalized *Corydalis cashmiriana*, masses of gentians, and discreet plantings of *Cassiope*, *Paraquilegia*, *Rhododendron*, *Cyananthus* and *Codonopsis*? But the Knox Finlays have cast their horticultural net much wider than Asia, although it would be impossible here to enumerate the treasures which have come to Keillour from other parts of the world. They have throughout the years given great pleasure and interest to the Joint Rock-Garden Plant Committee and many others by exhibiting a succession of rare and beautiful plants and they have an enviable record of success.

Major Knox Finlay had a particularly keen interest in *Lilium* and *Nomocharis* and in several papers contributed significantly to our knowledge of these genera. He had been a member of the R.H.S. Lily Committee for several years and regularly attended and spoke at the meetings in London. On two occasions an exhibit of *Nomocharis* was staged at the R.H.S. and one received a Gold Medal, the other a Lindley Medal. He received the Society's highest award, the Victoria Medal of Honour, in 1969. He was elected a Fellow of the Linnean Society in 1959.

George was a tremendous and engaging character, full of fun, with a forthright manner and puckish sense of humour—he will be sadly missed.

G. T.

# Photographic Competition

PRELIMINARY NOTICE

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. Notice of this is now given, so that a full gardening year may be covered, but the Conditions of Entry have not yet been settled. The following points will be covered by the Regulations :—

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.

# On Sowing Seeds

by I. F. LA CROIX, B.Sc.

THERE must be few club members who, as they unpack their annual selection from the seed exchange, have not wondered just how each packet ought to be treated. There are so many possible variables, for example do the seeds germinate better in dark or light, in coolness or warmth, do they like to be frozen and if so for how long ? There is also the question of time—can we expect to see seedlings within two or three weeks, or must we be prepared to wait until the following spring or even longer ?

The answers to some of these queries we learn by experience, to others by reading up the literature on the subject. There have been a number of general articles in past *Journals* on growing alpines from seed, notably 'Rare Plants from the Seed Distribution', by Mrs. Boyd-Harvey, in No. 26, April 1960, and 'Propagation from Seed', by A. Duguid, in No. 18, April 1956, and also some dealing with certain genera such as 'An Easy Method of Germinating Lilium and Nomocharis Seed', by A. E. Smith, in No. 11, 1952. There may well be others in back numbers which I have missed.

It is often impossible to be too exact even with one species or genus, as various unknown factors are involved, e.g. the age of the seed in question. For example, rhododendron seed collected in May as the seed-pods start to open, can germinate in a mass within a week, whereas older seed takes three or four weeks to germinate, or even longer, and does so in much smaller quantity.

I have still not decided whether Rhododendron seed germinates better in light or dark, but Primula and Meconopsis seed are both inhibited by lack of light and also do better at a relatively low temperature. Some genera tend to behave in a fairly consistent way, whereas others show considerable differences within the genus. This spring, I sowed the seed of three Kniphofia species : *K. pumila*, *K. caulescens* and *K. rooperi*. All were put in the airing cupboard (where for no very good reason I start off most of my monocot seeds). *K. pumila* germinated in less than a week, but the other two still have not appeared after two months. This could mean that the different species have different requirements, or that the seeds of the first were collected at the optimum time while those of the others were not.

Last year's non-germinators in the airing-cupboard were plunged outside in the autumn and left, uncovered, over winter. Now (early April) several species, including *Erythronium oregonum* and some *Lilium* and *Fritillaria* spp., are starting to germinate. Unfortunately the labels of these are now illegible, and so I shall have to wait for some years to find out which they are. If I had known that these seeds took a year to germinate, I could have saved space in the airing cupboard. And would their germination have been advanced if they had been frozen and thawed before planting? I do this to Primula and Meconopsis seeds, but not, so far, to Fritillarias and Liliums.

The way a seed is inserted in the soil may well be important. I have read on several occasions that flat seeds (e.g. Liliums and Nomocharis) germinate much better if sown edgeways rather than flat. When these species germinate, the seed is carried up on the end of the stalk and it could well be that the young plant is unable to overcome the resistance to the soil offered by a flat seed as it pushes upwards. Plumed seeds such as those of Clematis and Pulsatilla spp. are considered to germinate best if the plumed part is left sticking up above the soil. Winged seeds should also be sown vertically. Last year I grew *Hosta sieboldiana* var. *elegans* and sowed the seeds flat. As the seeds germinated, the winged part stuck in the ground forming a sort of lever, and the seedlings were lifted quite clear of the soil. I spent a lot of time replanting them, but if I had originally sown the seeds vertically with the wing above ground, this would not have happened.

Obviously it would take any one person a lifetime to learn the special requirements of many species by trial and error, and to divide each packet of seed into two or three lots for different treatments takes up too much space, unless the species in question is particularly rare and desirable. But there must be many members of the S.R.G.C. who have discovered effective treatments, perhaps for one or two species, perhaps for many. It seems to me that it would be an excellent thing if all this information could be collected and published, either as an article in the *Journal* or, as a separate booklet.

I would be very willing to start gathering this information, if members could send me notes, as detailed as possible, of what treatments had resulted in successful germination of various species. This would need to go on for a few years to collect a sufficient quantity of reliable information. For anyone who feels like following this suggestion up, my address is: Holmbury, Ridgway Road, Dorking, Surrey.

# Phyllodoces in Cultivation

by K. S. HALL

AT A TIME of year when the forms of *Erica carnea* are over and before *Erica cinerea* comes into bloom there is a gap of a month or two when their place can be taken by another genus of the Ericaceae, the Phyllodoces. Over the years the members of this genus have been moved around by botanists into *Menziesia*, *Bryanthus* and *Andromeda*, which causes some confusion when one reads early gardening or botanical books. In some cases both the generic and the specific names are different from those used today and these names will be mentioned below.

The genus Phyllodoce has a circumpolar distribution in the Northern Hemisphere from the Arctic to as far south as the Pyrenees, the High Sierra of California and the south of Japan. Some of the species are widespread, others endemic, and all of those described here make good garden plants for an acid soil, being perfectly hardy in Scotland.

In general the Phyllodoces are low evergreen shrublets, much branched ; the old wood is rough, though the new may have short glandular bristles. The leaves are linear and almost stalkless with a longitudinal groove underneath ; they are alternate and densely packed on the stem, the lower ones spreading and the upper ones more erect. Except in the case of *P. breweri* the corolla is campanulate, being joined in an ovoid or bell shape with five recurved tips.

The most widespread species is our Scottish native, *P. caerulea* (*Andromeda caerulea*. Linn. *Bryanthus taxifolius*. A. Gray. *Menziesia caerulea* and *Phyllodoke taxifolia*). This is common in Scandinavia and grows in North America as far south as Mt. Washington, New Hampshire ; in Japan it is found on the northern island of Hokkaido and there is an outlying European colony in the Pyrenees. In Scotland it was believed for many years to grow only on the Sow of Atholl in Perthshire, but in the autumn of 1966 a member of the Club, Mr. Ron McBeath, found a plant on Ben Alder. In the following spring he found two dozen plants in the same area and in autumn 1967 another colony of several dozen plants on a nearby mountain. In 1968 yet another group of plants was discovered near to those originally found. He writes : "The colonies are all on well drained sites in areas where the snow remains late into the spring, at altitudes between

2250 and 2750 ft. (685-835 m). Some have a northerly aspect, others are facing south.''

*P. caerulea* is a closely branched shrub 15-30 cm high, having leaves of a glossy dark green, almost leathery in texture, with a pale green groove below ; they are 6 to 10 mm long and densely packed. The name caerulea is rather misleading as the colour of the flowers is only just on the blue side of purple ; they are urn-shaped and within the corolla are enclosed the 10 stamens and the style. The calyx consists of five pointed, glandular segments and the flowers grow in umbels with deep red glandular pedicels 3-4 cm long.

Though normally a mountain plant, it may be found in certain areas in Norway growing on low moorland.

In Scottish gardens it grows well in peaty soil, flowering in May, but it is not so easy to cultivate in the south where the soil tends to dry out in the summer.

The two pink species of this genus are both found in Western North America. The only known habitat of *P. breweri* is the High Sierra of California where it grows on the damp banks of streams at an altitude of 9000 or 10,000 ft. (2750-3000 m). This species (fig. 39), once *Bryanthus breweri* and in many respects closer to Bryanthus than to the other Phyllodoces, was discovered in 1862 by a Mr. W. H. Brewer. It is unlike all the other species in having wide, saucer-shaped flowers about 1.3 cm in diameter, growing in racemes above erect shoots clothed with glossy leaves. The flowers are a rich pink with a touch of purple and the 5-lobed calyx is smooth except for a few cilia. *P. breweri* flowers rather later than the other species and is a very attractive plant for a damp peat garden, where it will spread by suckers to form a wide mat.

Further north on Mt. Rainier and into the Rockies grows the other pink species, *P. empetriformis* (*Menziesia empetriformis*, Smith. *Bryanthus empetriformis*, Gray.) which has the typical urn-shaped corolla of the genus. The leaves, 1.5 cm long, are lighter in colour than those of *P. breweri* and have a duller surface, but both have a marked longitudinal groove below. This species has a spreading habit and the umbels of pink flowers make a bright show in late May and early June.

Another native of the mountains from Mt. Rainier northwards to Alaska is *P. glanduliflora*, one of the two yellow species (fig. 40). The flowers on their pale green pedicels grow in umbels and are of a delicate greenish yellow ; they are almost spherical in shape with five points

curved back at the opening. The calyx is green with five pointed segments and the leaves are about 1 cm long, densely packed on the branches.

A natural hybrid between *P. empetriformis* and *P. glanduliflora* is one of the showiest forms in cultivation. This is *P.* x *intermedia*, a sprawling shrub which layers itself in moist peaty soil and makes a wide mat up to 25 cm tall (fig. 42). As may be expected with such parentage there can be considerable variation in colour, but a good pink form with generous umbels of urn-shaped flowers is a most desirable plant.

Bridging the gap between America and Asia comes the other yellow species, *P. aleutica* (fig. 43). This is found in the mountains of Alaska, the Aleutian Islands and the Kuriles, in Kamchatka and Sakhalin and southwards to Hokkaido and Honshu in Japan. It is a plant of damp alpine slopes and can form a clump up to 60 cm tall. The leaves are deeper in colour than those of *P. glanduliflora* and more glossy, while the corolla is larger and slightly less green. The flowering stems are stiffly erect and the pale green, glandular pedicels bend over so that the umbel of soft yellow flowers hangs like a cluster of tiny lanterns.

Japan, so rich in ericaceous plants, has five native species as well as some recorded varieties of these. One of our Japanese members, Mr. Kisaburo Tsunoda, has kindly sent some details and a map (fig. 47) showing the distribution of the species. Of these *Pp. caerulea* and *aleutica* have already been described.

*P. nipponica*, Makino, is a neat and attractive species from southern Honshu, 10-20 cm tall, and here in Edinburgh, after more than ten years is only 30 cm in diameter (fig. 44). The flowers are bell-shaped, white or pale pink, and droop at the top of erect pedicels which are the same deep pink as the 5-pointed calyx. *P. n.* var. *gracilis*, Nakai, is reported to be deep pink and of prostrate habit ; another form, *viridescens*, is also known, but these two may not be in cultivation.

Similar in habit to *P. nipponica*, but coming from Hokkaido and the north of Honshu is *P. tsugaefolia*, Nakai, which is described by Ohwi in 'Flora of Japan' 1968 as *P. nipponica* var. *tsugaefolia*, Nakai. This grows on volcanic rock at 1800 m on Mt. Daisetsu and Mt. Kariba, where it may reach 30 cm in height. Its leaves are 1.5 cm long as compared with the 1.0 cm of *P. nipponica* and the pedicels are distinctive in that the upper part is glandular pubescent.

Rare in its native country and in cultivation is *P.* x *alpina*, Koidz,

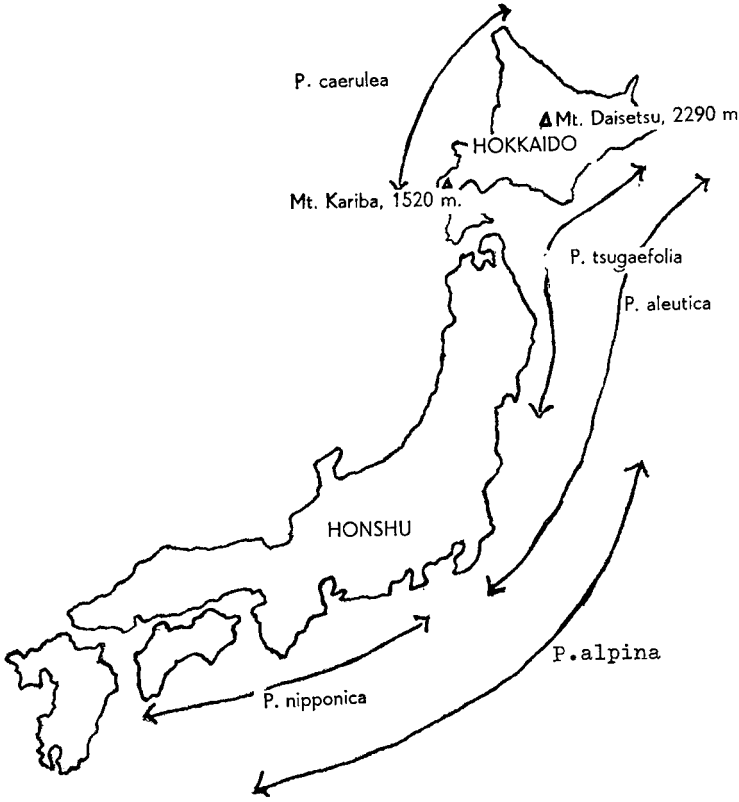
P. caerulea
Mt. Daisetsu, 2290 m.
HOKKAIDO
Mt. Kariba, 1520 m.
P. tsugaefolia
P. aleutica
HONSHU
P.alpina
P. nipponica

Fig. 47

(*P. hybrida*, Nakai.) which was first reported in the *Botanical Magazine of Japan* in 1918. In various papers this has since been described as having the corolla "blueish purple", "clear bright pink" and "white", it has been called a hybrid of *Pp. nipponica* x *aleutica* or alternatively "a high elevation form of *P. caerulea*", all of which makes its identification somewhat confusing. Not having grown this species, it would probably be wise to accept as a true description that of Ohwi in "Flora of Japan": ' leaves coriaceous, lustrous, linear, 5-5 mm long . . . flowers nodding, pink, pedicels 2-5, erect, 2-3 cm long. July, August, alpine Honshu (central district), very rare.'

From these brief notes it can be seen that this attractive genus is well worth cultivating. It is neat in habit, floriferous, evergreen, hardy and gives little trouble to those fortunate enough to have the type of soil favourable to the Ericaceae.

# President's Review

SINCE LAST year's President's Review the Club has been passing through a phase of greater activity than usual, with all the committees involved in a succession of meetings some of the results of which I hope are already visible in the upsurge of entries and attendance at some of our Shows, and in other Club matters.

Above all else, however, I am sure that Club members will be delighted to learn that at the beginning of this year Her Majesty, Queen Elizabeth The Queen Mother very graciously stated that she would be very pleased to accept Honorary Membership of the Scottish Rock Garden Club. Since then Her Majesty has expressed her interest in the range of activities covered by the Club.

The Discussion Weekend at Dunblane last October was again voted a great success—in fact several at the end of it said they thought it the best yet—and we all owe a debt of gratitude to Mrs. Spiller and her team of helpers for all that they have done during the Weekend's stay at Dunblane. It was decided, however, that after such a long spell of responsibility it would be only just to Mrs. Spiller to make a change, and this year the Discussion Weekend will be at North Berwick on the 24th October.

After the Annual General Meeting in Glasgow last November a Council Meeting was held later in the month when matters concerning the state of the Club and its finances were gone into in greater detail and a number of proposals were made which it was hoped might lead to an increased vitality and possible economies in the Club's various activities.

Subsequently at a meeting of the Publicity Committee Mr. Duff put forward for discussion a number of useful ideas which he had in mind for bringing the knowledge of the Club and its activities to a wider field of the general public ; some of these suggestions are now already in action. A joint meeting of Show Secretaries and Advisory Committees went very thoroughly into the matter of Club Shows, considering ways in which any economies could be made and how, at the same time, a revival of interest and enthusiasm for them could be aroused. If the number and standard of entries at Edinburgh Show three weeks later can be accepted as any criterion, this discussion and meeting seems to have been very worthwhile. Aberdeen Show, too, was of a high standard, with what must surely have been a record number of plants presented to the Joint Rock-Garden Plant Committee, and I believe that the 'gate' was up considerably on previous years on both days of the Show.

At a meeting of the Finance Committee under our Treasurer Mr. John Hall, our Editor, Mr. Kilpatrick, mentioned a number of ideas which he had in mind in the hope of being able to cut the costs of printing without impairing the usefulness of the Club's publications. These he went into in greater detail at a meeting of the Editorial Committee at Glasgow on the day of the Show there. If these ideas can be worked out satisfactorily it is hoped that they will bring about some amount of saving to the Club.

It is regrettable that I have to report that at the time of writing (May) the Club membership is down by 100 on what it was at this time last year. It is an unfortunate fact that the majority of regular Club members tend to be in the upper age group ; most young people, with their studies and their way to make in the world, find it difficult to give much time or thought to rock gardening till they are established and settled in a home and garden of their own, so that the influx of young people barely replaces the losses of older members through resignations and death. This makes it vital that, if the Club is to survive in a healthy state, all members should do their utmost to bring in new members and encourage them to take active parts in all activ-

ities such as group meetings and Shows and enjoy the benefits available in the Club. A substantial increase in membership could mean an improvement in our publications, in our meetings, and in our Shows.

Few members who have taken an active part in Club affairs—whether it was Shows, garden visits, or lectures—can have failed to meet Major George Knox Finlay, and surely most of us have more than once enjoyed the generous hospitality of the Major and Mrs. Knox Finlay when we visited Keillour Castle, to the magnificant garden of which we were always made so welcome. Even many of our Overseas members have enjoyed the pleasure of knowing the kindness of the Major and his lady and their wonderful garden of rare plants. His passing in the latter part of February was the loss of a personal friend to most of us older members and our warmest sympathy must go to Mrs. Knox Finlay in her great loss.

By this time next year the 1971 International Conference will have come and gone. Particulars concerning it will be found elsewhere in this *Journal* and it is hoped that all interested members will make up their minds to attend and to make their bookings in good time. The Conference Committee feel that the programme they have arranged will well bear comparison with that of previous Conferences.

This being the last President's Review I will write, I wish to end by expressing my gratitude and sincere thanks to all those Club Office Bearers and other members who have done so much to help me in my duties and to make my term of office so pleasant an experience. Thank you all. I have every confidence that you will give my successor the same generous support.

# Hero of the West - David Douglas

by JAMES T. AITKEN

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*Douglasia nivalis*—the first of the genus—was discovered in 1827 in open pine wood at the Athabaska Pass on the very watershed of the Rocky Mountains in Canada near the small lake from which emerges two streams—one flowing west to join the Columbia River, thence to

the Pacific, the other flowing north and east to join the Mackenzie and the Arctic Ocean.

The discoverer was David Douglas (fig. 46), born 29 years before at Scone in Perthshire, the traditional crowning place of the kings of Scots. Douglas was then near to completing his second visit to North America for the London Horticultural Society (as it was then styled before receiving its Royal Charter). He had for the previous two years collected in what now forms Oregon and Washington with forays into California and British Columbia.

That same day he had noted species of *Menziesia*, *Cassiope* (*hypnoides*), *Gentiana* and *Epilobium* and had plotted one of the highest peaks of the western mountain chain. He named it Mount Hooker, after Dr. William Jackson Hooker, Professor of Botany at Glasgow University, under whom, in the Glasgow Botanic Gardens, Douglas had worked as a journeyman gardener and later as a botanical assistant.

Hooker recommended Douglas to the Society, who first commissioned him to visit the eastern United States to study horticulture there, with particular reference to fruit. The mission was accomplished most satisfactorily—and most of the plants the Society wanted Douglas procured as gifts !

Thereafter, in 1824, he was despatched to North-west America, a region not then settled, to obtain plants and seeds of specimens likely to prove useful or hardy or decorative in Britain.

The first plant he records after landing was *Lupinus polyphyllus*, the parent of the modern Russell Lupin. Such were the privations which he was to suffer that in his records he stresses how the roots were prized as food by the local Red Indians because of their high farinaceous content. Likewise, he first records *Lewisia rediviva*—to the Indians, the "sandhill rose"—as the source of the flour forming the main nourishment of a Scots-Canadian trapper whose supplies had run low. The root, though bitter, was starchy and evidently nourishing. This trapper subsisted also on *Camassia esculenta*, the tubers of which the Indians used like onions. The *Camassia* Douglas disliked. It disagreed with him by causing flatulence. Indeed, he describes a night in an Indian hut when he was "almost blown out by the strength of wind" !

He based himself near the estuary of the Columbia River. Much of his collecting was done travelling with trading parties of the Hudson's Bay Company whose activities stretched right over to the Pacific. Upstream he discovered *Erythronium grandiflorum* which abounded in

lightly wooded, undulating country, mostly in sandy soils, often associated with *Dodecatheon*, though this genus he records more on his subsequent journey east of the Rockies where, when the white and coloured forms were associated, he considered they 'imparted a grace equalled only by the European daisy or primrose'. In particular *Dodecatheon meadia*—of which the popular Red Wings is a modern form—he found in marshy ground east of Edmonton.

*Eschscholzia californica*—the Californian poppy—from which is derived the modern hardy annual, was discovered on an early trip into that state with a Company party, and at the same time he found growing on the river banks *Iris tenax* with a ten-inch pale blue flower.

He had been warned before he left London that 'he might find the face of the country rather coarse and be subject to some privation'. In a sense they were all heroes, those men who pioneered the West, but Douglas endured more than most for he ventured so often beyond his strength. The weather never seems to have been his ally. The winters impressed him as cold with endless rain. Equally at times the sun never relented in the shadeless plain. He contracted fever and rheumatism and again and again was halted by sheer exhaustion. Ultimately he lost the sight of one eye. But nothing revived him so much as tea ! So often he extols its virtue. It soothed and succoured him and restored the vigour to his jaded spirits and spent limbs.

He returned from this expedition to the West Coast overland with the Company's 'Express Brigade' which yearly in each direction traversed the continent with despatches and mail. He was the first European not in the Company's service so to cross. Just over the watershed, at the Athabaska Pass, two days after he found the *Douglasia*, he records growing on dry gravel a plant well known from his native land—*Dryas octopetala*—the Scottish Rock Garden Club emblem. Later, on the journey to Winnipeg he records *Betula nana*, the miniature birch, growing with a *Ledum* species in high tufts of grass in marshy ground.

From Hudson's Bay he returned in a Company ship to the acclamation of the horticultural and botanical world and indeed the whole scientific cognoscenti of Britain. The cost of the whole expedition, including Douglas's salary for three years, was under £400, and the Society reckoned that the expense was more than covered by the value of his introduction of *Ribes sanguineum*—the flowering currant —which he spotted on his first day ashore on the North Pacific coast after the nine month voyage round Cape Horn. He recorded this

shrub as abundant on the rocky river banks and at its best in open, dry places, when it produced a great profusion of flower.

The London Zoological Society and the London Geological Society were equally appreciative of the specimens which he had furnished to them and these Societies, as well as the Linnean Society, conferred fellowships upon him.

But though he was the lion of scientific London he longed to be off again, this time to explore the flora of California.

Eventually he sailed in the autumn of 1829, two years after his return, in the employment again of the Society, and again accredited by the Hudson's Bay Company, but also with letters of introduction to Captains of H.M. Ships. The Admiralty had secured his services as a geographer. The Foreign Office sought his advice on the Pacific Border dispute with the United States. Immediately on arrival on the Pacific coast the local depot of the Company furnished him with a servant. He was by now patently a distinguished man of science and respected beyond his immediate scientific sphere.

The harvest of his third expedition may be of less interest to the rock gardener, but it yielded plants of considerable economic and decorative value. Practically the first item collected in California was *Nemophila insignis*—a useful annual known to bedding gardeners as the Californian Bluebell or as Baby Blue Eyes ! The hardy biennial of gardens, *Pentstemon heterophyllus*, is from this expedition to California, as is *Garrya elliptica*, a shrub for winter interest. Indeed, the Californian collections were acclaimed on arrival higher than the earlier introductions.

But it took time for his conifers to be appreciated to the full and these represent the introductions of greatest financial worth. His own Douglas fir (*Pseudotsuga menziesii*) he reported as exceeding all trees in magnitude. Among the earliest he saw was one 190 feet high with a girth of 48 feet. It is now the mainstay of the American lumber industry. Likewise he introduced the main tree in British forestry—the sitka spruce—(*Picea sitchensis*)—and *Pinus insignis* (the Monterey pine), a tree of vast importance in South Africa, New Zealand and Australia.

But he has been credited not merely with introducing riches to the garden but with the actual first discovery of Californian gold ! He found enough on the roots of trees he dug up to have a watch seal made for himself and when young plants from him were unpacked in London, gold dust was found on the roots. In fact the presence of

gold was well known to many settlers in California and they, like Douglas, attached no importance to it. Confidently Douglas predicted a rich future for California—but based on its export trade in tallow and hides !

Appreciation of his Californian exploration is marred by the loss of his diaries and notes on a gruelling trip north up the Fraser River when he all but lost his life.

When he planned his return in 1834 he decided to tarry in Hawaii to explore the island's botany which had earlier captured his interest when his outward bound ship had called. By now he was in a state of complete mental and physical exhaustion and his notes on the natural history and geography of the island have proved confused and inaccurate.

On a journey across the island he fell into an animal trap and was gored to death by a wild bull on 9th July 1834, in his thirty-sixth year.

He carried out the main systematic botanical exploration of North-west America from California north to the Fraser River in British Columbia. He discovered many plants and was able to introduce to cultivation many previously discovered by others. The botanical wealth of the district was now known. He had plotted the treasure and garnered the first harvest.

*Clarkia pulchella*, the hardy annual, which he collected on poor, thin soil in the Columbia basin, was named after Captain Clark who, with a fellow American, Captain Lewis (in whose honour is named the *Lewisia*), had in 1806 explored a tract of the Rocky Mountains.

He records—but did not introduce—species of *Menziesia*, named after a fellow Scot, Dr. Archibald Menzies, a naval surgeon who accompanied Captain Vancouver on his voyage of discovery thirty years before Douglas and who had botanised in the coastal belt. Before Douglas left for North-west America he met and benefited from Dr. Menzies's advice.

Douglas introduced also the plant which has aroused most nostalgia among gardeners. *Mimulus moschatus*—which he found in the Cascade Mountains in 1826—is the musk of the legendary and now departed perfume. It appears, however, that not all plants possessed the perfume and in his diaries Douglas never comments on any perfume the plant possessed.

His success was enhanced by his good fortune—or prudence—in collaborating with Professor Hooker of Glasgow, to whom he sent specimens of all his collectings. Hooker never failed to classify, record

and publish. Such support is necessary to achieve full exploitation of the talent of an able field collector. Douglas could not have been better aided.

In his life he achieved fame in his own country. He was respected also in the field. To the Indians he was the 'Man of Grass'. His ability as a herbalist earned him the title—'Dr. Douglas', as he was latterly universally styled in America. He consolidated the loyalty of one Red Indian tribe who looked upon him as King George's special envoy by affixing a sixpence with a hole in it on a wire through the Chief's nose. But he learned not to accept the hospitality of Indian villages—his experiences early taught him he would be devoured by fleas !

His plants are his monument. Still his countrymen specially cherish his memory. On the spot where he died the Burns Club of Hawaii have erected a cairn and in the North Inch of Perth the local horticultural society have established a memorial garden.

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# Slide Library

A SUPPLEMENTARY list of recently acquired slides has been compiled. This will be sent out in future with the main catalogue, but it can also be obtained separately.

The Club is indebted to Mr. Josef Halda of Prague for a collection of about 60 slides of plants photographed on Sakhalin Island, and in other parts of N.E. Asia. This most interesting collection may be borrowed by members or Groups. Applicants are asked to pay both postages.

The following LECTURES ON TAPE are available for hire :—

1. "Early and Late Flowers for the Rock Garden" by Major-General D. M. Murray-Lyon, D.S.O., M.C.
2. "Adaptation to Environment" by Mrs. L. C. Boyd-Harvey.
3. "Dianthus for the Rock Garden" by Mr. John Belchamber (presented by the lecturer).
4. "Ericaceae" by Mr. A. Evans, Royal Botanic Garden, Edinburgh (slides presented by the lecturer).
5. "Walls and Screes" by Major-General D. M. Murray-Lyon. D.S.O., M.C.
6. "Peat Banks and Beds" by Major-General D. M. Murray-Lyon. D.S.O., M.C. (both sets of slides presented by the lecturer).

Charge : 50 n.p. (10/-).

Typescript copies of the lectures, with slides but without recordings. can be supplied. Charge : 20 n.p. (4/-).

There is also a tape-recording of a BBC "Rock Gardeners' Forum" which was held at North Berwick in January 1964. This runs for about 25 minutes and is not illustrated by slides.

Full particulars of the above from the Curator : Mrs. C. E. Davidson, Linton Muir, West Linton, Peeblesshire.

**MEMBERS IN THE U.S. AND CANADA** please note that Lectures Nos. 1, 2 and 4 can be hired from Mrs. Henry G. Clarke, Bear Swamp Gardens, Ashfield, Mass. 01330, U.S.A.

# Joint Rock-Garden Plant Committee

**ABERDEEN—7th MAY 1970**

## AWARDS TO PLANTS

AWARD OF MERIT

To *Claytonia nivalis* as a flowering plant for the rock garden, introducer unknown, from Mrs. Knox Finlay, Keillour Castle, Methven, Perthshire, and H. Esslemont, Esq.

To *Orchis sambucina* f. *purpureus* as a flowering plant for the rock garden, original introducer unknown, from Major-General and Mrs. D. M. Murray-Lyon, Ardcuil, Pitlochry, Perthshire.

To *Phyllachne colensoi* as a foliage plant for the alpine house, introducer unknown, from J. D. Crosland, Esq.

To *Wulfenia orientalis* (red-purple form), subject to a clonal name being given, as a flowering plant for the alpine house, introduced by Cheese, Mitchell & Watson, from H. Esslemont, Esq.

PRELIMINARY COMMENDATION

To *Cassiope* 'George Taylor' (*fastigiata* x *wardii*) as a flowering plant for the rock garden and alpine house, raised by R. B. Cooke, Esq., from H. Esslemont, Esq.

To *Helichrysum plumeum* as a foliage plant for the alpine house, introducer unknown, from H. Esslemont, Esq.

## AWARDS FOR EXHIBITS

CERTIFICATE OF CULTURAL COMMENDATION

To H. Esslemont, Esq., 9 Forest Road, Aberdeen, for a well-grown plant of *Saxifraga florentula*.

To. J. D. Crosland, Esq., Treetops, Torphins, Aberdeenshire, for good plants of *Raoulia eximea* and *Haastia pulvinaris*, a well-flowered plant of *Paraquilegia grandiflora pallida*, a large well-flowered plant of *Primula forrestii* and an excellent specimen of *Phyllachne colensoi*.

To Mrs. J. Dyas, 56 Beaconsfield Place, Aberdeen, for a good plant of *Daphne petraea* 'Grandiflora'.

# Book Reviews

"MINIATURE TREES IN THE JAPANESE STYLE," by Gillian E. Severn, illustrated with photographs and line drawings. Published by Faber & Faber. Cloth bound 21/-, paperback 9/-.

This is a very readable book, a simple and practical guide for anyone who would like to make a start at growing these fascinating small trees. There is a list of trees and shrubs, many of which are hardy in the British Isles, and which can be collected as self-sown seedlings in the wild, such as oak, beech, birch, etc. After the third year, one should have decorative plants. Shallow pans are essential. How to begin with seeds, seedlings, cuttings and layering are all discussed. Then methods are given of forming the trees into upright, oblique, winding and cascading shapes. After-care, soil and repotting is described and the one essential, patience, is mentioned. These plants are not starved. Plenty of light, watering and feeding all go to bring success. At the end of the book there is a chapter on miniature bonzai and then, of course, a chapter on what pests and diseases should be guarded against. The illustrations are excellent.

L. M. D.

"WOODLAND PLANTS & SUN LOVERS," by Harold & Joan Bawden, illustrated with photographs. Published by Faber & Faber. 50/-.

This book is written from practical experience gained in their garden by Mr & Mrs Bawden, who obviously are very knowledgeable gardeners. Under the Chapter headings they list plants which are of great interest, and they give hints for growing these, in a most readable and informal manner. It is a book which makes one long to visit their garden.

At the same time it is full of useful information, and the index makes it possible to use it as a reference book. The black and white photographs are of good quality and interest.

Whilst for those who live in the North, some of the plants mentioned may be out of the question, the majority should do well, and there are interesting suggestions for ways of using them to the best advantage.

For anyone making a garden, or altering or extending their garden, this would be a most useful book, and to the general reader it should give a lot of pleasure.

J. K.

# Seed Exchange 1969-70

The final results for this year were as follows :—

| | | | |
|---|---|---|---|
| Overseas | Total number of Donors | 88 | (17% of Membership) |
| | of which new Donors were | 33 | increase of 38% |

Of the former Donors 60% sent the same number, or less, of contributions, while 40% sent more.

| | | | |
|---|---|---|---|
| Home | Total number of Donors | 154 | (6% of Membership) |
| | of which new Donors were | 34 | increase of 22% |

Of the former Donors 80% sent the same number, or less, of contributions, while 20% sent more. This reflects the poor seed-year in this country as compared with "overseas".

| *Applications for Seed* | | | *Membership* | |
|---|---|---|---|---|
| Home, i.e. Scotland and England | 306 | (43%) | 2463 | 82% |
| Eire, N. Ireland, Channel Islands | 17 | (3%) | 26 | 1% |
| Overseas | 377 | (54%) | 509 | 17% |

If the applications for seed are examined they show that the following percentages of Members who applied for seed in the three groups were 1%, 65% and 74% respectively. This is a clear indication of the great interest in and value of the Seed Exchange where our Overseas Members are concerned.

MARY B. TOD
HENRY TOD

W. C. Henderson & Son, Ltd., St. Andrews