The JOURNAL of THE SCOTTISH ROCK GARDEN CLUB

VOLUME XIII Part 2
No. 51

SEPTEMBER 1972

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

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

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SRGC PUBLICATIONS

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

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

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George Forrest V. M. H.

IN 1935 The Scottish Rock Garden Club published a volume in memory of George Forrest, V.M.H., who had died in 1932. Only a small number of copies were printed, and the book has become something of a collector's piece.

Since the Centenary of the birth of George Forrest falls on 13th March 1973, it has been suggested that a facsimile reproduction of the original book should be published. This will differ from the original edition only by the alteration of the page of Acknowledgements which gave the name and address of the Secretary. This will be brought up to date and will differentiate the new edition from the old.

The book consists of 90 pages of text and illustrations and will be bound in cloth.

The Contents consist of :—

There are also 27 illustrations.

A decision will be taken on 1st November 1972 whether to proceed with this publication. This decision will depend on the number of persons who will place a firm order for a copy of the book on the understanding that the price will not exceed £1.25 ($3.25) including packing and postage. This price will apply to those who are not members of the Club as well as to members.

No money should be sent at this stage. All that is required is a letter which should merely state that you will place a firm order provided that the cost does not exceed £1.25, including packing and postage. Your letter must reach the Editor before 1st November 1972, and

should be addressed to :—

The Editor, Scottish Rock Garden Club,
Slipperfield House,
West Linton,
Peeblesshire, Scotland,
EH46 7AA.

Manna from the Inland Revenue

FOR MANY years now the annual subscription has remained at £1, but this has been achieved only by the superhuman efforts of the officials of the Club. It is in your interests to try to avoid an increase in the annual subscription and, with rising costs, this can be achieved by greatly increasing the membership which you can do by recruiting on behalf of the Club.

However, owing to a generous concession by the Inland Revenue we have now been given a wonderful chance which should not be missed. The value of the concession will be determined by the number who will covenant their annual subscription for seven years.

IF YOU PAY UNITED KINGDOM INCOME TAX please take this opportunity and make your future subscriptions under covenant. For every 1000 ordinary members signing the deed of covenant this would give the Club an extra £630 a year at the present rate of tax. If you have already covenanted please accept our thanks ; if you have lost the forms please write to the Subscription Secretary, **Mr. R. H. D. Orr, C.A., 70 High Street, Haddington, East Lothian,** who will be delighted to help. It is to your advantage to covenant if you possibly can.

IF YOU DON'T PAY UNITED KINGDOM INCOME TAX OR LIVE ABROAD you can't do anything about the covenant scheme, but you can help to keep the subscription down by getting as many new members as you can. It is in your interests to do so. We have been informed many times that "no other club or society gives such good value for its annual subscription" and "how on earth do we manage to do it". Well, it is up to you !

One of our members has helped the Club in truly regal fashion by covenanting to pay £50 per annum for the next ten years to cover the cost of a lecture to be given at the Discussion Week-ends on the subject

of new and rare plants and plant hunting expeditions. He has done this because he feels that he would like to do something for the Club in return for the many friendships and pleasure he has gained from his membership.

Many of us who have had equal benefit from Club membership may not be in a position to give the same effective expression to our feelings, but the Treasurer mentions the matter as something which could well be kept in mind.

Enquiries should be made direct to Mr. Orr.

J. HALL

New Plants for Rock Gardening from Natural Flora of the U.S.S.R.

by T. V. SHULKINA, D.Sc., Leningrad

Botanical Institute, Popov Street, 2, Leningrad 197022, USSR

THE ROCK GARDEN of Komarov's Botanical Institute of the Soviet Academy of Sciences was founded in 1900. At present, its collections embrace 2000 species of perennial herbaceous plants which are arranged following their geographical distribution. Plants are there coming from different mountainous regions of the Soviet Union as well as from mountains of West Europe, Asia and North America. Long-term investigations have been conducted on life cycles, sprouting and life forms of introduced plants.

Detailed examinations have resulted in revealing the most promising forms of herbaceous plants to be introduced to northwestern regions of the U.S.S.R.

Long-term selection has also resulted in determining the plant set to be grown in rock gardens. The major part of the plants have come from various mountainous regions of the Soviet Union. These regions are native habitats of many well-known ornamental plant species which are, in part, grown successfully in rock gardens. However, plant reserves have still not been exhausted in the flora of the Soviet Union and more new plant discoveries may be made there. Flower gardeners have still not known many plants tested in our garden. Some of them belong to very decorative species which do well in cultivation.

Introduced from the West Caucasus, *Iridodictyum winogradowii* (Fomin) Rodion. (fig. 19) is one of the earliest flowering plants in

Leningrad. Its large yellow flowers appear here, in the latitude of 60° N, in April or in May at the first persistent increase in spring air temperatures. Flowering lasts for 10 to 15 days and flower stalks are from seven to ten cm tall. Tetrahedral, acutely pointed at the tip, leaves complete their longitudinal growth attaining 15 or 20 cm only in June, at fruiting. The vegetating period is over in late June. The plant is propagated by young bulbs and seed. Light conditions are of little importance to its growth.

Scilla roseni C. Koch. (fig. 20) is also at home in the West and South Trans-caucasus, in alpine meadows. In Leningrad, its vegetating period usually begins early, namely in late April ; it blooms in early May and flowering lasts for 10 to 15 days. Leaves are broadly linear, flower stalks grow from 15 to 25 cm high with one or two flowers borne at their tops. The flowers are large, from 25 to 30 mm across. Perianth lobes are light blue and reflexed. The vegetation period is over in June after seed has ripened. It can be propagated by seed and young bulbs. Light conditions are also of little importance to the growth of this plant. It grows comfortably in rich, moist, though well-drained, soils.

Saxifraga juniperifolia Adam grows in the Caucasus on moist rocks, limestones, and in the shady positions of the alpine rock garden.

The plant produces very dense "cushion"-like mats. In Leningrad it is an evergreen. All the old leaves overwinter and die off gradually next summer. New leaves start developing in May. They are small, linear, almost awl-shaped. The mat produced is from 3 to 7 cm high. In mid May or in late May, bright yellow flowers borne in racemes appear, emerging from 3 to 5 cm in height above the base. Flowering lasts for two or three weeks. Seed ripens in July. The plant can be readily reproduced from seed and bear flowers in the next year after sowing ; it may also be propagated by the cuttings. It grows well in full sun and is, however, tolerant to shading.

Macrotomia echioides (L.) Boiss. occurs in the Caucasus, Asia Minor, Kurdistan and Northern Iran on stony and grassy sides of the alpine rocks.

In Leningrad, its vegetation period begins in April. The plant produces the whorls of 6 to 10 narrow lance-shaped leaves being from 25 to 30 cm long and slightly leafy flowering stalks from 10 to 15 cm in height. Large flowers are bright yellow and spotted with dark dots. The flowers appear from June and flowering lasts for a month.

The plant reproduces itself readily from seed. It can grow both in semi-shade and in shade.

Rhodiola heterodonta (Hook. f. et Thoms.) Boriss. and *Rhodiola linearifolia* Boriss. occur in the mountains of Middle Asia and prefer rocky ledges and alpine meadows. The former can also be found in the Himalayas, Central Mongolia, in Northwestern China, Thibet and Afghanistan.

Both species are beautiful early spring plants growing 20 to 25 cm in height. The scape carries many sessile leaves which are blueish and three-angled ovate in *R. heterodonta* and linear with toothed edges in *R. linearifolia*. Flowering time is mid May, flowering lasts for two to three weeks. The plant is dioecious and male plants bear bright racemes of exceptional beauty. The flowers of *R. heterodonta* are brick red and those of *R. linearifolia* are reddish crimson ; while growing on grey granite and tufa, they look especially nice. In Leningrad, their vegetation periods are over in late August or in early September. Resting buds are arranged on tuber-like rhizoma just at the ground surface. Either species reproduce themselves readily from seed and are decorative in the second year after sowing. They can be easily propagated by division of the underground organs. They prefer an open sunny position and well-drained soils.

Cortusa pekinensis (Al. Richter) A. Los. is a native of the extreme Far East, Sakhalin, and Northern China ; it is attached to mountainous woodlands and grows there on moist rocks and on the banks of streams.

The flower stalk is leafless and about 40 cm tall. The flowers are carried in umbels of 7 to 12 pinkish-violet flowers. Vegetative short shoots carry leaves with long petioles and roundish blades cut into lobes. Resting buds begin their life cycle in late April or in early May. The flowers appear in June and flowering lasts for three to four weeks. The plant is reproduced both by division and from seed, flowers are produced in the second year. It does well in a sunny position but can also grow in semi-shade.

Draba kurilense (Turcz.) N. Busch occurs at Sakhalin, on the Kurile islands and in Northern Japan on rocks along sea coast.

The plant produces a loose mat which is from 5 to 7 cm high at flowering. Flower stalks and vegetative shoots carry leaves which are 3 cm long and 1.5 cm wide. Small white flowers are borne in racemes. The plant overwinters above ground and retains young whorls of green leaves till spring. Flowering time is late May. Flowering lasts for about a month. The seed ripens in early July.

The plant grows comfortably in full sun, though it is also tolerant of some shading. It is easily reproduced from seed and blooms in the

second year after sowing.

Veronica schmidtiana Rgl. grows at Sakhalin, on the Kurile islands and in Northern Japan and prefers meadows and shrubs.

It is from 7 to 12 cm high at flowering. Rather large bright blue flowers are carried in top or axil racemes. Leaves are waved, dark green and notched. The plant overwinters above ground and retains some green leaves until the spring. Flowers appear from late May and flowering lasts from three to four weeks. The seed ripens in July.

It grows well in full sun, though it can tolerate some shading. The plant prefers rich humid, though well-drained soils.

All the plant species mentioned above can be grown in rock gardens of different kinds. Delicate nice plants, such as *Iridodictyum winogradowii* (Fomin) Rodion. and *Scilla roseni* C. Koch. should be grown near roads ; *Rhodiola* plants, *Cortusa pekinensis* and *Veronica schmidtiana* may be cultivated at some distance from a road, and bright *Macrotomia* flowers are visible from afar. There is a good agreement in colour and flowering time between *Saxifraga juniperifolia* and *Veronica schmidtiana* and between *Draba kurilense* and *Cortusa pekinensis*. These plants can undoubtedly be added to the common set of rock gardening plants.

At the Botanical Gardens of the Botanical Institute of the Soviet Academy of Sciences, many new decorative species are tested, taken from natural flora of the Soviet Union and their numbers increase, resulting from yearly expeditions of botanists to different areas. Therefore, the plant set for rock gardening will be, hopefully, extended.

The Seed Exchange

THE Seed Exchange Manager, Dr. Lucy M. Dean, has intimated her resignation from the post after the Exchange of 1972-73. She has been thanked by the Council of the Club for her services.

Will members, and particularly Overseas Members, please look in the *Year Book* for 1973 for the name and address of her successor, who will be appointed at the Annual General Meeting on 9th November 1972.

Archibald Menzies, M.D., F.L.S.

(1754-1842)

by A. C. SMALL

TOWARDS the end of the 18th century what are now the western states of the U.S.A. and British Columbia were inhabited only by scattered Indian tribes and a few fur traders. But along the Pacific coast, from the time of Drake onwards, adventurous sea captains had sailed in these waters, many nationalities—British, American, Spanish and Russian—and others being represented. Inland, a British concern, the North West Company, a rival of, but later amalgamated with, the Hudson's Bay Company, was building a substantial trade in furs on which the Americans were casting envious eyes and were challenging British claims to the Oregon territory as far north as the 56th parallel. The Spaniards were there, too, occupying Nootka Sound on the west side of Vancouver Island and attempting to oust British traders. To meet the challenge in 1791 the Secretary of State, Lord Grenville, despatched a naval vessel to establish British authority in the area. The ship, the *Discovery*, was Captain Cook's old ship, now under the command of Captain George Vancouver, formerly Cook's Lieutenant. Also on board was a Scot, Archibald Menzies, appointed ship's naturalist on the recommendation of Sir Joseph Banks.

Menzies was born on 15th March 1754 at Weem, near Aberfeldy, Perthshire. His first job was in the garden of Menzies Castle, the home of Sir Robert Menzies of Menzies, Bart. From there he went to the Edinburgh Botanic Garden, where his brother William had preceded him. Here he worked under Dr. John Hope, Professor of Botany at Edinburgh University, and obtained a diploma entitling him to become a member of the Natural History Society of the University. In 1778 he made a tour of the Scottish Highlands and made a herbarium collection of rare Scottish plants for which he was commended.

Recognising talent in the young man, Professor Hope encouraged him to study surgery at the University, where he qualified in 1781. He then went into private practice as assistant to a surgeon in Caernarvon, but the life irked him and, filled with a desire to take part in the exploration of the new lands being opened up at that time, he joined the Royal Navy as an assistant surgeon. His first ship was the *Nonesuch*, in which he went to the West Indies, and was in action when

Admiral Rodney won a decisive victory on 17th April 1782 over the French who were supporting the Americans in the war of independence. At the conclusion of the war, Menzies was transferred to the *Assistance* and served for four years on the Halifax station, visiting Staten Island (New York) and the West Indies, collecting there and on the East coast of America and sending seeds to Banks in the spring of 1784.

In 1786, on the advice of Professor Hope, Banks assisted Menzies to obtain an appointment as surgeon on the *Prince of Wales*, owned by a private company engaged in the fur trade. The ship sailed in September of that year via Cape Horn direct to Nootka Sound, then in Spanish hands, the object being to collect furs, principally of the sea otter, and sell them in China. A little over a century later this friendly creature had been virtually exterminated, though it is interesting to note that the Canadian authorities in 1969 released in the area some of these animals brought from Alaska in an attempt to re-establish them. While in this area Menzies made the first record of *Cupressus nootkatensis*, *Rosa nutkana* and *Rubus nutkanus*. On the Queen Charlotte Islands he recorded a species of Nicotiana smoked by the Indians. The collection of specimens from this trip seems to have gone to the British Museum, but his journals, together with ship's papers, were seized by the Spaniards and have not been available for perusal. The return journey by Hawaii, New Zealand and The Cape of Good Hope was completed in July 1789, the round the world trip occupying three years.

The next year, 1790, he was elected a Fellow of the Linnean Society. A year later wanderlust had again gripped him and he was urging Banks to assist him to go overseas. Banks obliged and he was successful in becoming ship's naturalist on the *Discovery*. Besides going to Nootka, Captain Vancouver was also to visit the coast of New Holland (Australia) to chart the coast, then proceed to New Zealand. Besides dealing with the Spaniards at Nootka, Vancouver was to make an effort to find the long-sought-for North West Passage to the Atlantic or to the interior of the continent.

Menzies, too, had received instructions which Banks had spelled out in meticulous detail which may be summarised as follows : to study, at all places visited, the people, the soil, the climate, the animals including whales and seals, and the vegetation, with special regard to possibilities for settlement. He was also to collect live plants for which a special glass frame, a Wardian case, had been constructed on the after part of the quarterdeck of *Discovery*, and he was to arrange

with the captain for adequate supplies of fresh water to be available for these plants. Further, he was to collect dried material and seeds all of which were to be the property of His Majesty King George the Third. Likewise, any specimens of minerals or any articles obtained from the Indians were to be handed over to the Secretary of State together with journals containing observations on all the matters to be investigated. That journal, faithfully kept, is now in the British Museum, and appropriate parts were published in Honolulu in 1920, in British Columbia in 1923, and in California in 1924.

The *Discovery*, a sloop of 330 tons, and the *Chatham* of 140 tons sailed from Falmouth on 1st April 1791 and Menzies was assiduous in collecting specimens at every stopping place, first at the Cape of Good Hope, then at the south-west coast of Australia and while Vancouver was charting the coast Menzies spent a very profitable month ashore and made a large collection of Banksias, including *B. menziesii*, described as a half hardy evergreen rough tree with bronze inflorescences in autumn, and *Drosera menziesii*, a 30 in. climbing insectivorous plant suitable for the greenhouse. And at Dusky Bay, New Zealand, he made "the richest collection of ferns and mosses that was perhaps made by any single person". Other finds were *Hebe menziesii*, a small shrub with lilac flowers, and *Dracophyllum menziesii*, a tender evergreen shrub with heath-like flowers.

On 29th December they anchored at Tahiti where they rejoined *Chatham* and after a few days proceeded to the Sandwich Islands (Hawaii), where more botanising was done. Drake's New Albion (California) was sighted on 17th April and thereafter they continued northwards along the west coast of America. A long exploration by open boat was made of the Straits of Juan de Fuca and the Puget Sound, a tortuous series of waterways from which they saw towering into the sky Mount Rainier (14,526 ft.) and Mount Baker (10,827 ft.). From this area Menzies records the following trees : *Abies grandis*, *Arbutus menziesii*, *Acer macrophyllum*, *Ulmus oregana*, *Rhododendron californicum*, now the floral emblem of the State of Washington, and *Cornus nuttalli*, the emblem of British Columbia. They now made their way up the Sound of Georgia and it was in this area that Vancouver first stepped ashore on the mainland of Canada. The spot was on the north shore of the Burrard Inlet opposite the site of the City of Vancouver, B.C., and is marked by an inscribed tablet set into a low granite column in Lighthouse Park, West Vancouver. Now followed a dangerous cruise in fog and rain between rocky shores in

narrow seas till at last they came out into the open Pacific on 19th August 1792, when they turned southwards towards Nootka. They had had some narrow escapes : on successive days *Discovery* and *Chatham* went aground but luckily were able to get off again. On another occasion an open boat was attacked by Indians. It was only by the courage and the resource of Vancouver himself that they got away and Menzies was able to attend to the wounded. At Nootka the Spanish officer, Senor Quadres, was friendly but unwilling to surrender his post and eventually he and Vancouver agreed to refer the question of sovereignty back to their respective monarchs.

Before completing the season's work they rendezvoused with an Admiralty store ship *Daedalus* with letters from home, then retreated to the south and a warmer clime. On the way they ran into some very rough weather so that *Discovery* was unable to cross the bar at the entrance to the Columbia river, although the smaller *Chatham* succeeded in doing so and proceeded to make the first ascent of that river. Thirty years later David Douglas and John Scouler were held up by bad weather for six weeks at the mouth of the same river. On *Discovery* the official surgeon was overtaken by ill-health and obliged to return home by another ship and Captain Vancouver then appointed Menzies to fill the vacancy.

On November 26th they called at San Francisco where they had a warm welcome, then on to Monterey where they remained till 14th January 1793, and here Menzies made first recordings of *Pinus radiata*, *Cupressus macrocarpa* and *Sequoia sempervirens*, and collected a large amount of herbarium material. Hawaii was reached on 1st March, but only a fortnight was spent there before the return journey was begun on the 16th.

Exploration during the second season extended to the 56th parallel near Wrangel, Alaska. Three seasons, 1792 to 1794, were spent on that coast and Vancouver surveyed and charted 1800 miles of it from California to Alaska, while Menzies was busy collecting plants, animals, minerals and recording everything of interest that he saw. Plants collected included *Nemophila menziesii* the well-known annual, *Abies menziesii*, the oaks *Quercus garryana*, *Q. lobata* and *Q. agrifolia* and, collected on the *Prince of Wales* voyage, *Menziesia ferruginea*, the generic name being given by Sir J. E. Smith, founder of the Linnean Society, *Tolmiea menziesii*, an 18 in. hardy perennial with greenish flowers in April, *Spiraea menziesii*, a 3-5 ft. shrub with rose-pink flowers in July and August, and *Penstemon menziesii*, a 6-12 in. sub-

shrub with violet flowers for the rock garden.

After each busy season in these sometimes inhospitable waters they were glad to go south for the winter, but from the botanical point of view it was unfortunate that most of the time spent in the south was at times when most plants were not in flower.

In January 1794 while at Hawaii, Menzies decided to climb a live but quiescent volcano, Wha-ra-rai. He received every assistance from the King and, accompanied by several officers from the ship, and a large party of natives, they began the ascent on 17th January. The top was reached on the morning of the second day, and two days were spent on the summit, where he ascertained the height by barometer as 8457 ft. He records several plants growing up there, a dwarf form of *Sophora tetraptera*, a deciduous leguminous tree, *Dodonaea viscosa*, a small shrubby geranium and other dwarf shrubs. On his way back he made an attempt to climb another volcano, Mauna Loa, but was unsuccessful because the thin crust of lava would not support the weight of a man. A month later he tried again, and made a first ascent when he measured the height as 13,643 ft. No mean achievement for a man of 40.

In 1794 they finally turned for home but made a number of calls, first at Monterey where they had a most hospitable reception. Next they put in for water and repairs at Valparaiso where the captain, four officers and Menzies rode 90 miles to Santiago, the Chilean capital, where they were entertained by the Spanish Viceroy. To their amazement he addressed them in English with a decided Irish accent. This man was none other than the celebrated Don Ambrosius O'Higgins, who had emigrated to Spain, become a naturalised citizen, and found such favour at court that he was appointed to represent the King of Spain in Chile. During dinner some unusual nuts were served and Menzies unobtrusively pocketed some, to be sown in the glass frame on the ship, where they grew. Thus was introduced *Araucaria araucana*, the Monkey Puzzle tree, into Britain.

The remainder of the voyage was by Cape Horn and St. Helena and the ship arrived at the Shannon on the 14th September 1795.

On such a small ship near the end of a very long voyage it is not surprising that relations between the commander and the naturalist tended to become strained. It is recorded that on 28th July Vancouver put Menzies under arrest. The trouble began when the captain countermanded some orders given by the naturalist about tending the plants in the frame, as a result of which some plants perished.

Flash point came when Vancouver demanded, as he was entitled to do by Admiralty regulations, Menzies's Journal. Menzies refused, his instructions being to hand them to the Secretary of State.

Despite their differences, Vancouver in his report praised the surgeon/naturalist, stating that only one man had been lost owing to ill-health during the 4½ years of the expedition. Scurvy was always liable to break out but the crew were quickly cured after drinking Spruce beer made from Western hemlock, *Tsuga albertiana*. Another specific was made from *Ledum palustre*, labrador tea. In his 'Voyage of Discovery' Vancouver refers to his "able collaborateur". Menzies responded, as he recommended the generic name of Vancouveria.

The *Gentleman's Magazine* in 1842 referred to Menzies's "rich and valuable collection of land and marine plants, the finest addition to the treasures of the vegetable kingdom preserved at Kew, besides greatly enriching the cabinets of our first botanical institutions".

In his edition of the British Columbia portion of Menzies's journal Dr. Newcombe adds a list of about 300 plants of Menzies's collection from the North American coast. Twenty-five of these were dedicated to Menzies, and of the Hawaian collection nineteen were named after him.

In addition to the plants mentioned above the following are some more of his introductions : *Eschscholzia californica*, the well-known annual Californian poppy, *Ribes speciosum*, a 10 ft. gooseberry with fuchsia-like flowers, *Lupinus arboreus*, the tree lupin, *Picea sitchensis*, the Sitka Spruce, *Zauschneria californica*, a late-flowering plant for the rock garden, and *Gloxinia speciosa* var. *menziesii*.

He had a gift for drawing and in 1945 F. R. S. Balfour referred to his "beautiful drawings" of plants.

Four years after his return from the Pacific he received another appointment as surgeon on H.M.S. *Sans Pareil* and served in the West Indies. In the same year he was honoured by Aberdeen University which conferred on him the degree of M.D., and in 1822 the University of Leipzig gave him its Diploma.

When he retired from the Royal Navy he practised as a surgeon in London and married late but had no family. During his latter years he continued his interest in flowers and other plants and maintained connections with other botanists. He and Hooker had a very cordial correspondence and both Scouler and Douglas visited him when he was in his seventies, after their return from his old haunts. One may imagine how he would enjoy their tales of what they had

Fig. 20—*Scilla roseni* Photo—Dr T. V. Shulkina ▷

Fig. 19—*Iridodictyum winogradowii* Photo—Dr T. V. Shulkina

△ Fig. 21—*Colchicum agrippinum* Photo—Dr H. S. Wacher

▽ Fig. 22—*Colchicum autumnale* Photo—Dr H. S. Wacher

△ Fig. 23—*Colchicum luteum* Photo—Dr H. S. Wacher

▽ Fig. 24—*Colchicum speciosum album* Photo—Dr H. S. Wacher

seen, reviving memories of 40 years back.

When A. B. Lambert died on 10th January 1842, Menzies succeeded him as father of the Linnean Society and his portrait was hung in the Society's rooms. Unfortunately Menzies could have held that position for only a few weeks, as he died on 15th February just one month short of his 88th birthday.

His herbarium, mainly of cryptogams, he bequeathed to the Edinburgh Botanic Garden, while other parts are in the British Museum.

His remains lie in the cemetery at Kensal Green, London.

REFERENCES :
The Dictionary of National Biography, Loudon's Magazine of Natural History 1829, *The Gentleman's Magazine* 1842, and *The Proceedings of the Linnean Society* 1942, etc.

I wish to acknowledge the assistance of Mr. Wood, Librarian, Strathclyde University ; Mr. Alfred Evans, Royal Botanic Garden, Edinburgh, and the staff of the Mitchell Library, Glasgow, in tracking down some of the above sources.

Colchicum

by Dr. H. S. WACHER

THIS GROUP may often create difficulties where the space in the garden is somewhat restricted, for the large tubers produce such a copious supply of lovely flowers in autumn and winter, which are easily accommodated, but only to be followed in spring, for nearly three months, by bunches of enormous leaves over a foot high, which tend to spread over and throttle small plants in their immediate vicinity, and so may prohibit them from the small rock garden. They grow well in turf, but of course this means no mowing until June. If possible they are most suited to a site in front of deciduous shrubs, where they will not mind some shade during part of the day, and where their foliage can die away naturally without detriment to adjacent plants. This method can be seen very successfully in the R.H.S. Gardens at Wisley.

The flowers are rather similar in shape to crocus, although much larger, which has caused them to be given the popular name of "Autumn Crocus". But the root system is very different, for they possess a very large pear-shaped tuber which is permanent, whereas the crocus

makes a new corm above the current one each season. These Colchicum tubers should be planted with the thick end upwards some four inches deep, in a place where they can be left undisturbed for a few years. When the clump reaches the stage of producing more leaves in spring than flowers in autumn, it should be dug up completely and the tubers separated singly for replanting. They do not seem to be particular as to soil, provided that it does not dry out too severely during the times when growth is active. Seed-pods arise with the leaves in spring, and the seed should be sown while it is still sticky and not completely dried.

Various attempts have been made by the experts to divide the different species into groups, the chief of which are :—

1. Autumn flowering.
2. Tesselated (i.e., with chequered flowers).
3. Winter-spring flowering.

But anyone who has grown many different ones would realise that Classes 1 and 3 run continuously into and overlap each other, and Class 2 the tesselations or variegations in the flower petals are very variable and in most cases fade very quickly after developing. And of course these must be included in Classes 1 and 3 with regard to time of flowering. Consequently in describing the different ones I have grown, I place them in alphabetical order.

C. agrippinum. With me bears the most-marked tesselations of all, and the flowers last for nearly a month (mid-October to mid-November) when grown in partial shade and moisture among dwarf ferns of the underground-creeping types, where the tubers increase slowly. (fig. 21)

C. alpinum is locally plentiful in the Central European mountains at altitudes around 4000-5000 feet, but tends to keep to single plants rather than large clumps. The flowers are rather small—some four inches high. I have an albino which I collected in the Pyrenees while only in leaf—a lucky chance !

C. autumnale is very common throughout the Central European alps, where the leaves stand up thickly in the grass which is scythed for hay in summer. It takes some time to settle down after collection in the wild, but is quite permanent and produces good-sized flowers of pale pink, eight inches high, after 2-3 years for establishment. (fig. 22)

C. bornmuelleri develops the largest flower of any Colchicum that I grow, 15 inches high, with large petals of deep colour with a whitish throat. It does not make large clumps like many of the

others, usually just two flowers to a planting. It is the first of all to flower, early in September. E. A. Bowles considers it to be a variety of *C. speciosum.*

C. bowlesianum I have had for several years, but it declines to flower to date, and still remains a single tuber. It is said to be rosy-lilac with darker chequering, coming from N. Greece and flowering in November.

C. byzantinum is very similar in appearance to *C. autumnale,* producing large clumps of pale pink flowers throughout September, often some 20 or more to a clump. But it never sets seed with me in Kent.

C. cilicicum, E. A. Bowles considers to be a form of the preceding and plants of both are difficult to differentiate.

C. descaisnei. This is a dwarf species with flowers only some 3 ins. high in late November. It only flowered once with me and then departed. It comes from Lebanon and I fear that it may not be hardy outside.

C. fasciculare from my experience is very similar in every way to the preceding and is definitely not hardy outside.

C. hungaricum, sometimes known as *C. montanum,* is a little gem with pale lilac flowers only a few inches high, in January. It survived two seasons only, and must also be considered doubtfully hardy.

C. luteum is another very small species, in which the flowers are greenish-yellow in colour and appear with the leaves in February/March, the latest of all to bloom. It survived several years and increased a little, and I think it quite hardy ; but then it was completely eaten by slugs—leaves and all—and I have not been able to replace it since. (fig. 23)

C. parkinsonii is the name—now rejected—for *C. variegatum.* The plants which I have of this cannot be differentiated from my *C. agrippinum,* so I am doubtful as to whether I have the true plant.

C. sibthorpii is the best doer of the tesselated varieties which I have, producing annually increasing bunches of good-sized pale rosy-lilac flowers in October.

C. speciosum is probably the most widely grown of all these species. It is permanent anywhere, with very large flowers of a good colour on stout perianth tubes over a foot high in late October. It sets plenty of good seed and increases rapidly into large clumps which need to be divided and replanted every third or fourth year. It provides a large number of named varieties of which I grow the

following :—

C. speciosum giganteum lives up to its name and is the largest flower of all that I grow (apart from *C. bornmuelleri*) ; the stout perianth tubes standing up serenely through any amount of bad weather.

C. speciosum album is the one which attracts most attention from visitors, providing large stout flowers of pure white, in increasing quantities. But it is often damaged by slugs eating through the base of the perianth tubes. It is perplexing that all the growth of Colchicums should be so poisonous to all living animals, yet harmless to slugs ! (fig. 24)

C. speciosum 'Violet Queen' is probably a hybrid, because it never sets seed, and also there is often faint tesselation in the medium-size purplish-violet flowers, which are borne freely but do not develop large clumps.

C. speciosum 'Water Lily' is a very beautiful double-flowering variety of deep rose colour. Unfortunately the flowers are so large as to be top-heavy and tend to lie around on the surface soon after maturity. But for all that it is very spectacular and always admired, especially as it is not often seen in gardens.

This concludes the varieties of Colchicum which I have grown, but I think I might add *Bulbocodium vernum*, which seems to be a monotypic genus, its only difference from Colchicum proper being that the perianth tubes are divided to ground level instead of the reverse as in Colchicum. This flowers in March—only 3-4 ins. high—and the leaves appear before the flower is over. I have seen quantities of it at Valberg in the Maritime Alps, sending up seed pods in the turf in May/June.

This again is very similar to *Merendera bulbocodium*. But this blooms in July with smaller flowers, simultaneously with the leaves. I have found this at Gavarnie in the Pyrenees, also plentiful in the turf while it is still short.

I have of necessity omitted many others of this group of species which I have never been able to obtain ; for most of the Trade bulb-lists only include some few of the species. But I hope I have encouraged other members to look out for these plants which give such a conspicuous and lovely show of flowers at a time of year when flowers are scarce in the garden.

Botany for the Alpine Gardener
Part VI.—Rosaceae

by Dr. MAVIS R. PATON

THE ROSE family is basically a family of trees and woody shrubs. The genera are found growing in most parts of the world and many have been in cultivation for centuries. The Rosaceae include such plants as the apple (Malus) ; pear (Pyrus) ; cherry (Cerasus) ; plum (Prunus) and flowering quince (Chaenomeles).

Rosa alpina, in the genus Rosa after which the family is named, can be taken as a good example of a rosaceous flower. The fruit which follows the flower is a hip only in the genus Rosa. It is formed by the part of the stem immediately beneath the flower, called the *receptacle*, swelling around the fertilized seeds.

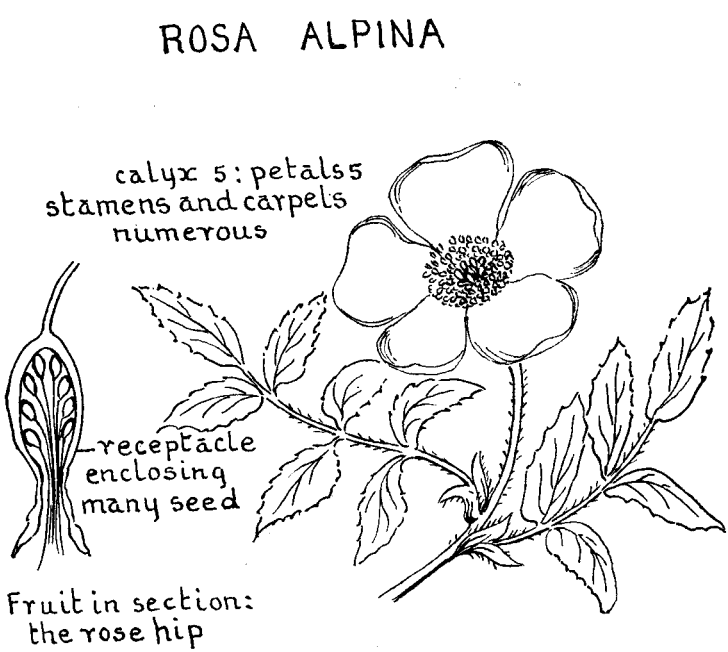
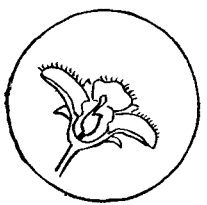


Fig. 25

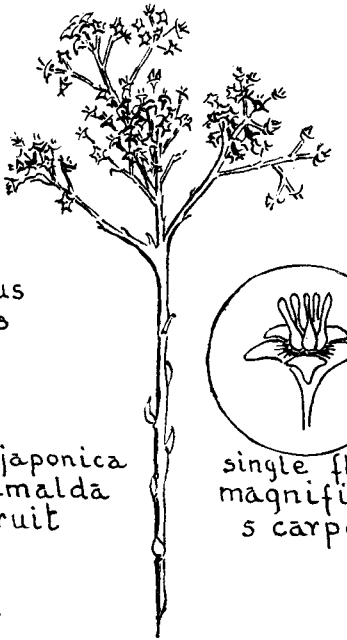
FRUITS OF THE ROSE FAMILY

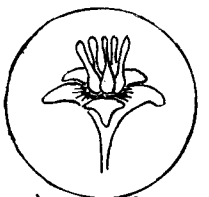
Cotoneaster microphyllus
Fruit in section: 2 seeds



Alchemilla alpina
calyx double: carpel 1.
(in section: magnified)

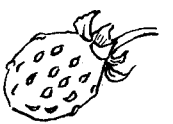
Spiraea japonica
var. bumalda
in fruit





single flower
magnified:
5 carpels

Rubus chamaemorus
fusion of individual fruits



Fragaria vesca
seed on swollen receptacle

Fig. 26

Although the detail of the flower is similar in all the Rosaceae, the number of flowers in the truss varies. It is the kind of fruit which develops afterwards which separate the different genera.

The family can be divided into genera that form trees and those that are shrubby or herbaceous. It is not the tree forms which concern the grower of alpines, but some of the smaller shrubs and herbs.

However, there are a few exceptions. One of these is *Sorbus reducta*, a dwarf alpine species of rowan. The flowers are arranged in a truss ; each flower quite small but unmistakably rose-like. The anatomy of the fruit resembles apples in miniature and for this reason Sorbus and Malus are allied in classification. The leaves are distinctive, being pinnate, and each leaflet is toothed.

Cotoneaster is another genus in this group as the fruits are similar in makeup. Many species form trees but some are true alpines from high altitudes and are rock-hugging or semi-prostrate. The leaves of Cotoneaster are simple and untoothed.

The following genera are composed of shrubs.

Spiraea. In general, this is a genus of rather large and elegant shrubs ; however, *S. japonica* in its form *bumalda* is neat enough to be grown in the rock garden.

Spiraea departs from the basic rose form in having the *seeds in carpels which split open* when ripe. There are usually 5 carpels. The flowers are carried in a truss (or in some species an elongated head) ; each small flower has 5 petals and numerous stamens of an odd shape, wide at the base and tapering to the apex.

Spiraea is sometimes confused with Astilbe, belonging to the family Saxifragaceae. In Astilbe, a predominantly herbaceous genus, there are only 2 carpels joined at the base and but few stamens.

Petrophytum is a small American genus akin to Spiraea (*Petrophytum hendersonii* used to be called *Spiraea hendersonii*) but differs in the dwarf and *evergreen* habit and in the shape of the flower truss. The very small flowers are crowded in an elongated head on top of the stem. The long stamens, 10 to each flower, give the head a fluffy appearance. Leaves are simple.

Kelseya is represented by a single species and its distribution is confined to a few places in the Rocky Mountains. The dense *cushion habit* of this shrub is very different from any other rosaceous plant. The flowers are almost stemless and nestle in the clustered leaves.

Rubus. The alpine species include *R. parvus* and *R. chamaemorus.* The rose-like flower develops into a "berry" which is really a collec-

tion of individual fruits fused together. Stems and leaves are usually armed with prickles.

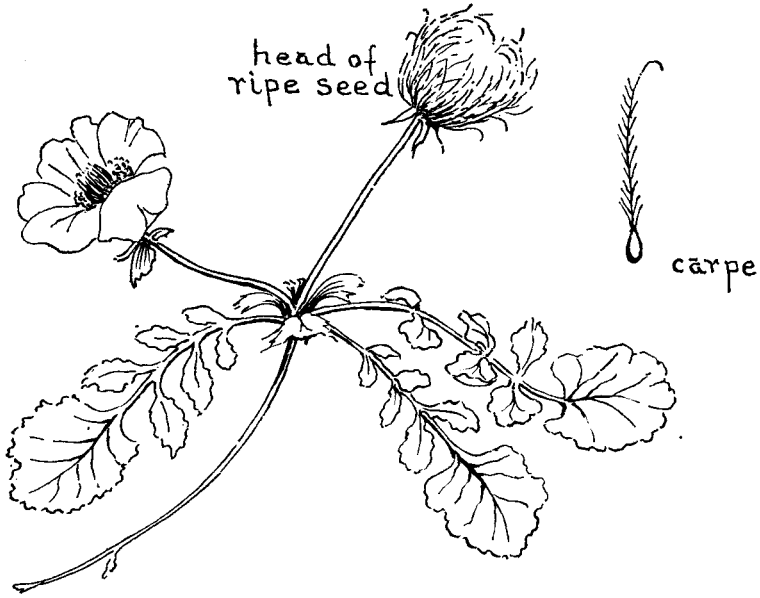
Dryas. A true alpine plant developing a woody root stock. There are only two species. The flowers are borne singly on a stem : no succulent fruit is formed here ; instead the seeds become airborne by long feathery styles.

Consider next the genera consisting of herbs.

In *Potentilla* one finds a single shrubby species, *P. fruticosa,* among a large number (around 300) of herbs nearly all growing in northern temperate climates.

P. fruticosa in its many forms is a useful shrub with a very long flowering season. The flowers are followed by a brittle flat receptacle bearing the seed and surrounded by the dried calyx which remains after the petals drop.

Herbaceous alpine potentillas are widely cultivated. The flowers and seed heads are all similar in form. All potentillas have a noticeable *double calyx* round each flower. The leaves are divided and hairy.



GEUM REPTANS

Fig. 27

Geum. The flowers are as in Potentilla but the styles elongate in fruit and are feathered and often hooked. Leaves are divided into leaflets.

Fragaria. The strawberry is known the world over for its succulent fruit. This is formed by the receptacle swelling up and becoming coloured. The ripe seeds are spread over the surface of the fruit. Alpine strawberries are both attractive ground cover and edible.

Alchemilla is one of the few genera in Rosaceae where petals are *absent.* This makes the small green flowers inconspicuous. The *single* seed ripens at the bottom of a vase-shaped calyx. Leaves are distinctive, palmately divided and silvery with silken hairs in the alpine species.

Primulas at Howgate—Part IV

by W. A. BRUCE ROBERTSON

OF THE Pubescens varieties brought to the garden, those planted in the gravel beds were 'J. H. Wilson', 'Alba', 'The General' and 'Faldonside'. These older varieties can still hold their own with some of the newer types. *Primula* x *pubescens* 'J. H. Wilson ' has good heads of flowers of a reddish purple and with a white eye, while 'Faldonside' and 'The General' are nearly of the same shade of brownish red, 'Faldonside', however, having a white eye, and 'The General' deep yellow.

Recent acquisitions are x *pubescens* 'Red Indian', 'Janet', 'Blue Wave', and 'Cedric', as well as *Primula auricula* 'Clare' and *Primula hirsuta nivea.*

There are numerous named varieties of alpine auriculas available, but only a few of these have been acquired and positioned in the garden. As all these make good alpine house plants a few have been potted up and are retained in the propagating house. Should it be desired, however, to grow Auriculas in the alpine house for brilliance and colour, preference should be given to the show varieties. Although these can be grown in a cold frame elsewhere, it is doubtful whether they would survive in such a position in this garden and certainly not outside.

Lack of planting space at various times resulted in some Primulas being planted in the gravel beds when they should have been planted elsewhere. Suitable beds for planting Primulas were limited in the first section of the garden completed and *Primula anisodora* was planted in a shady corner of a gravel bed. The plants grew here successfully for several years and they have been retained in this position.

Primula anisodora is rather dull, the flowers being brownish purple with a greenish eye. The flowers are tubular, funnel shaped and just over ½ in. in diameter. The scape may be up to 2 ft., carrying 3 to 5 superimposed whorls of 8 to 10 flowers on nodding pedicels ½ in. long. The whole plant is aromatic and flowering time is June. The obovate leaves are denticulate, 10 ins. long and narrowed to winged stalk. *Primula anisodora* comes from Yunnan and Szechwan.

Plantings of *Pp.* x *juliana*, *scapigera*, *wardii*, 'Snow Cushion' and *wattii* have also been made in these beds. The latest planting, *Primula wattii*, which is supposed to be difficult, has been located in a semi-shaded position which only gets early morning sun and is well protected by the house from the prevailing wind and rain. *Primula wattii* has flowers of rich violet carried on short stems and might be more suitable for alpine house treatment.

Primula wardii, on the other hand, gets the south and west sun as well as all the rain from the west. *Primula wardii* has thrived in this position and has actually produced more than sufficient self-sown seedlings to replace all losses.

Without some means of accurate recording it would be somewhat difficult to sort out the smaller types of Primula. Two or three of those originally brought to the garden have now been discarded as they had lost their name record. A good number, however, were still available for planting and many of these are now well established in the gravel beds.

The initial types brought were x *biflora*, *spectabilis*, *villosa* and *villosa alba*, *clusiana*, *glaucescens* and *viscosa*. All these flower reasonably well except *spectabilis*, which expands rapidly and has to be reduced regularly while producing very few flowers. *Primula* x *biflora* is a natural hybrid between *P. minima* and *P. glutinosa*. The flowers, which are rosy-purple, are carried in pairs on 3 in. stems.

Primula clusiana belongs to the Auricula Section and comes from Austria. The plants form rosettes of bright green ovate leaves, with umbels of up to six flowers, carried on short scapes, between two and three inches high. The flower colour is near carmine with a white eye

and deep notched petals.

Primula glaucescens, given sun and good drainage, both grows and flowers well. The flowers are fairly large and may be of shades between rose, lavender and purple.

Primula viscosa has sweetly scented flowers and evil-smelling leaves. The umbels of rose to lilac flowers are carried on a stout scape some six inches tall and *viscosa* is another species which grows well. The leaves are somewhat sticky and with a yellowish tinge. This species crossed with *hirsuta* has given rise to a natural hybrid in x *berninae* and garden hybrids when crossed with *pedemontana* in x *bowlesii*, with x *integrifolia* in x *dinyana* and with x *integrifolia* in x *muretiana*. I have not yet managed to acquire any of the garden hybrids, but this is something for the future.

Other small Primula brought were x *intermedia*, *amoena*, *mooreana* and x *wettsteinii*. *Primula* x *intermedia* is a hybrid *clusiana* x *minima* and is a first class plant for rock garden or scree. Very large rose-pink flowers are carried on short stems and to perpetuate, reproductions must be by cuttings only. *Primula* x *wettsteinii* is the reverse cross, being *minima* x *clusiana*. This time, however, the large flowers are blue and carried on five-inch stems in pairs.

Primula mooreana was acquired some twenty-five years ago and looks like a form of x *pubescens*, the flowers being of a deep magenta shade with a white eye. A number of the smaller Primulas were kept in the propagating house until there were sufficient plants available to permit them to be planted outside. *Primula allionii* and *Primula* 'Ethel Barker' were two of these, now planted out, but only time will tell whether they will stand the outside conditions. Other recent additions to these beds were *Pp. apennina*, *calycina*, *rusbyi* and *pedemontana*. Although all of these are interesting none of them is particularly showy, probably *pedemontana* being the best.

Primula apennina is easy to grow and has pink flowers with a white eye on four-inch stems. *Primula rusbyi* grows well in a light soil in full sun and carries reddish purple flowers on six-inch stems. This is a summer flowering species rather than a spring one, and comes from North America.

Primula pedemontana is a sun loving species from the European Alps which has dark green oval leaves, occasionally toothed. The leaves contrast well with the two- to three-inch high scapes of deepish pink flowers set off by a white eye. The flowering time here is May and propagation is easy by autumn division.

Although some of the newer hybrids—'Beatrice Wooster', 'Dianne', 'Joan Hughes' and the hybrid *marginata* x *venusta*—are good, *Primula* 'Marven' can hold its own. *Primula* 'Marven' in this garden retains its reputation for flowering capacity and the contrast between the deep violet flowers and their white eyes provides an air of distinction.

Although *Primula allionii* is being tried outside the cultivars, 'Alba' and 'Apple Blossom' are still retained in the propagating house. Even with protection *allionii* 'Alba' has proved much more difficult to retain than *allionii* itself. *Allionii* 'Apple Blossom' is doing well inside and may be tried outside later : the flowers are certainly much superior in size and form to *allionii*, as well as being of a delicate light rose-pink shade. One would have expected *Primula allionii* to have been reasonably hardy outside as this species comes from the French and Italian Maritime Alps.

Primula eburnea and *P. forrestii* are both inside and will no doubt remain there. *Primula eburnea* has not yet flowered here and although this is planted in a pot, the pot is bedded in a sand frame to help provide the deep rooting conditions required for this species. A very gritty mixture is required and also careful watering. The flowers of this species are numerous and ivory white, carried in an open head on a 6 in. scape.

Primula forrestii comes from Yunnan and has flowers in July which are sweetly scented. The flowers themselves are a strong yellow with an orange eye carried in a many-flowered umbel on a six- to eight-inch pedicel. The wrinkled leaves are also decorative, carried on short stems in rosette form and mealy underneath. Propagation is easiest by division.

Five other Primulas are in the propagating house at the present time—*Pp. algida, takedana, tosaensis, heucherifolia* and 'Gordon Harrison'. These will no doubt be tried outside when propagated. *Primula algida* has violet flowers $\frac{3}{4}$ in. in diameter carried in a 3 to 12 flowered umbel on a 2 in. to 6 in. scape. The flowers have very short pedicels not more than $\frac{3}{4}$ in. Leaves are oblanceolate up to 2 ins. in length, obovate and denticulate. This species is yellow farinose.

Primula heucherifolia has flowers varying in shade from mauve pink to deep purple, $\frac{3}{4}$ in. in diameter and carried in an umbel of 3 to 9 flowers on 1 in. pedicels, with scape about 6 ins. in height. This would appear to be a woodland Primrose or one for part shade. The leaves have 7 to 11 triangular lobes coarsely and irregularly toothed.

This Primrose comes from W. Szechwan, and flowers in May. Synonyms for *heucherifolia* are *gagnepainii*, *lanata* and *oculata*.

Several other Primulas have been grown in the garden here at various times, lost, and not replaced. Quite a number of Primulas flower well in the summer, still look healthy in the autumn, but depart in the winter. As there are so many new types to try, it is not possible to find space to replace all those lost. One of the recent losses, however, I would very much like to replace is *Primula apoclita*.

Primula apoclita comes from S.E. Tibet and Yunnan and is a plant of distinction with flowers of a deep purple shade. Although the tubular flowers are small, about ¼ in. across, they are grouped in a many-flowered head. The head, which is carried on a 6 in. scape, is yellow farinose above and, to make this Primrose still more desirable, the flowers are scented.

The only other position in the garden where Primulas are located and which has not been mentioned is the marsh area at the end of the pond where *Primula florindae* runs riot. Originally three plantings were made—*Primula florindae* itself, a bronze form and one of a 'rasp red' shade. Although the original plantings are still true to colour, seedlings have now produced many different shades. *Florindae* will probably be the first Primula moved out to the wild garden when that has reached a suitable stage for planting.

No doubt Primulas will keep departing from the garden as regularly as they have done over the past years and, although plants of other genera are calling for more planting space, there will always be room available for members of this desirable genus.

More Alpines from Afghanistan

by ROBERT B. GIBBONS, B.Sc.

IN RECENT years, since about 1961, several botanical expeditions from England have visited Afghanistan, and all have brought back new and interesting plants. These collectors were, of course, Paul and Polly Furse, Ian Hedge, and Professor Hewer, and also Chris Grey-Wilson this year. To these big names, we, as a small party of independent graduates, added our efforts this year. Although the flood is now

drying up to some extent, in that little new can be found by simply driving around the roads, there is still a fair quantity of worthwhile plants to be introduced. Afghanistan is larger than France, with huge mountain ranges up to about 24,000 feet in the north-east, and generally poor communications, so that a few small expeditions can hardly be expected to cover all the ground, let alone catch all the plants at the appropriate collecting stage.

For gardeners, the main items of interest from Afghanistan are the alpines, and the bulbous plants usually from the lower regions. Since the summers are long, very hot, and completely dry in most areas, these bulbous plants tend to be distinctly tricky to grow out of doors in England, even in the drier south-east, so, in the main, Afghan plants appeal only to specialist growers. There are a few distinct exceptions to this rule, though it is always difficult to say whether a particular plant will or will not be hardy here. A large proportion of the hardier plants tend to be found over a wide range in central Asia, e.g. *Allium rosenbachianum* and *Eremurus stenophyllus*, and these can clearly tolerate varying conditions, but this is by no means a general rule. *Crocus korolkowii* and *Colchicum kesselringii* also grow quite well in Britain, and they do have a wide distribution in Afghanistan, but generally under very similar conditions, viz. on dry slopes of mountains at 6-8000 feet. There has been so little experience with Afghan plants in Britain, except for those having a wider distribution, e.g. *Fritillaria imperialis*, that no general rule can be formulated.

The official (botanical) alpine zone in Afghanistan generally begins at 4000 m or approximately 13,000 feet, which gives some idea of how hot the country is. Considerable areas of the country are in fact above this height, especially in the Pamirs, Hindu Kush, Koh-i-Baba, and Nuristan ranges. Most of the more attractive alpines do occur above 11,000 feet, but many plants that would be grown by the alpine gardener occur much lower. For instance, *Dionysia lindbergii* and *D. microphylla* are two very attractive and desirable plants which have been introduced in quantity (relatively speaking) this year, but they both grow in a limestone gorge at 4-5000 feet in the northern desert lands. Another desirable new species was discovered there this year by Professor Hewer and Chris Grey-Wilson, and a fourth not unattractive species, *D. viscidula*, also occurs, in addition to the ubiquitous *D. tapetodes*. Except for this latter, all are varying shades of purple or blue, and all will probably be very difficult to grow, but well worth the effort. We were not lucky enough to see any of these

in flower, but even the upside-down cushions were well worth seeing, with the dried but still coloured petals still on them. Other Dionysias occurring at even lower altitudes are *D. hedgei* and *D. freitagii*, and these again have been introduced this year (although not for the first time ; seed of these has been brought back, but germination has been poor or non-existent, so there is no stock at present.)

One of the most interesting areas of the country for alpines is the Salang Pass. This is easily accessible from Kabul, the capital, and is on the way to many other places, so we found ourselves stopping there frequently. The road passes through a tunnel (the highest in the world, as one is frequently told) at 11,200 feet, and above this a very rough track goes on up to a beautiful corrie lake at about 11,700 feet, where the snow lorries go to cut snow for Kabul (taking the place of fridges in Afghanistan). On most of our later visits we camped at this lake, in spite of the cold at night, partly because of the plants, but also because at lower altitides we kept meeting an awkward character from a nearby village, who once proved to be distinctly nasty with his knife. We also nearly had a tent stolen by another villager ; hence we avoided the 7-10,000 feet area for camping ! Such incidents were rare, and most people were very friendly, though very curious about us !—and very hospitable.

The high lake proved an interesting place : while we were up there in June, the small stream by the tent froze up, and in the morning two of us were lucky enough to see a pair of wolves rapidly departing—their footprints showed that they had had a good look around the camp early in the morning ! On the cliffs and slopes around the lake grew many superb plants. The delicate *Paraquilegia grandiflora* was surprisingly abundant in crevices of the granite, and we collected a good quantity of seed. *Corydalis gorlshakowii* was also common and beautiful, but unfortunately grew in more accessible places, and so was almost entirely grazed off by the local nomad goats and sheep ; hence we only got a tiny amount of mature seed. We hope this grows, as I think it has not been introduced before. One plant which we saw only in the vicinity of the lake was *Delphinium dasyanthum*. This is a tallish (18 ins to 2 ft.) plant, and rather less attractive than other plants here, being too gangling and covered by grey hairs. However, higher up, at around and above 12,500 feet, we found a much more attractive Delphinium, about 8 ins. high and brighter blue. This is *D. brunonianum*, but rather dwarfer and different to the better-known Chinese form. Again, only a small amount of seed was collected. A

well represented genus up here was Chorispora (Cruciferae) ; *C. macropoda* is a pretty yellow and cream plant which grows in small straggly clumps, nearly always on almost bare frost-heaved soil (with a superb soil structure !). *C. bungeana* (fig. 28) is a small annual with a rosette of pinnate and distinctly pungent leaves, topped by a hemisphere of beautiful almost Aubrieta-like flowers (but larger) — a very attractive effect. Another fine crucifer we found near here has been identified as *Ermania flabellatus*, a pale purple-mauve flowered plant (variable according to soil moisture content). For this I had to struggle up to 14,500 feet ; it grew up to about 15,000 feet, the highest summit around. I was glad it did grow there, as almost nothing else did, and I felt there ought to be some reward for coming this far ! From a distance, it almost looked like a Primula, peeping out from under a rock. There was a fair amount

Fig. 28

Fig. 29

of seed as the herds rarely reached as high as this. This year was very bad for over-grazing, being the second very dry year in a row, and sheep were being slaughtered in huge quantities for a quick sale, as there was too little grazing for all the flock. Some papers reported widespread famine among the people, but we saw no real evidence of this.

The second highest plant we found was an unlikely one (we thought) —*Papaver involucratum*. In colouring this was quite unlike most poppies, and was also very dwarf. It was generally pink or orange, with bright green and near black in concentric rings, and was superb in a very small way. The flowers were rather too small for the plant to make it really attractive, but it is well worth introducing. A pretty yellow Ranunculus, probably *R. shaftoana*, was common here, its bronzey-green leaves very striking, and under nearby rocks was *Primula macrophylla*. This is perhaps not the best of Primulas, but does have the distinction of holding the high altitude record for Afghanistan, at the remarkable height of 5450 metres. Other Primulas that we saw in the area were *P. auriculata* and *P. capitellata*, (fig. 29) both pleasant and small, growing by streams of snow melt-water.

Near the lake in short grazed turf we found, among other things, two very small blue Gentiana species. Neither was more than ½-1 inch high, but they possessed the usual attractions of all Gentians. Unfortunately, hardly any seed was mature before we had to leave. Growing with the Gentians were Cerastiums, Potentillas, rare 1 inch high Thalictrums and other pretty dwarf plants. One of the most interesting plants up here was a very prostrate Lonicera (*L. semenovii* ?) forming huge mats on the ground, and on vertical rock faces. It bore its delicate but almost unscented pale yellow flowers in small quantities usually, but occasionally in sheltered places it was a mass of flowers (which were just over for us). As usual, there was only a small quantity of seed there. Nearby were great masses of a ?Merendera in fruit which we have yet to see in flower. Other plants of interest from the high Salang were a beautiful orange-red Sedum, a form of *Androsace villosa* common everywhere, an unusual greeny-yellow Allium with a maroon bract, growing on wet rock ledges, pretty little Lloydias and Gageas, and Drabas with other yellow or cream Crucifers. A superb place, with hardly any of these plants in cultivation. In a nearby corrie, with generally similar flora, we found small quantities of the beautiful *Isopyrum ? anemenoides*, closely related to *Paraquilegia grandiflora*, but more delicate.

Fig. 30

One of the best features of this quiet place was the lack of staring Afghans, for nearly everywhere else a crowd soon gathered (albeit friendly) to watch one's every move—EVERY MOVE. Here there was no-one except the men with the snow lorries, who were too busy, and occasional nomad herdsmen who were too worried. Similarly pleasant were the large beaver-like marmots with calls like those of a wader but much more piercing. Lower down the Salang, especially on the north side, are the Irises, a large blue-grey Juno, *Iris microglossa*, the yellow *I. xanthochlora*, and the superb Regelia *I. afghanica*. (fig. 30) *Crocus korolkowii* in abundance, *Colchicum kesselringii*, and the desirable candelabra *Allium regelii*, which we could not find anywhere ! There were many other fine plants too numerous to mention, to say nothing of the tall Afghan with the long knife—quite one of the best specimens we saw !

Much further west, towards the centre of the country, lies the 11,000 foot Unai Pass. Generally speaking the flora becomes less and less rich as one moves west, away from the Himalayas, and a comparison of the Unai and Salang Passes would bear this out. The Unai looks bare even in early summer, and the number of species is undoubtedly lower. It shares several species with the Salang, but lacks many. However, it does have a few of its own that we did not see on the Salang. The attractive *Acantholimon diapensioides*, looking very like a pink Dionysia, grew on exposed ridges in several places. The tall, pale yellow *Eremurus kaufmannii* is common here up to about 12,500 feet, as in much of the central region. Towards the summit of the nearby mountains, we found several fine Crucifers, yellow or purple, one looking like a very miniature Wallflower, its yellow flowers turning orange as they aged. It also had a strong scent, as do many alpine crucifers. Another scented plant, commoner here than on the Salang, was the dwarf pink *Valeriana fedtshenkoi*, unfortunately not in seed.

A little lower down, at about 13,000 feet, we came on a beautiful sight ; for about 100 yards down the banks of a small stream there was a mass of luxuriant *Corydalis moorcroftiana* highlighted in the evening sun. They were much larger than the Salang plants, and perhaps less attractively proportioned, but en masse they were perfect—not much hope of emulating this in Britain !

Plant Hunting in Kurile Islands III. Alpines of Mount Shakotan

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WE HAD not too far to go to Mt. Shakotan from our base, which was placed in village Malokurilsk. The seismologic station, in which we had our base during our expedition, is so placed at the foot of this mountain.

Mt. Shakotan is not too high—only about 300 metres above sea-level ; we should say under our conditions only a foothill—but in relation to the territory of all island Shikotan and to the nice Matokutan Bay, which is in the immediate neighbourhood—it is truly a mountain. So by character of its vegetation it is truly a mountain—with alpine plants on the top and on rocky slopes of the upper part.

From the village were seen on slopes of Shakotan nice reddish groups of shrubs of sumac, *Rhus ambigua* Lavall. (in Japanese : Tsuto-urushi), which on Shikotan does increase to its maximum size. Perhaps it is only one species, which on Shikotan grows to larger size than anywhere around. Several other species of plants are at Shikotan represented by their dwarf forms. On Shikotan *Rhus ambigua* forms large and vigorous shrubs or even smaller trees, while on Kunashir (it is another island in neighbourhood), as well as on the Japanese island Hokkaido, it is represented only by creeping or spreading shrublets.

An example of a dwarf form which occurs at Shikotan is groundsel —*Senecio cannabifolius* Less. (Jap. : Hangon-sō). It grows on Sakhalin up to 3 m of height. On Shikotan we have found *S. cannabifolius* f. *linearifolius*, which was high only several dozen centimetres. On peaty spots of Shikotan there even grow dwarf trees of fir ; *Abies sachalinensis* (F. Schmidt) Mast. (Jap. : Aka-todo-matsu) grows there only up to 4 m, etc.

But let us return to Mt. Shakotan. Here on the way we have collected seeds of shrubby bamboo—*Sasa paniculata* (Makino) Makino et Shibata (Jap. : Nemagari-dake) ; it is usually 1-3 m high. We have found there a fertile formation of this bamboo of about ten square metres ; none of the plants were more than 40 cm high. As is usual

with bamboos there, the spots with fertile plants were easy to find by the colour of drying leaves on these usually evergreen plants. So the spots with dying fertile plants are the only places in their formation where other plants can even survive.

To the slopes of Shakotan we have climbed by the side of a not too rich brook, which was shaded by mature trees of *Abies sachalinensis*, cork-tree—*Phellodendron amurense* Rupr. var. *sachalinense* F. Schmidt (Jap. : Hiro-ha-no-kihada) without any cork, and maple—*Acer mono* Maxim. var. *mayrii* (Schwerin) Koidz. ex Nemoto, (in Japanese Aka-itaya, Beni-itaya), with undergrowing shrubs of currant —*Ribes latifolium* Jancz. (Jap. : Ezo-suguri). This Ribes had edible fruits very near to the taste of cultivated ones. Under big trees there was growing *Weigela middendorffiana* (Carr.) K. Koch (Jap. : Ukon-utsugi), honeysuckle—*Lonicera caerulea* L. var. *edulis* Turcz. ex Herd. (Jap. : Ke-yonomi) with edible relatively large berries, which are nicely bluish pruinose. At the margin of forest were seen shrubs of *Spiraea betulifolia* Pall. (Jap. : Maruba-shimotsuke), *Actinidia kolomikta* (Rupr. et Maxim.) Maxim. (Jap. : Chōsen-gomishi).

On the more moist spots at the brookside we collected some interesting ferns. Many of them will probably grow in Czechoslovakia. Their viable spores are in the careful hands of Dr. Z. Seibert and they do live—now mostly in early stages of growth—as protonemas. They were for a European, a rare species, Japan male fern—*Dryopteris crassirhizoma* Nakai (Jap. : O-shida), which is widespread in Manchuria, Korea and on Japanese islands Hokkaido, Honshu and Shikoku, on Sakhalin and even on Southern Kuriles, and *Athyrium yokoscense* (Fr. et Sav.) var. *fauriei* (Christ.) Tagawa (in Japanese Hebi-no-negoze), inhabiting only Southern Kuriles and part of Korea. Two other ferns are very widely spread through the all moderate zone of Northern hemisphere—*Dryopteris austriaca* (Jacq.) Woynar (Jap. : Shirane-warabi) and *Matteuccia struthiopteris* (L.) Todaro (Jap. : Kusa-sotetsu).

By this brook also was growing red skunk-cabbage—*Symplocarpus renifolius* Schott (fig. 31) (Jap. : Zazen-sō). It had not at this time flowers nor fruits—but we could not mistake its large and broad leaves, which slightly resemble a horse radish, even to their characteristic scent. *Symplocarpus renifolius* Schott, synonyms are *S. foetidus* auct. Asiat. non Salisb., *Spathyema foetida* forma *latissima* Makino, *Symplocarpus foetidus* f. *latissimus* Makino, *S. foetidus* var. *latissimus* (Makino) Hara, is different from the American species *S. foetidus* Salisb. by its more broad leaves and by regular brownish-red flower-

spathes without any greenish shades. It inhabits large areas in Eastern Asia—it grows at Japanese islands Honshu and Hokkaido, on Sakhalin, in the area of rivers Amur and Ussuri and on Kuriles.

What is written on the use of its American counterpart, probably is valid even for *S. renifolius* (Uphof 1959). Rootstocks are emetic, antispasmatic and diuretic. They are consumed after being fried or baked by the Indians as an emergency food. Foster informs us that *Symplocarpus foetidus* is some dangerous, aggressive in the garden—this plant can under suitable conditions become a weed. But in Europe we need not be afraid of this lovely plant—it would be perhaps a good wish of many gardeners if this plant would self-propagate in their gardens. It should make possible the giving of this beautiful spring plant to other friends.

On similar moist place as with Symplocarpus was growing also rock-foil—*Saxifraga reniformis* Ohwi (Jap. : Chishima-iwabuki). It can interest each collector of rarities and catch him by its nice kidney-shaped, leathery and dentate leaves and also by its nice, soft white flowers. Its synonyms are *Saxifraga punctata* sensu auct. Japon. non L., *S. ohwii* Tatewaki, *S. punctata* ssp. *reniformis* (Ohwi) Hara. It grows very rarely in Japan—only on Mt. Dasetsu on Hokkaido, on small island Rishiri, and exceptionally even on Sakhalin, Kurile Islands and Kamtchatka.

In crevices of moist rocks we have collected a similar-looking *Saxifraga fortunei* Hook. f. var. *incisolobata* (Engl. et Irmsch.) Nakai (Jap. : Dai-monji-so), a highly variable species, widespread in Japan, Sakhalin, Korea, Manchuria, on Southern Kuriles, in basin of river Ussuri and in China. It is a very variable plant ; that was why the Japanese botanist Genichi Koidzumi has given it one of its synonyms —*Saxifraga mutabilis*. Another synonym approximately characterizes its leaves, *S. cortusifolia* sensu auct. Japon. non Sieb. et Zucc. Together with this Saxifrage we have found also *Viola biflora* L., which in Europe and in continental Asia inhabits only moist crevices in higher elevations of mountains. Here on Shikotan it grows a few metres above sea-level, on not high hills, as is Shakotan. It is a very nice alpine, especially for lovers of shining-yellow flowers. It is interesting that the Japanese do not call it sumire, as they name 47 other species of Viola which occur in Japan, but for this alpine they have a quite different and very long name—Kibana-no-koma-no-tsume.

On the slopes of Shakotan, not densely covered by trees and shrubs, were often shrubs of *Rhus ambigua* ; we have written about them once

at the beginning. Around those shrubs with nicely red-coloured leaves was walking Miss Alexejeva very carefully and at a distance—after her previous not nice experience with them.

After contamination with leaves, branchlets or fruits she had on her hands very ugly blisters, very slowly going off. People living there do name it "yperit-shrub". When we had collected specimens for the herbarium, we treated it very, very carefully, for we wished not to try on our own skin the rightness of its local name. With maximum care we avoid meeting with the Rhus formations—and for it we walked through a not big fir-forest, where the Rhus did not grow in deep shade. Here we have met a small group of rare small Orchids—*Listera yatabei* Makino (Jap. : Takane-futaba-ran). Its synonyms are : *Listera major* Nakai, *L. savatieri* Maxim. var. *major* (Makino) Beauverd, *L. convallarioides* subsp. *yatabei* (Makino) Beauverd. Although it has in its several synonyms epithet of "*major*", it is not a big plant—the most high plants reached 10 cm. It occurs rarely from mid Siberia to North Japan, Sakhalin and Kuriles.

Further up the slope of the mountain was covered by a formation of low evergreen holly—*Ilex rugosa* F. Schmidt (Tsuru-tsuge). Home of this shrub is Japan, Sakhalin and Kurile Islands. Ainus in North Japan uses its berries as a remedy against sensitive ill teeth.

Under shrubs of this holly mixed with groups of *Leucothoe grayana* did grow one very interesting plant, which is not probably in any encyclopedia of gardening as a decorative one. It is *Chloranthus japonicus* Sieb. (fig. 33) *Ch. manshuricus* Rupr., *Tricercandra quadrifolia* A. Gray, *T. japonica* (Sieb.) Nakai ; in Japanese it is named Hitari-shicuke.

It looks at first sight similar to the European *Mercurialis perennis*, but it belongs to a family which is for a European very exotic—*Chloranthaceae*. A short notice on them may illustrate exoticism of Shikotan flora. It is common in woodlands in lower mountains in Japan, also it is present in Manchuria, Korea, Southern Kuriles, islands Kunashir and Shikotan, also in East USSR by the rivers Amur and Ussuri.

When we left the last metres of slope covered by *Ilex rugosa*, the gentle slope led us to the top part of Mt. Shakotan. There were many interesting plants. We will write on those which were not discussed in our articles from Kuriles.

On the top in rock crevices and on small flat spots were several rare alpines ; some of them are more, some less known. They were

standing immediately against severe winds from the Pacific Ocean. Let us name for example *Mertensia pterocarpa, Leontopodium kurilense, Lloydia serotina, Tofieldia nutans* and *Oxytropis retusa.* All of them were out of their flower period ; only *Oxytropis retusa* did show a few of its late violet dense flower clusters.

On the rock immediately below the top was a very rare Lion's foot —*Leontopodium kurilense* Takeda (fig. 34), which inhabits rarely only two of the Kurile Islands—Shikotan and Iturup. Its inflorescence has usually 12 involucre-like leaves, and it is extremely nice before its flowers are fully developed. The inflorescence is usually nearly sessile.

In Czechoslovakia there was only one plant of this lovely species between 1967 and 1970 ; it was in the rock garden of Mrs. O. Duchácová. This plant was raised from seed sent by a Japanese plantsman. Although it was very nice, it did not give us seeds. So the seeds which we have collected on Shikotan did not germinate here. Botanists from Sakhalin tried several times to introduce *Leontopodium kurilense* into Botanical Gardens on Sakhalin, but without any success. On this plant as a decorative one there is not any notice in literature except the work of Sampson Clay (1937), where it is named among Lion's foot, which can evaluate by their decorativity even *L. alpinum.*

In crevices of rocks here was not lacking Alp lily—*Lloydia serotina* (L.) Reichenb. We were looking for another species of Alp lily which occurs on Kuriles—*Lloydia triflora* (Ledeb.) Bak. ; but have not found it. This Lloydia—in contradistinction from *L. serotina,* which inhabits high mountains of all the Northern hemisphere—grows only in Eastern Asia from Siberia to mid China and Kuriles, Japan and Sakhalin.

On the top of Mt. Shakotan were growing quite low shrubs of *Sorbus sambucifolia* (Cham. et Schlecht.) Roem. (Jap. : Takane-namakamado) ; they caught our eyes by their bright red fruits. Rehder writes of this species, that the shrubs can grow up to 2.5 m in height. But on Susunai Mountains of Sakhalin and on Kuriles on Shikotan we observed fertile shrubs, but none of them were more high than 30 cm. Seedlings of it do grow at Pruhonice in Czechoslovakia very slowly and it seems that their size will never be so big that it would not be suitable for any rock garden. In horticulture is *Sorbus sambucifolia* since 1905, but to this time it is very rare, and sometimes it is mistaken for *Sorbus decora* and *S. sitchensis.* It may be somewhat difficult to grow ; it feels itself much better everywhere in its home mountains than under the most careful hands of alpine gardeners.

Its berries are bright red and at the base of glossy, rich green and dense leaves they look very nice. Also they are tasteful, slightly acid, without any shade of a bitter taste, as is usual in many other Sorbus species. Pavlov (1942) writes that on Kamtschatka they do collect fruits of this Sorbus, but that they are edible only after the first frosts —as it is also with fruits of our mid-European *Prunus spinosa*. I must say that the fruits of *S. sambucifolia* do not differ from the ones of cultivated edible *Sorbus aucuparia* var. *moravica*.

Another interesting plant here—from the Boraginaceae family—was *Mertensia pterocarpa* (Turcz.) Tatew. et Ohwi, syn. *Steenhammera pterocarpa* Turcz. (Jap. : Kuri-sō). We have collected seeds of it. On this alpine, which likes small crevices on the tops of banks at most windy spots on Southern and mid Kuriles, are not so often notices in works on alpine gardening. We have found only a short remark on it in a book of Jelitto—Schacht (1968). It is very scarce in culture, and probably the cultivated plants are not of the true species, which grows on Shikotan, but its variety : *Mertensia pterocarpa* var. *yezoensis* Tatew. et Ohwi from island Hokkaido. Synonyms of it are : *Mertensia rivularis* var. *japonica* Takeda pro parte, *M. yezoensis* Tatew. et Ohwi. It grows scarcely at Hokkaido in alpine zone.

From the viewpoint of introduction of new plants there were two interesting species of genus Geum : Herbaceous *Geum calthifolium* Smith var. *nipponicum* (Bolle) Ohwi—in Japanese called Miyama-daikonsō—and sub-shrubby *Geum pentapetalum* (L.) Makino (Jap. : Chin-guruma, Iwa-guruma). The first species is widespread on Kuriles, in Japan on island Hokkaido, on the North and mid Honshu, and on Mt. Ischizuchi on Shikoku. The typic plants of species are growing on Kamtschatka, Aleutian Islands, and in North America. This plant has large, golden yellow flowers an inch in diameter—and very decorative rigid leaves. For the collector-botanist these plants are so sympathetic—their preparation is easy, as they can be dried very quickly for the herbarium. As it is a less known plant, let us bring all its used synonyms : *Geum calthifolium* auct. Japon. non Smith, *Sieversia calthifolia* auct. Japon., *Acomastylis nipponica* F. Bolle, *A. calthaefolia* var. *nipponica* Hara. Takeda for pot culture of this plant recommends a mixture of two parts of leafmould, one part of loamy soil and seven parts of river sand—and exposing of plants to full sun. Its culture is easy ; it can be propagated by seeds or by dividing of older clumps.

The second Geum, the miniature sub-shrub *Geum pentapetalum* (L.) Makino, grows in more damp crevices of rocks or sometimes on

sphagnum-bogs high in mountains on Honshu, Hokkaido, on Kuriles and Aleutian Islands. Its synonyms are *Dryas pentapetala* L., *Sieversia pentapetala* (L) Greene, *Geum anemonoides* Willd., *Sieversia dryadoides* Sieb. et Zucc., *Geum dryadoides* (Sieb. et Zucc.) Fr. et Sav. From these synonyms, which revocate names of Dryas and Anemone, we can imagine that this plant will be a lovely prostrate alpine and that it can be a plant of an especial interest to alpine gardeners.

In Japan it often has associations with Primulas from the section Cuneifolia—it is a good tip to make this combination even in rock gardens. Takeda writes also that on Hokkaido the double form (forma plena Miyabe et Tatewaki) has been recorded. On Mt. Shakotan *Geum pentapetalum* grows on rocky cliffs in moister crevices, full of humus. Takeda recommends (for conditions at Tokyo) for its pot-culture a mixture of 7 parts of sphagnum and three parts of leafmould and good peat, or in Osmunda roots. He also writes that it is possible to grow this miniature gem in a small basin, but in this case the grower must change the water twice a day in a hot summer. So he recommends placing the plants in sun, but protecting against drying winds ; in hot summer to use fertiliser carefully and apply water three times a day. In our much cooler conditions this plant is cultivated with less difficulty, acid soil is used with a good supply of food and with part of peat ; in North Bohemia it grows well in the same conditions as *Gentiana sino-ornata*—and also there is propagated by seeds. It is possible to propagate it also by layerings and cuttings. The Japanese name is Chin-guruma.

Only one plant we have met at the top of Shakotan in flower—it was *Oxytropis retusa* Matsumura, a very rare species, which inhabits only Southern Kuriles. Japanese authors mention this plant even from Kamtschatka, but recently this plant was not found again there. It is possible that in this case we met with some broader conception of a species and that the discussed plants from Kamtschatka can be *Oxytropis rubricaudex* Hultén or *O. kamtschatica* Hult. Our *Oxytropis retusa* is closely akin to *O. megalantha* Takeda, which is better known in culture and more often seen ; it differs from *O. megalantha* only by deeply excised standard. *Oxytropis retusa* flowers are bluish-purple, about 20 mm long, brought together into dense spikes. The plant is not usually more than 10-15 cm high.

Oxytropis megalantha grows—according to Ohwi—only on the small island Rebun (its Japanese name is thus Rebun-so). Voroshilov describes it even from Sakhalin. The specimens from Sakhalin were

in 1948 described as separate species—*O. austrosachalinensis*. Our *Oxytropis retusa* is truly a very nice plant, suitable for rock gardens. We have brought a satisfying quantity of seed and so can look forward to enriching our collection of Oxytropis. Seeds of these plants retain their viability for many years.

O. retusa Matsum. is a member of sub-genus *Euoxytropis* (Boiss.) Bunge, and of section *Orobia* (Bunge) Aschers. et Graebn., which is most rich in species. It has not fewer than 64 species in USSR alone. In this section our Oxytropis is placed in series *Ambigua* Vass., which contains species widespread from Caucasus and the eastern side of the Volga basin to Arctic regions, North America and mountains of Central Asia. On Mt. Shakotan it inhabits the most windy spots at the top, in conditions in which the severe winds from the Pacific Ocean brought out ground. It grew there in small free spots among grassy clumps.

The last interesting plant from Mt. Shakotan was *Arnica unalascensis* Less (fig. 32). (Jap. : Ezo-usagigiku). It is only a small plant, 10-30 cm high, with large, golden yellow heads, inhabiting Hokkaido, Kuriles, Southern Kamtschatka and Aleutian Islands—Unalaschka. On the largest island of Japan—Honshu—it grows in the Northern part in the alpine zone in a slightly different form, named var. *tschonoskii* Kitam. et Hara. Takeda recommends this variety for culture even in miniature rock gardens, if planted in pans or larger pots. It requires full sun and a good supply of water, but good drainage is necessary. He recommends for this Arnica a mixture of 2 parts of leafmould, 1 part of loamy soil and 7 parts of coarse river-sand. There are intermediate types between the typic plants and var. *tschonoskii*.

As we have written before, there on Shakotan were so many other interesting plants from a rock gardener's viewpoint—but to write on all that was collected would make this article too long.

From the rocky top of the mountain we did look at last at the Pacific Ocean, attacking below us the coastal cliffs—and returned with full rucksacks of collected plants and seeds back to the village of Malokurilskoje. Now many plants, which were raised from collected seeds, do remind us of the nice hours which we have spent there. Let us name several of them : *Sorbus sambucifolia*, *Mertensia pterocarpa*, *Oxytropis retusa*, *Geum pentapetalum*. The only pity is that the seeds of *Leontopodium kurilense* and *Geum calthaefolium* did not come up. But we must be content ; if all would be successful everywhere, perhaps the work of botanists would not be so interesting.

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SEED EXCHANGE 1972-73

THE Seed Exchange Manager would like to draw the attention of intending donors to the following, which is to be regarded as superseding the somewhat ambiguous statement appearing on p. 68 of the Club's *Journal* for April 1972.

Donations of seeds for the Exchange should be sent to the Manager (Dr. L. M. Dean, 9 Ledcameroch Crescent, Bearsden, Glasgow, G61 4AD) **so as to reach her by the 31st October 1972.** Seeds not ripe for harvesting at this time should be listed and the lists posted to Dr. Dean to arrive by 31st October ; otherwise it may not be possible to incorporate the items concerned in the printed Seed List of this Exchange. All late-ripening seed must, however, be mailed in time to reach Dr. Dean **not later than 28th December 1972** (by which time the Seed List will be in the post !)

Behind the Scenes in the Seed Exchange

by Dr. L. M. DEAN

THE Club's Seed Exchange, which Council regards as one of the most important services offered to members, entails for its Manager and her helpers a lot of hard work over nearly half of the year.

Seeds come in from all over the world : donors in Australia, Austria, Belgium, Canada, Czechoslovakia, Denmark, France, Germany both West and East, Iceland, Italy, Japan, the Netherlands, New Zealand, Norway, Russia, Sweden, Switzerland, Tasmania and

the United States of America contribute to the mass of seed ; home donors in the British Isles also do their share. Although much seed received is saved from plants in cultivation, there is always a proportion of seed collected in the wild. The importance of the latter can scarcely be over-rated, although among garden seed there are to be found items representing many species and forms which are unobtainable from the professional seedsmen.

Upon arrival in the Manager's hands, the individual consignments —which may arrive at the rate of over thirty per day—require to be checked, indexed (items and donors) and acknowledged. Members will appreciate the relief registered by the Seed Exchange workers when a consignment is found to be legibly (and unambiguously) named and listed. Individual packets of seeds are then transferred to temporary storage in packets (one per species and/or variety) which are deposited in alphabetical order in one or other of some sixty converted shoe boxes (lettered Ab to Zy !) stored on shelving in a dry room.

Once October is over (and, it is hoped, all the seeds and lists of 'seeds to follow' are to hand) a start is made on the Seed List. Most of this is done on a single typewriter, and although dangerously overheated bearings have not so far been detected, wear and tear on both typist and typewriter are considerable. Press day comes in late November ; then there is a short lull in this department until the galley proofs arrive for correction. This is the last opportunity for incorporating an addendum for late seed. Then back to the printers so that the finished Seed List will be available just before Christmas and in time for dispatch once the Christmas mail is cleared.

Meanwhile other team members have been packeting seed, sometimes having to clean it first ! One well-remembered item consisted of berries of a choice *Berberis* ; many seemed suspiciously empty, and a closer examination showed that the whole packet of some sixty berries yielded only three seeds ! The packeted seed is temporarily returned to the storage file under its name, but as soon as the Seed List is available in typescript the individual seed packet for distribution is marked with the serial number corresponding to its contents. Then these seed packets are 'filed' in numerical order in a series of subdivided "baker's boards" to be ready for the making-up of members' requests.

By the turn of the year, copies of the Seed List have been dispatched to all overseas members by air-mail, to home donors and to members who have sent requests accompanied by a stamped self-addressed

envelope (not smaller than 5½ ins. by 8½ ins.). Preparation for mailing these, in itself, entails a short burst of activity. At this time too, the last of the promised 'seed to follow' should have arrived and requires to be processed. It will be understood that seed arriving later than this is unavailable for distribution and may delay completion of members' seed allocations.

Once the New Year holiday is over, requests for seed begin to pour in from all airts, and allocation of seed against requests must begin—with overseas donors, home donors and other overseas members having priority. A great majority of applications for seed have been made out in strict numerical order : to all these applicants we are grateful. With the "baker's boards" arranged as they are about a very large table, with items numbered in sequence from left to right, it makes for less confusion when all the team members engaged in making up seed allocations are moving in the same direction. Dispatch of seed would be much slowed down if lists were made up without regard to ascending sequence. So please bear with us, those members who have found this request irksome.

Before dispatch each seed allocation is checked over against items requested—so that if you get items not asked for it is because your choice is no longer available : since some popular items are commonly in very short supply, it is inevitable that many applicants will suffer disappointment. On the other hand, some seed arrives at the Exchange in large quantities. So if you find a packet of one item with only six seeds and several hundred in another, remember that it is not careless apportionment, but rather the abundant availability of the latter item.

Packing, checking and dispatching of seed carries on almost daily throughout January : only in mid-February does the pace slacken. Then occasional late requests come in and are dealt with. In the course of the 1971-72 Exchange 169 home donors and 106 overseas donors contributed seed. Allocations dispatched against members' applications totalled 707 (overseas 419 ; home 288). All of these figures show a gratifying increase on those for the 1970-71 Exchange. Finally comes the disposal of surplus seed, chiefly through Group Conveners but also to institutions, mostly overseas.

The cost of operating this service has rocketed in the last few years —the past two especially. In the Seed Exchange 1970-71 the Seed List cost £0.35 (=35p) per head of active participants in the Exchange (i.e. members requesting and paying for seed). Although the steep rise in postage rates did not then affect the finances of the Exchange,

at the close of the operation it showed a 'trading deficit'. In the Seed Exchange 1971-72 the new postage rates had come, and with them the demise of the 'sample post' rate. The only hope for rapid delivery of seed was full Letter rate. A more careful avoidance of duplication of listed items (except in the category of wild seed) allowed the Seed List to be a little shorter than in the previous year, although in reality no less variety of seed was offered. This resulted in a saving on printing cost, but, more important, due to the reduction in weight of the List, the postal charges were less than anticipated, hence this year the Exchange closes with a credit balance. A single extra sheet added to the List would have entailed a 50% increase in Air Mail charges—with a consequent less happy financial outcome.

Members will see from the above how much the Seed Exchange depends for its functioning upon the arrival of seeds and lists of 'seeds to follow' in the hands of the Manager (Dr. L. M. Dean) not later than the end of October, and the actual late-collected seed not later than 28th December. These dates are set out formally at the beginning of this article.

Finally, to all who have sent in seed (and are preparing to do so for the next Exchange), we offer our most sincere thanks. Without your work there would be no Seed Exchange ! Thanks, too, to all who sent in orders without a single grumble. This encourages us : even more so have done your letters of thanks and appreciation : we all read them !

Millglen—A Scottish Garden

by M. R. STUART

(Reprinted, by permission, from the American Rock Garden Society *Bulletin* No. 4, 1968).

THE OLD village of Moulin lies on the lower southern slope of Ben-y-Vrackie (2750 feet) and is a mile from Pitlochry which is roughly at the centre of Scotland. The elevation of Millglen is approximately six hundred feet and the annual rainfall thirty-four inches. Snow cover in winter cannot be depended upon, and severe frosts of zero Fahrenheit have been experienced several times with little or no snow cover.

△ Fig. 31—*Symplocarpus renifolius* Photo—V. Vasak

▽ Fig. 32—*Arnica unalascensis* Photo—V. Vasak

Fig. 33—*Chloranthus japonicus* Photo—V. Vasak

Fig. 34—*Leontopodium kurilense* Photo—V. Vasak

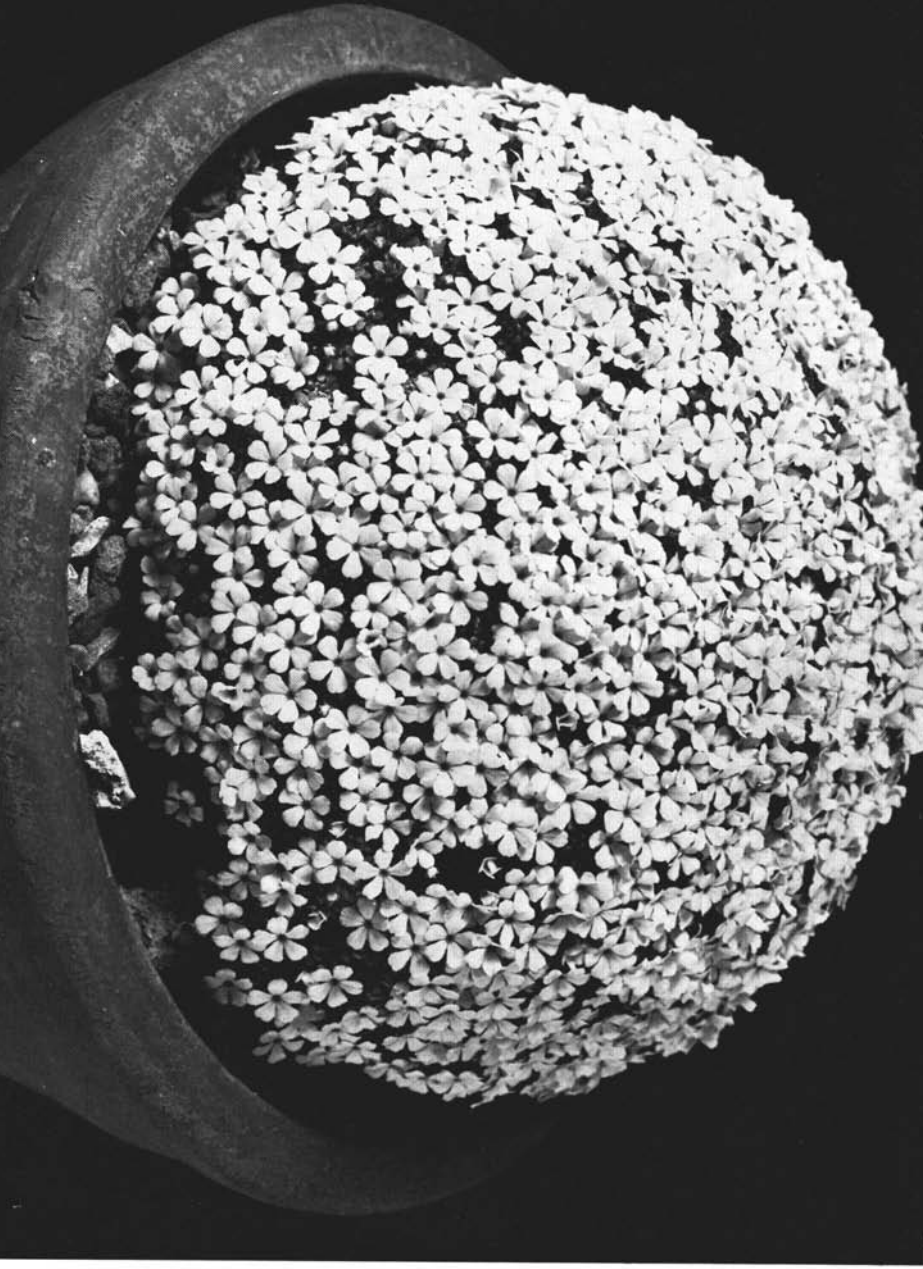

Fig. 35—*Androsace imbricata* Photo—John Watt

Late spring frosts of eight to twelve degrees Fahrenheit are, unfortunately, only too common.

Twenty years ago we bought a 17th century cottage (with 20th century plumbing) with a garden of half an acre in Moulin. Fourteen years later found us with a garden so full of plants, it was with great difficulty that a place could be found to plant one more bulb. A larger garden was essential, but with no wish to leave this lovely village we were doubtful as to the outcome. It was, therefore, with some excitement and relief that we eventually found a site at the upper limit of the village. Moulin has approximately two hundred inhabitants. There is a very old church, built on the foundations of an older one, previously destroyed by fire. Opposite the church is the Moulin Hotel, in bygone days a coaching inn ; inside, one can see old photographs of the 'four in hand' ready to start the journey over the moors to Braemar. The Moulin Burn flows through the centre of the village. In spring, children can be seen on the banks with home-made fishing rods, endeavouring to catch the wily small brown trout. In a storm this stream can change from a gurgling burn to a roaring torrent.

The two-acre site we acquired had been part of Moulin two hundred years ago. In the midst of a dense scrub of sapling elm and ash, brambles and nettles, two derelict cottages and several outbuildings remained as relics of human habitation. A millstream still cascaded down a tortuous course from an old and very dilapidated millpond, situated at the highest point of the site. From here, the water can be controlled and diverted down a rocky gully to the Moulin Burn which flows rapidly in its own deep ravine and marks our western boundary. It was, without a doubt, this clear water delivered to the pond from the slope of Ben-y-Vrackie that decided us to accept this challenge and make our garden here.

The garden is situated on a steep slope, open to the south. The first task was to clear the site. A very noble and ancient beech tree standing by the millpond and dominating the northern boundary was spared, as was an old apple tree rescued from the jungle of saplings, etc. The trees were quickly felled, but, as I write this five years later, my winter exercise is still the sawing up of this wood to burn during the winter months.

Clearing of the scrub soon let us know the areas from which gales and icy winds could be expected, and the planting of shelter belts was therefore a priority. The north boundary was, however, amply protected by existing woodland, but to the east, about two hundred

dwarf mountain pines, *Pinus mugo* var. *mughus*, were planted as a boundary fence. This is an alpine pine which attains a height of only ten to fifteen feet in maturity but becomes as broad as it is tall. To combat gales from the opposite direction, the west boundary was planted with taller conifers such as *Abies grandis* and x *Cupressocyparis leylandii*. The leyland cypress is of special interest as the only known hybrid between the two sections of cypresses—between *Cupressus macrocarpa* and *Chamaecyparis nootkatensis*. It was raised in 1880, is reputed to have the fastest growth of any conifer, and has inherited the extreme hardiness of *C. nootkatensis*. Propagation by cuttings is neither quick nor easy, and plants obtained in 1962 had been grafted; but today, thanks to the technique of mist propagation, this tree is much easier to procure. Our young trees are now twelve feet high by five feet in width and have never been burnt by our often severe spring frosts, as have young stocks of *Abies grandis*.

We have also used groups of pines for internal windbreaks comprising *Pinus contorta*, *ponderosa*, *strobus*, *banksiana*, and *sylvestris*.

Many deciduous trees have been planted to provide summer shade, colourful autumn foliage and fruit, and bark of varied hue and texture for winter effect. A collection of Asiatic, North American, and European *Sorbus* has been grouped to display their diversity of foliage and colour of fruits. Together with maples from North America and Japan, they end the year in a blaze of glory.

The birches, *Betula pendula*, *papyrifera*, and *albo-sinensis* are also grouped, but varieties such as the Swedish birch, *B. dalecarlica*, with finely cut leaves, and *B. verrucosa* 'Youngii', the weeping birch, are utilised as 'spot' plants.

An outstanding *Prunus* for winter effect, indeed colourful at all seasons, is *P. serrula tibetica* whose silky mahogany bark irresistibly compels fingers to stroke it and which, when it peels in translucent ribands and is viewed against the sunlight, needs no apology for its otherwise insignificant flowers.

As the windbreaks grow and provide their necessary shelter, so the making of the garden becomes more of a pleasure and less of a battle.

The rock garden is made partly within the walls of one of the derelict cottages. The soil was modified by the addition of peat, sand, and gravel, and sloped to simulate a scree. Ancient rough-hewn flagstones which had served as floor covering in the cottage, are now placed in the rock garden, making a winding path of stepping stones from the lowest to the highest point. Scree plants requiring perfect drainage are

planted at the top, others preferring moister conditions find a suitable home on the lower slope. The setting of the new house into a steep slope entailed much excavation and thus about eighty tons of good top soil became available for dumping on this site. The old cottage, like the new house, was set into the hill, so, after the removal of the front wall, the soil was sloped from the top of the rear wall to the foundations of the front. The rock garden faces due south and receives full sun.

Saxifrages have excelled (our soil is acid and no lime is added) and the position chosen for Kabschias and Englerias is well drained and lightly shaded from the midday sun. *Saxifraga diapensioides*, 'Faldonside', x *irvingii*, x *jenkinsae*, x *megaseaeflora*, *burseriana* 'Gloria', *b.* x *crenata*, and *b. sulphurea* have made hard symmetrical cushions eight inches across, smothered in early spring with flowers of white, pink, and yellow. *S. grisebachii* 'Wisley var.' has been growing here for three years. *S.* 'Bridget' has attractive rosettes which form a hard silver cushion and the pink flowers on four-inch stems are long-lasting. *S. kellereri* is the earliest to flower, opening in January if the weather is suitable. No protection whatever is given to these plants. Our native, *S. oppositifolia*, seeds itself profusely. Our plant was collected on Ben-y-Vrackie, where the crags above 2000 feet glow purple with its flowers in April. *S. longifolia*, and its variety 'Tumbling Waters', are grown in walls where their arching plumes of bloom and great silver rosettes are seen to advantage. *S.* 'Southside Seedling', a new cotyledon hybrid, has a red-spotted ring on the white flowers.

Draba dedeana, imbricata, rigida, oligosperma, and others are grown in very gritty soil in full sun on the highest point of the scree, but have proved more difficult to accommodate than the Kabschia and Engleria saxifrages. Sunny frosty mornings damage the cushions, so to protect them, a large shrub of *Stranvaesia davidiana* was planted.

Petrophytum hendersonii and *Geum* (*Sieversia*) *pentapetalum* enjoy full sun with their backs against a rock. The autumn colours of the geum are magnificent. *Phyteuma comosum* has a west-facing crevice and produces its curious blue clusters of flowers with gratifying regularity.

Edraianthus pumilio and *Wahlenbergia* (*Edraianthus*) *serpyllifolia* are grown high on the scree, also in full sun. Although their flowering period is of short duration, the blue, wide-open flowers, which look straight up at one and completely cover every leaf, are outstanding.

Gentiana acaulis and named hybrids planted on the lower level where

scree blends into moister richer soil present no problems and after the main spring show are rarely without the odd blossom. *G. sino-ornata* and *G. s.* 'Brin form' are major plantings for the autumn garden. These are lifted and replanted in enriched soil every three years. *G. verna*, too, grows and flowers profusely, always producing a few self-sown seedlings. Each plant lives and blooms for approximately three years, and weeding around these plants in April is done very carefully as it is then that the tiny seedlings appear. Other gentians such as *Gentiana farreri*, 'Caroli', 'Glendevon', 'Inverleith', and 'Devonhall' are not so easy, as they definitely require replanting in fresh ground every two years to keep them strong and healthy.

We are very interested in the New Zealand genus *Celmisia* and grow as many different varieties as we can procure. Included in the collection are *C. spectabilis*, *rigida*, a silver-and-gold-leafed form of *coriacea*, *sessiliflora*, *gracilenta*, *argentea*, *hectori*, *bellidioides*, and others unnamed from seed. Before the publication of *Rock Garden Plants of the Southern Alps* by W. R. Philipson and D. Hearn, in which the habitat of *Celmisia* is described as very moist, most plants in Britain were grown on warm, well drained slopes, possibly because of generally experienced adverse effect of our damp climate on felt-like hirsute leaves. It was decided to test this by placing *C. spectabilis* right at the water's edge. Some of our visitors saw this planting during the first summer and bluntly said that it would not survive a winter. However, this celmisia is healthy and very vigorous, perhaps more so than those on the drier slopes of the rock garden. Philipson and Hearn also state that as the leaves die they form a natural moisture-retaining mulch over the roots. But, as it happened, it was a mistake in this garden. The vole (*Microtus*) made a cosy winter home hidden under the leaves and fed off the succulent stems. Now, the dying leaves are removed and the plants top-dressed in spring with a mulch of peat mixed with hoof and horn fertilizer. One thing is certain, they resent drips from overhanging trees but do not object to rain and cold.

Celmisia longifolia from Australia succeeds, too, and is a most attractive plant with rosettes of thin silver leaves four inches long. It has many single, pink-backed daisies on six-inch stems. It propagates by runners, popping up six inches or so from the parent plant, but is not rampant.

Behind and above the rock garden is a remnant of a small ruined stone out-house. One of the walls has been closely planted with sempervivums which clothe it like tapestry with all the muted colours

of a Persian carpet. Within the suntrap of the remaining walls three terraced beds give the extra warmth and drainage necessary for choice small bulbs such as *Narcissus bulbocodium romieuxii, N. b. monophyllus, Rhodohypoxis* and many others. This situation has also favoured *Viola pedata.*

The peat beds, which face west, are at a lower level than the rock garden. Behind them and above, the stream cascades from the higher slopes and water constantly percolates through its banks to irrigate the peat beds. It is well drained, too, for beyond the path which skirts it, there is a drop of eight feet into the Moulin Burn.

The moist soil, rich in humus, makes a happy home for many rare, beautiful but difficult plants. Interspersed with trilliums and erythroniums from North America are soldanellas from the Alps. Likewise, *Cypripedium reginae* finds a congenial neighbour and welcome cover for its roots in *Corydalis cashmeriana.* The ericaceae in particular, with the diversity of shape and habit, and wealth of bloom over a long period, make the preparation of a special bed well worth while.

Favourites at Millglen are many varieties of *Cassiope, Vaccinium, Phyllodoce, Arctostaphylos, Shortia* and *Schizocodon.* Over the past twenty years we have been able to acquire a collection of Japanese schizocodons and shortias. Those grown are :

Schizocodon soldanelloides
S. s. alpinus
S. s. magnus carnea
S. s. ilicifolius
S. s. i. alba
S. s. rubrifolius (*minima*)

Shortia uniflora
S. u. grandiflora
S. u. g. 'Attraction'
S. u. g. 'Snowflake'
S. u. g. rosea

S. galacifolia, the sole North American species, and its hybrid with *S. uniflora, Shortia intertexta* 'Wimborne' is also grown.

Throughout the year their leaves change in colour from shiny green to crimson and gold and always with a metallic sheen. The Japanese name for these plants is approximately 'Mirror of the Skies'. When transplanted from our last garden, they were placed in a temporary bed, as the site of the present peat bed was piled high with

logs. The plants survived, but did not thrive. The temporary site, the only possible one at the time, was too exposed to sun and wind. In autumn 1962, the logs were removed. The ground was then well dug and enriched with peat and hoof and horn fertilizer and the plants removed to their present position. They responded almost immediately with renewed vigour and beauty. Seed has been sown with no success, but suitable rooted layers are now available for propagation this year.

A small lawn set between the old ruined cottages, towards which all paths converge, we named the 'Village Green'. The stream skirts the north side close to the walls of the 'Rock Garden Cottage' whose construction shows evidence of the use of water power to turn wheels or a lathe for some long-forgotten cottage industry. Well worn stone steps lead down to a pool which was then the sole source of water for all purposes. These old steps have been preserved and still retain their usefulness when watering cans have to be filled. Within the shelter of the reduced walls of the second cottage on the opposite side of the lawn more tender plants are accommodated. A collection of variously coloured kniphofias ranging in height from eighteen inches to six feet are planted here. Proving much hardier than expected is *Crinodendron hookerianum* (*Tricuspidaria lanceolata*), while *Camellia* x *williamsii* 'Mary Christian' bloomed for the first time last year and has made flower buds for this season. The original small beds around the cottage are planted with lilies, paeonies and the large *Fritillaria imperialis*, both red and yellow. The moisture loving climber, *Tropaeolum speciosum* twines through the original covering of ivy, clothing the ancient stones with a riot of scarlet bloom in autumn.

In front of the south wall a lightly wooded plot has been maintained for extensive plantings of *Helleborus* and *Meconopsis*. Beneath flowering cherry trees and open bushes of *Enkianthus*, these provide a ground cover which has interest throughout the year.

The many species of *Helleborus* (Christmas and Lenten roses) are invaluable for winter and early spring display. The bold foliage and green flowers of *H. corsicus*, *foetidus*, *cyclophylla*, and the small deciduous *viridis* blend with the white flowers of *H. niger*. Later to bloom is *H. orientalis* in various shades of white, pink, and purple, some spotted and splashed with crimson. Among those grown are *H. niger* 'Potter's Wheel' which has huge white flowers measuring four inches across ; *H. n. altifolius* and *H. n. macranthus* with white flowers fading to pleasing shades of old rose, but smaller than those of *H. n.* 'Potter's

Wheel'. A recent acquisition is *H.* x *torquatus* which has not flowered here, but is reputed to be of varying shades of blue, and has been called the 'Blue Christmas rose'. An interesting hybrid, *H.* x *sternii*, is a cross between the very hardy *H. corsicus* and the tender *H. lividus*. The leaves are grey-green with slight marbling, the reverse side being rosy pink. The green flowers are also tinged with pink. This plant is not as hardy as the others and is planted in a warm, sheltered position.

Meconopsis grows well and our best blues are *M. grandis* 600, *M.* 'Branklyn' and *M.* x *sheldonii*. *M. grandis* 'Prain' is crimson in bud. A good white is *M. g. alba* which is a useful plant to separate the coloured varieties. All the above are perennial.

The monocarpic species are well worth growing but are less popular as they take from three to five years to bloom from seed. Nevertheless, some gardeners are sorry to see them bloom, for then their handsome rosettes of downy gold or silver leaves die. Those grown are *M. napaulensis* S. S. W. pink form, which grows seven feet high here ; *M. aculeata* and *M. horridula* which have blue flowers but only grow two feet in height. The latter are deciduous and care has to be taken to mark their position, to prevent damage to their crowns when tidying up in spring. The same applies to *M. integrifolia* whose soft yellow flowers can measure four inches across. Originally seed had to be sown each year in order to have plants in all stages of growth, but now self-sown seedlings are appearing in places that suit their needs. Gardeners with a penchant for tidiness, wielding the hoe over every inch of soil, seldom receive this bounty.

On the lower slope where the original canalised stream has been reformed with pools, riffles, and waterfalls, the continually moist margin provides natural conditions for water-loving plants. Among the many Asiatic primulas which seed themselves freely are *Primula pulverulenta, waltonii, sikkimensis, florindae, ioessa, yargongensis*, etc. Other showy and interesting primulas are *P. rosea* 'Delight' and the fragrant Japanese *Primula sieboldii*, the latter in drifts of blue, pink, and white, and white with carmine reverse. *P. parryi* also grows well, giving colour later in the season.

After dividing the petiolarid primulas *P. gracilipes* and *P. scapigera*, which grow in the peat bed, some small plants being left over, were planted by the waterside where the constant availability of water has resulted in superior growth and bloom. When spare plants are available of *P. whitei* (*bhutanica*) and *P. sonchifolia*, they too will be planted here.

Ourisia caespitosa gracilis, from New Zealand, makes a hard prostrate mat of shining green, enveloping the large stones at the water's edge, while the dainty white flowers on two-inch wiry stems bloom over a long period.

One plant that literally cannot be overlooked is the giant *Gunnera manicata* from Brazil which exceeds ten feet in height here. For frost protection when young a straw covering was necessary, but now as the huge leaves collapse after the first hard frost they are draped over the crown and give all the protection required. Nearby, for contrast, we have planted the miniature three-inch *Gunnera magellanica*.

The banks of the stream are also furnished with various willows, including the prostrate species, *Salix reticulata, retusa, apoda, herbacea*, and the taller shrubs, *S. lanata, hastata* 'Wehrhahnii', and *fargesii. Iris kaempferi, pumila*, and *gracilipes* add contrast in foliage as well as colourful blooms. At the water's edge are *Lysichitum americanum* and *L. camtschatense. Mimulus lewisii* spreads rapidly and has to be restrained, for self-sown seedlings are even appearing outwith our boundary. Aquatics include *Nuphar advena* and *Iris laevigata*.

The streamside garden is always lively. Mallard duck return each spring to nest, and throughout the year the dipper (*Cinclus cinclus*) flies busily up and down the water course, closely between banks, but often 'taking to the road' and walking the stream bed, completely submerged. A heron, too, although less welcome to the trout, has a favourite observation post at the head of a pool.

The fern garden is bounded on the north by a steep rocky gully through which surplus water cascades to the lower Moulin Burn. Constantly moist with spray and shaded by a light canopy of native ash, elm, and hawthorn species from Europe, Himalaya, North America and Japan, ferns luxuriate among mossy stones. Equally happy in this situation are *Romanzoffia sitchensis* and *R. unalaschensis* (Mist Maidens) raised from A.R.G.S. seed. Other congenial companions are *Parnassia palustris, P. nubicola* (Grass of Parnassus), *Pyrola media, secunda*, and *asarifolia*, and *Moneses uniflora*.

The old mill pond is roughly pear-shaped, the inlet being the narrow end. It is 140 feet long by 50 feet at the widest point. The pond can be reached from the fern garden by following the gully up very steep steps, or by a gentle, tree-lined slope through the main garden. A new dam has just been built and the pond refilled. Banks have been left for the planting of shrubs and moisture-loving plants. A gravelly bay near the shallower inlet has been devised for aquatic

plants requiring this medium. At the dam the water is five feet deep. To break the expanse of water and to induce our wild duck to nest in safety, an artificial island supported on piles and covered with turf and brushwood has been made.

Throughout the rock garden, dwarf and slow-growing conifers have been placed at strategic points as focal points of interest. Among treasured varieties are : *Abies balsamea* 'Nana', after twenty years this is now fourteen inches high and twenty-four inches across, with dark glossy green foliage ; *A. lasiocarpa* 'Compacta', eighteen inches high, and a very slow-growing densely-branched conical tree with attractive blue-green foliage ; *Juniperus communis depressa* 'Aurea Nana', an exceptionally fine prostrate form. In spring the colour of this dwarf is brilliant gold, turning to bright green in summer, and changing to russet in autumn. This is a much better form in every respect than *J. c. d.* 'Aurea'. *Juniperus recurva* is an outstanding, graceful little tree with rich green foliage and very pendulous whip-cord branches. A rooted cutting received fifteen years ago, from a twenty-eight year old tree measuring two feet high by three feet wide, is now eighteen inches high by twenty inches wide. The species, *J. recurva coxii*, known as the ''Chinese Coffin'' tree, has been planted where it can remain to reach its full stature which, in its native land, exceeds eighty feet. *Microcachrys tetragona*, a unique Tasmanian usually given alpine house protection, has been growing here in the open for twelve years. It regularly sets its tiny red cones.

As time goes on the collection increases and a special site has been constructed to permit more natural groupings. This has been done by terracing one of our many slopes, the retaining walls being built of field stones interspersed with blocks of peat dug from bogs on the moorland. The slope is to the west and the terrace walls provide shelter from the morning sun after spring frosts. Representative genera include *Abies, Cedrus, Chamaecyparis, Cryptomeria, Juniperus, Picea, Taxus, Sequoia*, and *Thuja*. Ground cover among these little trees are provided by three species of cyclamen : *C. europeum, neapolitanum*, and *coum*, which increase steadily by self-sown seedlings. On the terrace walls masses of *Lewisia cotyledon* hybrids are planted in crevices. *Lewisia tweedyi*, grown from A.R.G.S. seed, has pride of place.

Dwarf pines grow among hardy rhododendrons of the Lapponicum series on another west-facing slope adjoining the rock garden, which is also terraced. These include *Pinus pumila, P. aristata, P. parviflora,*

P. sylvestris argentea, *P. s.* 'Beuvronensis', *P. s.* 'Viride'. Rather larger than "dwarf" but slow-growing is *Pinus sylvestris* 'Aurea', which, after eleven years, has reached six feet in height. The needles turn golden yellow in autumn, changing again to grey-green in spring. It is a curious fact that each leaf must, of course, repeat these changes twice or thrice before falling.

So many trees and shrubs have been mentioned here, and these only a selection from the total, that I fear I may have given the impression that we have returned to the state of congestion that literally squeezed us out of our previous garden. Indeed, if all present plantings remained this would become inevitable.

However, some method has been contrived and trees and shrubs with a long expectation of life have been suitably spaced, and the present wide areas between planted with short-term subjects. As the definitive plantings mature, space is easily released for them. In the meantime they provide shelter for each other and removals, when they become necessary, open up new "mini-vistas" and mark the continuing development of the ultimate garden.

A Groundwork for Shrubs

by K. S. HALL

WHETHER it be in a stretch of natural woodland or in a border containing two or three small trees with shrubs amongst them, the gardener is faced with the problem of covering the ground between the larger plants. The woodland can usually be left to itself for natural regeneration of grasses, ferns and flowering plants to form the lowest layer of vegetation, but in a small area one cannot risk leaving bare spaces to be filled by any chance wind-blown seed. To avoid the wearisome job of constant hoeing, and to imitate the natural layers seen in any deciduous woodland of trees providing broken shade, with shrubs forming thickets of medium height and a carpet of low-growing plants, the gardener must introduce this lowest layer himself.

This may, to the purist, seem outside the scope of an article for rock gardeners, but there are many plants offered by alpine nurserymen which are out of place in the rock garden proper yet ideally suited for ground cover in this type of border. In addition, this combination of

plants forms an excellent background to the rock work and is a natural and satisfying feature in the garden.

First, however, one must give a warning about this term 'ground cover', for there are plants advertised for this purpose which can become a menace in a very short time. Of these one can mention *Galeobdolon luteum variegatum*, a yellow-flowered creeping deadnettle with beautiful white and green foliage, a really lovely evergreen carpeter for large spaces, but one which will make a take-over bid in a small area, climbing up into shrubs and spreading far and wide unless the long trailing stems are cut drastically each winter.

Where the shade is dense few plants are happy, though ferns can be tried if the soil is sufficiently moist. It was Gertrude Jekyll who liked to plant ferns and bulbs together so that the fading leaves of the bulbs are hidden by the unfolding fronds of fern. But the light shade of small deciduous trees is relished by many species which have attractive evergreen foliage and give an added bonus of blossom. Of these, one of the most valuable is *Helleborus orientalis* in its many forms, with flowers ranging from creamy white through dusky pinks to deep purples, sombre perhaps, but most attractive even when fading. It blooms early in the year and later its dark palm-like leaves on foot-high stems will flop in a wide circle, covering the soil and keeping weeds at bay. Planted with it *H. foetidus*, with more finely cut leaves, provides a contrast with its yellowish green shoots appearing before the end of the year and opening into clusters of green flowers tipped with purple. In most gardens these are easier than *H. niger*, the Christmas Rose, and form a better cover.

Bergenia (Megasea) is an old fashioned plant now coming back into popularity. It enjoys open shade and forms mats of large leaves, usually of a shiny dark green which in some forms turns through vivid red to purple in winter. In spring it sends up strong stalks with clusters of flowers in varying shades of pink or mauve. There are several good hybrids and either these or the species are worth growing, though *B. ciliata* may be tender in some gardens.

Many of the hardy geraniums will form a valuable carpet among shrubs, probably the best for this purpose is *G. macrorrhizum* which roots as it spreads. Its light green leaves have a pleasant fragrance and turn a brilliant red in autumn. The flowers vary from pink to magenta and Ingwersen's variety can be recommended as a good clear pink. *G. grandiflorum* is another spreading species with blue-violet flowers which will grow in half shade, as will *G.* 'Johnson's Blue' and

G. endressii 'Wargrave Pink'. All these are deciduous.

Amongst the most graceful of shade lovers are the various species of Epimedium or barrenwort. The stems are about 30 cm high, erect and wiry, bearing three or more thin stiff leaves at the top, amongst them the flowers rise in delicate sprays, yellow in the case of *E. pinnatum* and *E. perralderianum*; both are evergreen and for this reason more valuable for our purpose than the deciduous species and hybrids. The clumps increase rather slowly but can be spread by division.

An excellent semi-deciduous carpeter is *Oxalis oregana* which will grow close to, and even under shrubs, forming patches of bright green clover leaves above which rise cheerful pink flowers. Unlike many of its relatives, this never becomes a nuisance and it is surprising that it is not seen more often.

Two other valuable woodland plants from America are *Tiarella cordifolia* and *T. wherryi*. The former spreads by stolons and quickly forms a wide flat carpet of lobed, slightly hairy leaves which turn bronze, or in some cases pink, in autumn and remain all winter. From these rise 9 inch (23 cm) spikes of little creamy flowers which give the plant its colloquial name of 'Foam Flower'. *T. wherryi* forms a clump of leaves with darker markings on them and taller spikes of pink flowers, but does not send out stolons, so it has not the same value as a carpeter. *Tellima grandiflora* from western North America also thrives under trees forming mats of hairy leaves which turn russet in winter. The flowers are insignificant, being little creamy-green bells on stems 60 cm high, but it sets a generous quantity of seed and the self-sown seedlings quickly cover bare ground.

It is always a matter for surprise when plants from the Middle East settle contentedly in our variable climate, but one which always looks perfectly at home is *Euphorbia robbiae* from Asia Minor. It was found by a dauntless Victorian traveller, Mrs. Robb, who brought it back to Constantinople in her hat-box, having, so the story goes, decided that it was of more value than her best hat. So 'Mrs. Robb's Bonnet' it became and botanists honoured her with its specific name. The dark, glossy evergreen leaves alternate up the stem to about 30 cm, becoming close together at the top and appearing to form tight rosettes. Above these rise, in spring, clusters of yellow-green flowers. It spreads by suckers and seed but is easily controlled.

Provided the soil is moist, Pulmonaria or lungwort will stand plenty of shade, though it undoubtedly flowers more freely in a sunny open site. Four species are grown, any of which will form large clumps.

The earliest to bloom and perhaps the one least often seen is *P. rubra*, with bright green leaves and clusters of coral-coloured flowers from February onward. This is followed by *P. picta* and *P. officinalis*, both having dull green, hairy leaves with white blotches, the former long and narrow and the latter more rounded. The clusters of flowers in each case are pink in the bud, opening to mauve and blue. The fourth species, *P. angustifolia*, is deciduous, but the flowers are of the purest brilliant blue, a colour to gladden the eye as winter turns to spring.

Omphalodes verna also has vivid blue flowers, coming a little later. It runs about freely, rooting as it goes and sending up sprays of forget-me-not flowers even under shrubs. Though deciduous, it keeps its heart-shaped leaves till late in the year and justifies its place as a ground cover plant.

Although the Hostas from Japan and China turn gold in autumn and drop their leaves, they merit a place on this list as they can be grown among any of the plants already mentioned and will send up their magnificent foliage in spring, providing a contrast of form and texture which is wholly satisfying. Any shady spot with moist soil will suit them. *H. sieboldiana* (grey-green), *H. fortunei marginato alba* (with white-edged leaves) and *H. f. aurea* (gold leaves turning green later) are amongst the most handsome and all send up in summer one-sided spikes of lily-like flowers in varying shades of lilac.

Particularly suitable among rhododendrons are two of the Ericaceae, Gaultheria and Vaccinium, both of which have small urn-shaped white or pink flowers followed by attractive berries. *G. miqueliana* and *G. cuneata* form wide clumps up to 30 cm high carrying large white berries in autumn and having small glossy leaves. *G. procumbens* is only about 10 to 15 cm high and has oval leaves which turn copper-coloured in autumn, its berries are bright red and there appear to be two forms, one of which has larger fruit than the other. It spreads by stolons, forming a very attractive carpet through which small bulbs, particularly *Narcissus cyclamineus*, will grow happily in spring. Our native *Vaccinium vitis-idaea*, the cowberry, with its shiny evergreen leaves, not unlike those of box, and its red berries, will form a solid weed-suppressing carpet, but some of the other species are not entirely hardy.

For the first year or two after planting ground cover weeds may be troublesome, but once the plants have spread and knit together they should prevent the germination of unwanted seed. No mention has been made of the open spaces at the outer edge of the shrub border

where there is more light and air and where a wide range of ground-covering plants can be grown. Further ideas may be gleaned from the following books :—

Plants for Ground Cover : G. S. Thomas
Ground Cover Plants : Margery Fish
Gardening in the Shade : Margery Fish
The Woodland Garden : Judith Beresford

Plant Notes

CROCUS MEDIUS

APART from the autumn gentians, I think *Crocus medius* was the showiest plant when I went round the garden this afternoon—24 October 1971. The leaves do not develop till after the flowers are over. The flowers are 2 or 3 inches high, and are much sturdier than many of the other autumn flowering crocus species which tend to be bashed and flattened by wind and rain. In spite of coming from the Riviera it is perfectly hardy ; ten days before the day I am talking about we had two nights with 10 degrees of frost. The flowers are a good size without being blowzy. They are lilac outside and purplish-mauve inside, and the petals are attractively veined.

I find it does well in a sunny scree, and it increases quite well.

Pitlochry. M-L.

HYPERICUMS—AND A MILD WINTER

IN MY garden most of the genus Hypericum are something of a gamble for they seem to be balanced very delicately on the knife-edge of hardiness. I planted *H. olympicum* and *H. polyphyllum* in one bank some ten feet or so apart, but I suspect the "bees got busy" for I seem to have a range of leaf-types. However that may be, normally they seed fairly freely and usually a few seedlings and occasionally a bigger plant manage to come through the winter, so I have two or three moderate sized plants to flower in late July each year.

This year, however, I have a solid bank of *Hypericum* spp. (and hybrids ?), some eight to ten feet long by four feet wide, and dozens of seedling plants for twenty or thirty feet beyond that, dotted here and there. I can only assume that the very mild winter with very light

frosts only was just about the maximum winter conditions they can tolerate, at any rate in my garden, so that *all* have come through—and I now have a completely new weeding problem, for their roots are remarkably tough !

Midlothian. H. T.

PRUNELLA VULGARIS—A WARNING

I HAVE a path composed of approximately a scree mixture through the middle of my rock garden and, some years ago, I noticed that here and there rather neat mats of plants with clear blue flowers were showing in the path. This plant I identified as 'Self-Heal', *Prunella vulgaris*, and I thought it looked rather well and left it alone.

On weeding over my rock garden this summer I have taken out quite literally several barrow-loads of Prunella which has laced itself into and through almost every plant on the bank. As almost all these plants are down-wind from where the original plants were growing, I think the seed must be wind-distributed, but whether that is the case or not I would warn members against letting this very attractive—and apparently suitable—native plant get any "root-hold" in or near their rock garden.

Midlothian. H. T.

EARLY PROPAGATION OF ANCHUSA CAESPITOSA

ON THE occasion of the Harrogate Conference of April 1971 I had the pleasure to take part in the Garden Tour from England to Scotland. In the R.B.G. of Edinburgh—I'm always dreaming of this wonderful garden and hope to see it again—I was kindly given a little plant of *Anchusa caespitosa* by Mr. John Main from his private Alpine House.

During the terrible hot and dry summer of 1971 I kept my *Anchusa caespitosa* near the glass in the alpine house with very little water, observing it closely. While most of the other plants were suffering from the heat, particularly in the autumn, the Anchusa looked very satisfied. It overwintered very well and at the end of January the new shoots were visible. After having removed the yellow leaves, the rosettes were so well separated that I took the risk to divide the plant and to take a cutting, because I wanted to have some plants ready to plant under different conditions in spring. The three divided plants flowered from the beginning of March to the beginning of May. One

of these plants was kept in a pot, another planted out in the alpine house and the third was divided after flowering into two small plants, which are showing the first new shoots.

The cutting taken in January rooted fast and is now beginning to flower, although I take the flower buds away to let it grow a little more. Later I shall try one plant in the open scree and another in a calcareous wall in full sun.

Actually the Anchusas are the pride of my little alpine house and delight my friends and visitors.

I must perhaps say that the climatic conditions here seem to be very good for Alpine plants. My garden lies at 650 m above sea-level, in the sub-alpine region ; we have the strong mountain-sun, much wind from the south (the famous "Föhn", excellent for wine, but very bad for an unprotected garden and tall perennial plants) and usually much snow in winter, with the exception of the winter of 1971-72. Therefore I don't know if the early division of *Anchusa caespitosa* was only possible because of the very mild winter.

Oberschan, Switzerland S. B.

TULIPA TURKESTANICA

Tulipa turkestanica (fig. 36) is a small-flowered branching tulip with up to 7 flowers on one stem, but usually less. The flower is star-like when open, white, flushed on the outside with cream and gold markings, has a yellow blotch in the inside and dark purplish anthers. The leaves are long, narrow and slightly glaucous, stem slender, height up to 1 ft. Flowering early March/April.

T. turkestanica is closely allied to *T. biflora* but has slightly larger flowers and is a better and more vigorous plant for the rock garden.

Many tulips, coming from hot arid regions, need a thorough summer baking to make them flower. *T. turkestanica* seems to flower without this treatment, but an open sunny situation with not too rich a soil and excellent drainage should be chosen.

Midlothian S. M.

CELMISIA CORIACEA (Forst. f.) Hook. f. (Compositae)

Celmisia coriacea is the type species of the sub-genus Pelliculatae, according to the latest classification. In the same series are *C. dubia* Cheesem., *C. insignis* W. Martin, *C. monroi* Hook. f., and *C. morganii* Cheesem. (G.C. 32 [1902] 191) refers.

Fig. 36—*Tulipa turkestanica* Photo—Duncan Turnbull ▷
First Prize in Photographic Competition

Fig. 37—*Salix reticulata*

Photo—John Watt

DIONYSIA CURVIFLORA

It is a tufted herb and forms large clumps (see fig. 39). Its sheaths are densely compacted to form a thick pseudostem. The plant shown has leaves 230mm (9 ins.) long × 30 mm (1¼ ins.) wide, although in nature this plant is sometimes found with leaves up to 600mm (24 ins.) long × 100 mm (4 ins.) wide. Although the plant illustrated has the upper surface of its leaves covered by glistening hairs which give them an attractive silvery appearance, the plant is extremely variable and there are forms which appear to have green leaves, the pellicle being less conspicuous.

Its distribution is widespread in the South Island of New Zealand where it is found in alpine herbfields and fellfields.

In cultivation it is an extremely desirable plant and looks well at all times of the year, whether or not in flower. It is especially attractive during winter months if well placed in the rock garden when the sun is bright and low, because not only is the silvery pellicle highlighted, but the thick white tomentum on the underside of the leaves will also reflect the light. It is generally easier to grow in cooler climates and should not prove difficult in any part of Britain if given the correct conditions. It is understood that it is more amenable in cultivation in the North of England and in Scotland than in lowland gardens of New Zealand where hot dry conditions can be fatal to it.

Propagation in the North is simple. Pseudostems are removed at the base in the spring and plunged into pure peat in the open garden. Provided the ground is not allowed to dry out for long periods, roots will form and new plants will develop from these pieces. The same should be true in the South, where a more shady position may be necessary, although the plants may need to be moved into an open sunny position after they have developed in order that they can flower freely.

Darras Hall G. I. M.

GROWING PYXIDANTHERA

IN THE September 1971 issue of the "Bulletin of the Alpine Garden Society" there appeared an excellent article by John Osborne about the New Jersey Pine Barrens in which he laid much stress on the necessity of mycorrhiza for the life of *Pyxidanthera barbulata.*

Before I had time to forget the point about the mycorrhiza, I received a gift of a small plant of *P. barbulata* with clean roots, very

◁ Fig. 38—*Dionysia curviflora* Photo—G. I. Merelie

◁ Fig. 39—*Celmisia coriacea* Photo—G. I. Merelie

little soil adhering to them. My problem was to preserve, and encourage the growth of, any mycorrhizal mycelium present.

Knowing that Rhododendrons depend on a mycorrhiza, it occurred to me that soil surrounding their roots could contain elements useful to the mycorrhiza associated with Pyxidanthera—more than this could not be expected.

I collected soil from around a Rhododendron and some from a Pine wood in imitation of Pine Barrens soil. To this mixed soil was added sand and peat in the proportion : one part peat, one part sand, two parts soil.

The Pyxidanthera was planted in a five-inch pot of this compost, covered with a well-fitting mini-cloche and plunged to the pot rim in the cold frame. Aside from very occasional watering no other attention was given. The plant remained healthy through the winter and made a little growth. In March buds appeared and throughout April the plant was covered with flowers.

As a result of one experiment too much must not be claimed. A certain degree of encouragement is justified in view of the fact that several attempts have been made over the past ten years and on at least two occasions a healthy plant has been maintained for about two years under continuous cover with a small cloche, though no flowers appeared.

Rowardennan F. E. S.

Do You Realise . . .

that those members who pay their subscription for 1973 by Deed of Covenant are promised that their subscription rate of £1.00 will be adhered to for the seven years that the Deed operates, even though the subscription rate for members is increased.

Rock Gardening "from the ground up" - IX

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

IN THE course of these articles screes and scree beds have been mentioned a number of times and actually their composition, lay-out and construction should have been dealt with sooner.

As was mentioned earlier scree as found on the hills consists of rocks and rock fragments of varying sizes with, particularly at depth, "juvenile" soil admixed. This consists of the finer weathering products of the rock mixed with recently added organic debris, the mixture forming a newly-formed soil which is rich in nutrients. The movement of rain water percolating down through the rock fragments and also water moving through them from higher up the slopes tends to mix these materials and to move them down to a point where their further movement is halted by the underlying rock. If, now, a plant begins to develop among the upper layers of the scree, its roots will gradually develop downwards gaining their nourishment from the films of the components which are being gradually moved down by the water, and ultimately they will reach the deposit of juvenile soil at depth where there will be a good, readily available supply of nutrients. By this time the plant will be firmly held by these deep-ranging roots and it will have every chance of prospering, well-fed and securely anchored.

Very obviously no gardener can wait for such a "set-up" to develop so an approximation must somehow be produced. The characteristics of scree are (1) very complete rapid drainage in the surface layers, and (2) feeding at depth. For these conditions the two scree mixtures mentioned in Part I of this series were introduced. It will, perhaps, be best to repeat the details of these.

FARRER'S MIXTURE

16 parts granite or whin chips, 1 part loam, 2 parts peat or leaf-mould, 1 part sand.

BOOTHMAN'S "RICH SCREE' MIXTURE

2 parts chips (granite or whin), 1 part loam, 2 parts peat or leaf-mould, 1 part sand.

Farrer's mixture, as I have mentioned elsewhere, was devised, I suspect, for a wet area and is, in my view, rather too extreme in its sharpness of drainage for more average conditions. The mixture introduced by Stuart Boothman will, in my experience, grow almost anything up to really tricky and difficult plants. Though it contains only one-third of the total as chips, as opposed to four-fifths in the other, the same effect of really sharp drainage at the neck of the plant is produced, as the rain washes the other components downward leaving the top layer of chips as required. Obviously a mixture somewhere between these two extremes could be used, say with 4 parts chips, 1 loam, 2 peat, 1 sand, giving a 50% chips mixture.

I have mentioned earlier that in a sloping rock bank this can be used as a filling, starting narrow and deep, at or near, the top of the bank and sweeping down, gaining width but becoming shallower in depth as the foot is reached. Preferably it should have some sort of an irregular curving outline, otherwise it may look too much like a slice pushed into the main run of the bank. Scree mixture can, of course, be used in beds on the flat as I have also mentioned earlier, but in that case real care must be taken to see that there is a clear outlet for drainage at the very bottom, for there must be no chance of stagnant water lying in the lower layers after heavy rain—this is, obviously, of much less importance for a scree on a slope.

While the foregoing are the details for what may be called a fully-developed scree, if the ordinary garden soil is light and reasonably free-draining, quite an effective compromise can be made by loosening the surface of the soil and then applying a layer two or so inches thick of chips. This is a fuller development of the common practice of giving a surface dressing of chips over the surface of the rock garden and, given suitable soil conditions, it can be remarkably successful in its results—in my own garden it has even helped with the ripening of some of the dwarf bulbs.

To re-cap on the matter of the different scree mixtures ; in a moderate-rainfall area of from thirty to forty inches of rain per annum, the rich-scree mixture will grow most of the trickier members of the

Ericaceae which suggests that it has a high water-holding capacity. In all probability, then, it would be rather too retentive for true scree plants in, for example, the West of Scotland. At the other extreme, Farrer's mixture is, in my own experience, too sharply drained and too sparse for the lower-rainfall areas where probably the intermediate mixture I have mentioned above would be best. I would repeat again that in my view the "open gritty compost" can be a bit too much on the dry side *in the open garden* (as opposed to plants grown in pots) in the drier of our strangely varying climates in this country.

Before going on to other aspects of rock gardening it may be as well to deal with a subject that is raised very frequently at "Question and Answer" sessions, namely the feeding of rock plants. I have mentioned this earlier in passing, but perhaps it is best to deal with it as a separate and definite topic.

There is a rather widely held idea that rock plants need virtually no feeding at all. There is a basically sound notion in this, for if rock plants in general are given a really rich "diet" they will grow lush and soft and will frequently stop flowering. They must, however, get their essential nutrients, or else they will begin to fail and will ultimately die. Quite a few, in fact, seem to thrive on a fairly rich diet ; the late Clarence Elliott in his book gives as his recommendation for growing and flowering *Gentiana verna* a layer of cow manure, then a layer of soil and above and in the soil layer, the plant. Some primulas, too, seem to thrive on rich feeding. I was rather startled to be told that the famous "Yak" bed at Keillour Castle had been enriched heavily with a mixture of cow manure and, as I recall, silage that had "gone bad", i.e. had become compost instead of a feeding stuff for cattle. These are, however, exceptions in my opinion, but all plants sooner or later will need *some* feeding, though in general this is a matter of the lapse of time. One builds a rock garden and, as the years slip by, one tends to forget just how much time *has* passed and just how much a strongly growing plant can extract from the soil, to say nothing of leaching losses.

The type of soil has a lot to do with this as well, for a light sandy soil will run short of nutrients much more rapidly than a heavier one which most probably has a higher level to begin with and loses less by leaching. For an average soil I think that most rock gardens will require a feed every seven or eight years—but only a *light* feeding. For a light soil this might be five or six years, and for a heavy one nine or ten. I am quite certain that for good results an evenly-balanced

fertiliser with a 1:1:1 ratio, for example one with 7% nitrogen, 7% phosphate and 7% potash should be used. For general use such a mixture, usually with an organic "carrier" such as cocoa waste but *not including superphosphate* can be used on any plants ; if "supers" is included as a phosphate source it may cause serious trouble with lime-haters—and so may bone meal in any form. It is an unfortunate fact that very many of the "organically-based" manures likewise have much too high a lime content for safety ; I was taken aback some years ago to find that on analysis *fish meal* of all things had a dangerously high content of calcium (lime). The modern tendency is to keep off "supers" and other lime-rich materials in the commercial compounding of fertilisers and manures, so that the newer products are, in general, safer than the old stand-bys. I do not wish to make any invidious comments on commercial products but, for example, "TopRose" is more or less based on the classic Tonk's formula, using superphosphate, while "RosePlus" uses ammonium phosphate and has a minimal calcium content. The one absolutely fundamental point which must always be remembered is that it is the easiest thing in the world to add lime to a calcium-deficient soil and one of the most difficult to get rid of an excess of lime.

If a feed of about the 7%:7%:7% range is being used, about *one ounce per square yard* should be about the right dressing, unless very strongly-growing plants which are showing definite signs of weakening are concerned when one-and-one-half could be applied. One other point to be borne in mind as a possible cause of weakening of growth or even failure is, as I have already mentioned, a serious fall in the organic matter content. This can lead to a loss of water retention on the lighter soils as in the case I quoted of the Branklyn garden. Here the remedy is peat or clean leaf-mould liberally applied—a really good dressing an inch or more thick and, if possible, largely worked in. A smaller top-dressing applied each year is, of course, the ideal way of maintaining the content of organic matter in the soil—and also helps in weed-control !

The fertiliser dressing I have recommended may seem a bit "skimpy", but for most rock plants a heavier dressing might lead to unduly lush, soft green growth, and that can lead to trouble with fungus diseases and, for that matter, to serious storm damage in really wild weather.

Seamill
Discussion Weekend & Show

THE SHOW will be held at the Seamill Hydro during the Saturday afternoon (21st October) of the Discussion Weekend.

SHOW SCHEDULE

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

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

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

We had a good Show last year. Let's double it this year.

Exhibitors please have their plants staged by noon on Saturday.

The Seamill Hydro is now fully booked. There are only one or two double or twin-bedded rooms in the Hydro Annexe and Lodge. There are however, at the time of going to press, both single and double rooms still vacant at the Inverclyde Hotel and double rooms at the Seamill Hotel. Both of these hotels are within 2 or 3 minutes walk of the Seamill Hydro.

Show Reports

ABERDEEN

A VERY well supported Show filled by many interesting and well-grown plants and a wealth of publicity supplied by local papers, resulted in the door takings being up on last year. Well-filled Trade Stands assisted in maintaining public interest. Also a feature we are fast learning to expect at the Show—namely the first class exhibit, as always, of the Cruickshank Botanic Garden. One feels that at times members do not realise the amount of work and effort involved in the displays set up by Trade members and by the Botanic Garden personnel. Those who do, very much appreciate the assistance of those involved in making the Show such a success on 4th and 5th May.

The Judges : Messrs. J. Lawson, Inshriach, R. S. Masterton, Aberfeldy, and F. Sutherland, Aberdeen, were early under way and their efforts met with universal approval and appreciation at the conclusion of their task.

The 'Forrest Medal' was awarded to Mr. A. D. Reid for a superb example of that not too easy *Cassiope selaginoides* known to many as "Sherriff's Cassiope" and introduced under the collector's number L & S 13284. The Aberdeen Bronze Medal for the six pan Class was won by H. Esslemont, Esq., with a well balanced six, which included *Rhododendron* 'Chikor', a hybrid raised by Messrs. Cox of Glendoick, near Dundee, *Cassiope lycopodiodes*, an outstanding *Androsace imbricata*, *Primula ellisae* and a quiet but very thoroughbred looking *Cyclamen creticum* which we had noted some days earlier with a First Prize ticket at Perth Show. Second place in this class was gained by A. D. Reid, who, in addition to the Forrest Medal Cassiope, displayed a lifted plant of *Trillium grandiflorum* which in addition collected a Certificate of Merit, a good pan of seldom seen *Leucopogon fraseri* and also *Cassiope* 'Bearsden', a plant which always recalls that outstanding plantsman and Club Member the late W. Buchanan. Third place and obviously only separated by the smallest of margins was occupied by J. Crosland, whose plants included *Pleione pogonioides*, *Lewisia tweedyii*, *Primula forrestii*, last year's Forrest Medal plant, *Fritillaria pallidiflora* and an outstanding plant of *Polygala chamaebuxus rhodoptera* and that gem *Trillium rivale*. This latter plant very similar to another *Trillium rivale* which headed a well supported class at the Perth Show.

Obviously this is a plant for Show competitors to acquire and grow on, as it has the appeal and appearance not always displayed by varieties.

Mr. Esslemont secured a first in the three pan class, closely followed by Mrs. Maule of Balerno, Midlothian. We are grateful for the support by competitors travelling this distance, more particularly so, as in this instance we understand some mechanical difficulties had to be overcome to enable the plants to reach the show benches before closure time. Class 3 for a Scottish native plant was well supported and resulted in a win for Dr. Cormack of Edinburgh with the mountain azalea *Loiseleuria procumbens* liberally sprinkled with its engaging pink flowers seldom seen in captivity, followed into second place by that, at times similarly temperamental native, *Primula scotica*, shown by Miss Kelly.

Class 4 resulted in a win for H. Esslemont with one of those cushion plants where he excels in growing to perfection ; earlier we had understood him to say that he had had difficulty in collecting showable plants, scraping the bottom of the barrel, as it were. With the quality displayed in this class, as in many others by this competitor, we assure him we will at all times be very happy to accept at our Shows his "scrapings". This fact was well exemplified by Mr. Esslemont taking the Walker of Portlethan Trophy for most points in Section I.

Mrs. Maule, Midlothian, secured a first in Class 5, followed by Messrs. Esslemont and J. N. Aitken.

Very high quality and skill was much in evidence in Class 8, which was won by J. Crosland with *Raoulia eximea* followed by Mrs. Dyas with *Androsace imbricata* and a *Dionysia curvifiora* in third place.

Reflection by older members will result in realising that 10 years ago any one of the three mentioned plants was considered practically ungrowable and to see all three in the same class glowing with good health is a very high tribute to the skill and determination of the competitor members of the Club and we are fortunate to be able to see the results of their work on our show benches.

H. Esslemont exhibited a well grown and far from easy example of *Anchusa caespitosa* in Class 9—its blue flowers nestling in the spear-shaped leaves are quite outstanding.

Mrs. H. Blair secured a first in the class for anemone or pulsatilla. A comparative newcomer plant headed Class 12 in *Celmisia ramulosa*. This plant obviously has a number of engaging features, not least the clear silver leaf tip and edging. This plant was shown by J. N. Aitken.

Dr. D. G. Hardy showed a very good *Draba bryoides* in Class 13. The quality maintaining the standard set by this competitor in his success of last year in Section II. This was again in evidence in Class 17. Mrs. H. Blair, Mr. Crosland and Miss Kelly had further successes with well displayed plants. Mrs. Dyas showed the *Androsace imbricata* fresh from its success as the Forrest Medal plant at Perth Show and took a first in Class 33. Mr. McKay and Mr. G. Sinclair had a first rate duel for the Club Bronze Medal in Section II, resulting in a win for the latter.

As mentioned earlier, the Trade Stands were tastefully displayed and the Judges unhesitatingly awarded a Large Gold Medal to Messrs. Jack Drake, Inshriach, Aviemore, and a Gold Medal to Mrs. McMurtrie of Balbithan, Kintore, Inverurie.

In addition the Judges awarded Certificates of Merit to *Phyllodoce glanduliflora* and *Rhododendron sargentianum* shown on the Cruickshank Botanic Garden Stand. These were quite outstanding among many well grown plants on this stand.

In conclusion, the writer would take this opportunity of expressing the Committee's thanks to that ever willing band of helpers who, as always, make this Show one of the outstanding events of the Gardening Year in Aberdeen, a point well mentioned in his introductory remarks regarding the Show by our President, Mr. David Livingstone.

A. D. REID

EDINBURGH

THE SHOW was held in the Horsa Hut, a part of the former Royal High School Building, on Wednesday and Thursday 7th and 8th June. This was an opportunity to see some different plants on the show bench.

The Forrest Medal was won by a beautiful specimen of *Verbascum* x 'Letitia' shown by Mrs. Stead of Glasgow ; the plant was in beautiful condition, fully 18 ins. across and smothered in flowers. The Corsar Challenge Trophy for 3 pans of Primula of different species or hybrids and the A. O. Curle Memorial Trophy for 3 pans of rock plants grown from seed by the exhibitor were also won by Mrs. Stead. The latter consisted of *Spraguea multiceps, Talinum okanagense* and a small white lavender-flushed *Penstemon hirsutus pygmaeus.*

The Carnethy Medal for 3 pans of rock plants of 3 different genera was won by the writer ; a well-flowered pan of *Phlox triovulata* was included in this exhibit. Mr. J. D. Crosland of Torphins, Aberdeen-

shire, was first in the class for new, rare or difficult plants and won the Elsie Harvey Memorial Trophy. Mr. J. D. Main won the Reid Rose Bowl for the exhibitor with the highest points in Section I, and he also won the R. E. Cooper Bhutan Drinking Cup, awarded to the exhibitor of the best species Primula, with a superb pan of *Primula nutans*. The Boonslie Cup, awarded to the best miniature garden, was won by Mrs. M. M. W. McLeod, and the Kilbryde Cup for an arrangement of cut flowers and foliage from the rock garden by Mrs. A. W. Meikle of Edinburgh. Dr. and Mrs. J. E. G. Good won the Henry Archibald Rose Bowl for 3 pans of rock plants of easy cultivation, in Section II, and the Club Bronze Medal for the highest number of points, also in Section II, was won by Dr. D. M. Stead of Glasgow.

There were many interesting plants shown, and I shall mention a few. The Lewisia section, which included species and many gay hybrids, was particularly colourful. The class for Scrophulariaceae was very well filled ; a good pan of *Calceolaria darwinii* took first prize, second a fine *Verbascum dumulosum*, and third that interesting Chinese plant *Rehmannia glutinosa*. Another plant of interest, seldom seen at Shows, was that 'shrubby' primula from America, *Primula suffrutescens*, reputed to be shy flowering, but this specimen was quite well flowered and had more buds to come. Mr. J. Duff, Glenfarg, had an excellent *Saxifraga florulenta*, Mrs. Simson Hall showed a pan of *Iris innominata* of very good colour, and there was a pan of that enchanting beauty from Patagonia *Oxalis laciniata*. From further north in the American continent, a plant of *Phlox adsurgens* 'Wagon Wheel' very well named from the shape of the flowers, and of a pleasing pink, and Mrs. B. B. Cormack showed a very well budded plant of *Campanula zoysii*, unfortunately not yet fully out. Mr. H. Esslemont showed a pan of a very attractive silvery *Centaurea pindicola*, grown from seed collected in Greece. Also shown were 3 exhibits of *Viola cazorlensis*, showing interesting variation. Mrs. E. M. J. Murdoch of Edinburgh had a pan in the class for Scottish Natives, of dainty *Lysimachia nemorum*, and there were the usual good pans of Sedums and Sempervivums.

Section II had some very good plants ; Dr. and Mrs. Good had a very good pan of *Ramonda myconi*, as had Mr. J. K. A. Milne.

We had two excellent Trade stands, Jack Drake of Inshriach, and Ponton of the Gardens, Kirknewton ; both won a Gold Medal.

I have left to the last a special exhibit, staged for us by Mrs. J. Dyer, who showed a beautiful selection of flower paintings. Also on

view was a selection of line drawings selected from Dr. Peter Davis's 'Flora of Turkey' for which Mrs. Dyer did the Botanical Illustrations. This was very favourably commented on by the public, and created a lot of interest, and we thank Mrs. Dyer for the trouble she took to arrange the exhibit and enable us to see such a selection of paintings and drawings. She received a Special Prize for this display.

The Show Secretaries had an excellent band of willing helpers, and we thank them very much for their support. We also had every co-operation from the staff at the Hall, and we thank them for their help.

S. MAULE

GLASGOW

THIS Show was held on 12th and 13th May. Despite the very early season and the slightly later Show in Glasgow the large number of entries was very heartening. Section II of the Show was particularly well filled. Indeed, it would appear that more entries were received in this Section than ever before—or at least as far back as records go.

The winner of the George Forrest Memorial Medal was Mrs. Joan Stead with a very attractive plant of *Asperula suberosa*.

The William Buchanan Rose Bowl was won by Mr. and Mrs. Ian Donald of Old Kilpatrick with 6 plants, including a very fine example of *Lewisia* 'Sunset Strain'. This young couple, last year's winners of the Bronze Medal at Glasgow, were also the winners of the William C. Buchanan Cup for 3 plants, rare, new or difficult.

Mrs. Joan Stead was a worthy winner of the Henry Archibald Rose Bowl with an entry which included plants of *Soldanella villosa* and *Corydalis cashmeriana*. In addition Mrs. Stead won the Edward Darling Memorial Salver for 3 pans Rhododendrons and gained a Certificate of Merit for her *Ranunculus obtusiloba patula*. The runner-up for the Darling Trophy, which was presented by the friends of the late Edward Darling, for so long a Vice-President of the S.R.G.C. and the mainstay of the Club's activities in the West of Scotland and of the Glasgow Show, was Dr. Lucy M. Dean.

The Crawford Silver Cup for the member with most points in Section I of the Show was awarded to Mrs. Elizabeth Ivey of Dalry. Among Mrs. Ivey's collection was a very fine pan of *Cyclamen repandum*, *Lewisia* 'Phyllelia' and *Lavandula stoechas*.

This year the Bronze Medal and James A. Wilson Trophy was won by Mr. Malcolm G. Adair of Glasgow with a large collection of

well grown plants. Mr. Adair's entry included *Cassiope* 'Bearsden', *Gentiana verna* and *Phyllodoce aleutica.* As mentioned earlier in the report, Section II of the Show was particularly well supported and the entries of Dr. Peter Harper, Mr. W. L. Morton and Dr. D. M. Stead would on many occasions have merited the Bronze Medal.

In Section I of the Show Mrs. Sheila Maule's pans of *Fritillaria* aroused a great deal of admiration, as did her pan of *Raoulia hookeri.*

In the Rhododendron Section Sir G. W. Pennington Ramsden of Muncaster Castle, Northumberland, took two of the trophies, the third for the best species Rhododendron being won by Mrs. Neil Rutherford, Kilarden, Rhu, with *Rhododendron lindleyi.*

A Gold Medal was won by J. R. Ponton, The Gardens, Kirknewton, for his built-up Rock Garden, and visitors to the Show enjoyed the opportunity of purchasing from this attractive stand and from that of Miss Izatt, Grovemount Nurseries, Auchterarder.

Dr. B. A. Knights was awarded a Certificate of Merit for his exhibit of cruciferous plants, mostly *Erysimum, Aethionema* and *Arabis.*

The Show Secretaries are most grateful to all who contributed to the success of the Show and would give a special word of thanks to the band of willing helpers who so cheerfully set up and prepared the show benches and to those who, within one hour of closing time, by their rapid dismantling and tidying of the halls, turned the 1972 Glasgow Show into a pleasant memory.

M. THOMSON
M. HOLGATE

NEWCASTLE

THE weekend's activities commenced with a Friday evening lecture by Mrs. C. Greenfield entitled "My Favourite Alpines". As could be expected, with such a dignitary as Mrs. Greenfield, there was a good attendance and the talk and presentation matched the high standard expected. Local members provided overnight accommodation for visitors.

Saturday morning the 15th April saw the staging of plants for the first ever open public show of Alpines in the North East. This was a joint Show held in the Church Hall, Ponteland, and members of both the S.R.G.C. and A.G.S. competed. Exhibitors came from Ayrshire, Edinburgh, North Northumberland, Morecambe, Leeds and North Yorkshire, Middlesbrough and Teesside and, of course, the Newcastle area.

The Show was well supported with more than 200 entries and the standard was high.

Mrs. L. C. Boyd-Harvey, Mrs. C. Greenfield and Dr. Henry Tod were the judges and whilst judging was taking place local gardens were open for visitors. The Gordon Harrison Cup for the best 3 pan class in the Open Section was awarded to Mr. E. G. Watson, whose entry comprised *Andromeda polifolia macrophylla, Draba mollissima* and *Kalmiopsis leachiana* Umpqua River form. Mr. D. W. Swales of Guiseley, Yorkshire, won the Cyril Barnes Trophy for the highest aggregate of points in Section B. Two special awards in the form of the N.E.E.A.R.G. Silver and Bronze Medals, very generously donated by Dr. Henry Tod, were won by—Silver, Mrs. Ivey of Ayrshire for a pan of *Cassiope* 'George Taylor', and Bronze—Mr. N. Bowland of Guiseley, Yorkshire, for *Epigaea repens*. Mr. E. M. Upward made the presentations.

Throughout the afternoon approximately 350 non-members paid entrance money to see the Show. Many enquiries were received and dealt with by the joint Publicity Stand and the members' plant stall had no difficulty in selling roughly 800 plants. Afternoon tea and refreshments, organised by an enthusiastic group of lady members, were continuously available.

The Show Secretary is very grateful to those who helped to make the Show a success and in particular to those who had travelled long distances to exhibit. Next year the Show will be officially "Joint" and fully recognised by both Societies.

E. G. WATSON

PENICUIK

WINTER began early in November with heavy snow, then eased off with moderate temperatures until the end of January. At that point there were frosts down to nearly zero Fahrenheit, followed by short-lived snow and then moderate temperatures once more. The result of this was rather erratic behaviour by many plants but, in all quite the best and certainly the most spectacular and colourful Penicuik Show, on March 11th, for five or six years. Oddly enough the same plant, *Dionysia curviflora*, (fig. 38) as last year was awarded the Forrest Medal but shown this year by Mr. Merelie of Newcastle upon Tyne. One of the most remarkable plants in the Show was exhibited by Mr. Crosland of Torphins, Aberdeenshire—an *Orphanidesia gaultherioides* nearly

two feet across, in full flower and excellent foliage, a most difficult feat to achieve. It gained a well-deserved Certificate of Merit, as did Mr. Watson's *Haastia pulvinaris*, a big plant five or six inches in diameter and in fine condition ; Mr. Duff's beautifully-flowered *Saxifraga burseriana* 'Gloria' and Mr. Main's very fine cushion of *Raoulia mammillaris*. Mr. Main also won, by a handsome margin, the Midlothian Bowl for the highest number of points, while the Midlothian Vase for the best plant in Section II was won by Mrs. Maule's lovely pan of *Cyclamen sp.* M.T. 4358.

This year the Irises were really outstanding, even in growth and of extremely high quality. The Crocus species had returned to their normal quality—and quantity—after rather thin and uneven classes in the last few Shows. The Kabschia Saxifrages also were very good and there were good entries of Cyclamen, many of very fine quality. This was the first year of the revised Show Schedule and it seemed to have worked most satisfactorily for there were good entries in all the "Open" classes but two—and these were a matter of date—"Tulipa species" and "Primulas other than Asiatic". Throughout the Show the standard was extremely good and competition close, providing the Judges, Dr. Davidson and Messrs. Wilson and Black, with quite a problem at times. The exhibitors, in addition to more "local" ones, came from Newcastle to Aberdeen, from Dundee to Dalry in Ayrshire, and we were delighted to welcome them as well as a number of newer exhibitors from Edinburgh and Midlothian.

Our Judges also dealt with the Bulb Classes in the Penicuik Horticultural and Industrial Society's Show, the host organisation, which were well-filled and of high quality ; considering that up to a little over a week before it was doubtful whether the Show could be held at all owing to heat and light restrictions, it was quite remarkable that as well as our Show being the biggest yet, with well over a hundred entries, the Industrial Show was also one of the best and biggest to date.

Mr. Ivey, with the Midlothian Publicity Officer, Mr. J. P. Maule, had a successful afternoon with the new Publicity Stand which appeared for the first time at this Show. The attendance was extremely good, the hall being packed at times, and in fact the ladies of the Industrial Section who provided the usual very welcome teas had to send out twice for extra supplies !

HENRY TOD

PERTH

IT HAS been a year of change, for with Dundee having ceased participation in Shows, old St. Johnstoun has been left to carry the flag. The result being the decision to stage a one day Show each year rather than a two day Show every other year.

The venue was a new one, and instead of our established meeting place at Scone, we were at Kinnoull School, much nearer to Perth. Accommodation here was excellent, and being just over the water meant that pedestrian visitors had only a quarter of a mile to walk from the city. This new site proved in every way to be a very good choice, and, coupled with the idea of a one day event, brought in more exhibitors (but not many new faces) and a substantial increase in visitors.

This year the Show gained some publicity from being associated with the Perth Festival of the Arts, being listed as one of the 'Fringe attractions'. The entry this year was good and with a high overall standard, some of the exhibits being of outstanding quality.

The pupils of Kinnoull School were invited to participate, and under Miss Rhoda Fothergill Primary 7 produced a colourful display of posters and showed considerable talent by creating a number of really first class miniature gardens, for which the judges awarded a well deserved Certificate of Merit. They also showed a collection of auricula plants which had been given by Mr. Brien of Pitcairngreen and grown on to maturity by the pupils.

The George Forrest Memorial Medal for the best plant in the Show was won by Mrs. Dyas of Aberdeen with a supreme example of *Androsace imbricata* (fig. 35).

The three principal awards in Section I went to Mr. John B. Duff of Glenfarg. They were the L. C. Middleton Challenge Trophy for the highest aggregate of points from 1st Prizes, the Alexander Caird Trophy for the six pan class, and the Dundas Quaich for the three pan class.

In Section II the Bronze Medal was won by Mr. James Sutherland of Inverness.

Mr. A. D. Reid of Aberdeen received a Certificate of Merit for his specimen of *Cassiope wardii*. Mr. H. Taylor of Invergowrie exhibited a fine *Salix reticulata* (fig. 37).

The Judges on this occasion were Mrs. Knox Finlay of Keillour Castle, Methven, Mr. Alfred Evans of Edinburgh Royal Botanic Garden, and Mr. James R. Aitken of Perth, who also provided a most attractive garden display of rock plants.

Again this year we had the pleasure of seeing the work of Mr. Lawrence Greenwood ; his collection of water colours of alpine plants attracted a lot of attention both from the enthusiasts and from the more casual visitor.

My thanks are due to the three judges and to all those who put in so much time and work to make this venture a success.

JOHN WATT

Joint Rock-Garden Plant Committee

GLASGOW—12th MAY 1972

AWARDS TO PLANTS

AWARD OF MERIT

To *Cyclamen creticum*, subject to confirmation that the specific name is valid, as a flowering plant for the alpine house. Exhibited by H. Esslemont, Esq., 9 Forest Road, Aberdeen.

To *Lewisia cotyledon* (white form) as a flowering plant for the rock garden and alpine house. Exhibited by Mrs. E. Ivey, Northbrae, Dalry, Ayrshire, and by H. Esslemont, Esq.

To *Lewisia* 'Phyllellia' as a flowering plant for the rock garden and alpine house. Exhibited by Mrs. Ivey.

AWARDS FOR EXHIBITS

CERTIFICATE OF CULTURAL COMMENDATION

To. J. D. Crosland, Esq., Treetops, Torphins, Aberdeenshire, for a large well-flowered plant of *Primula forrestii*.

To H. Esslemont, Esq., for a well-flowered plant of *Androsace imbricata*.

Tours for Gardeners and Botanists—1973

A range of holidays for wild flower enthusiasts, of which two are outlined below, has been planned for next spring and summer. Prices are not available at the time of going to press ; but these, with full details, will be sent on request and should be ready by the end of September when it is hoped that the currency situation will be stabilized.

SWITZERLAND—Zermatt, an ideal centre for the gardener and botanist, has been chosen by Major-General Murray-Lyon for his 1973 tour. Famous for its unique situation under the Matterhorn ; for the rich variety of alpines to be found in its vicinity and for the number of excursions that can be made, Zermatt gives excellent scope to the hardy walker and the less energetic alike. There is transport in plenty to the high pastures and into neighbouring valleys, and the Swiss Holiday Ticket, with which everyone is provided, includes a free excursion to the Gornergrat.

SPAIN—a second visit to Espot has been arranged for the first two weeks in June 1973, following the resounding success of this year's tour with Mr. Underhill. This centre and its surrounding area provides a varied terrain for walking ; a very wide selection of interesting plants for the botanists—more than 340 species were identified this year—a good range of birds and, because of the richness of the meadows and the sheltered aspect of the village, great numbers of butterflies. The *Hotel Saurat*, where accommodation has again been booked, was particularly well liked by those who stayed there this spring.

AEGEAN " SITES & FLOWERS " CRUISES will again be operated in April 1973, and will as usual be accompanied by a botanist who will help passengers to identify plants in Greece and Turkey. Operated in the small, comfortable m.v. *Semiramis*, these cruises are particularly interesting to flower-lovers. A separate brochure will be sent on request, giving full details and a ship's plan.

OTHER SPECIALIZED TOURS accompanied by botanists will include centres in Turkey, Greece, Italy and Kashmir, where a pony-trek accompanied by Mr. Polunin is again arranged. For brochures, apply to the organizers

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