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C. R. Worth, Editor

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A FRONT YARD ROCK GARDEN

MAJ.-GEN. D. M. MURRAY-LYON, *Edinburgh, Scotland*

THIS ARTICLE ORIGINATED as a lecture I gave to a group of the Scottish Rock Garden Club. Your editor, seeing it in the programme of coming events, very rashly I think, asked me to convert it into an article for the American Rock Garden Society's BULLETIN, and here it is for what it is worth.

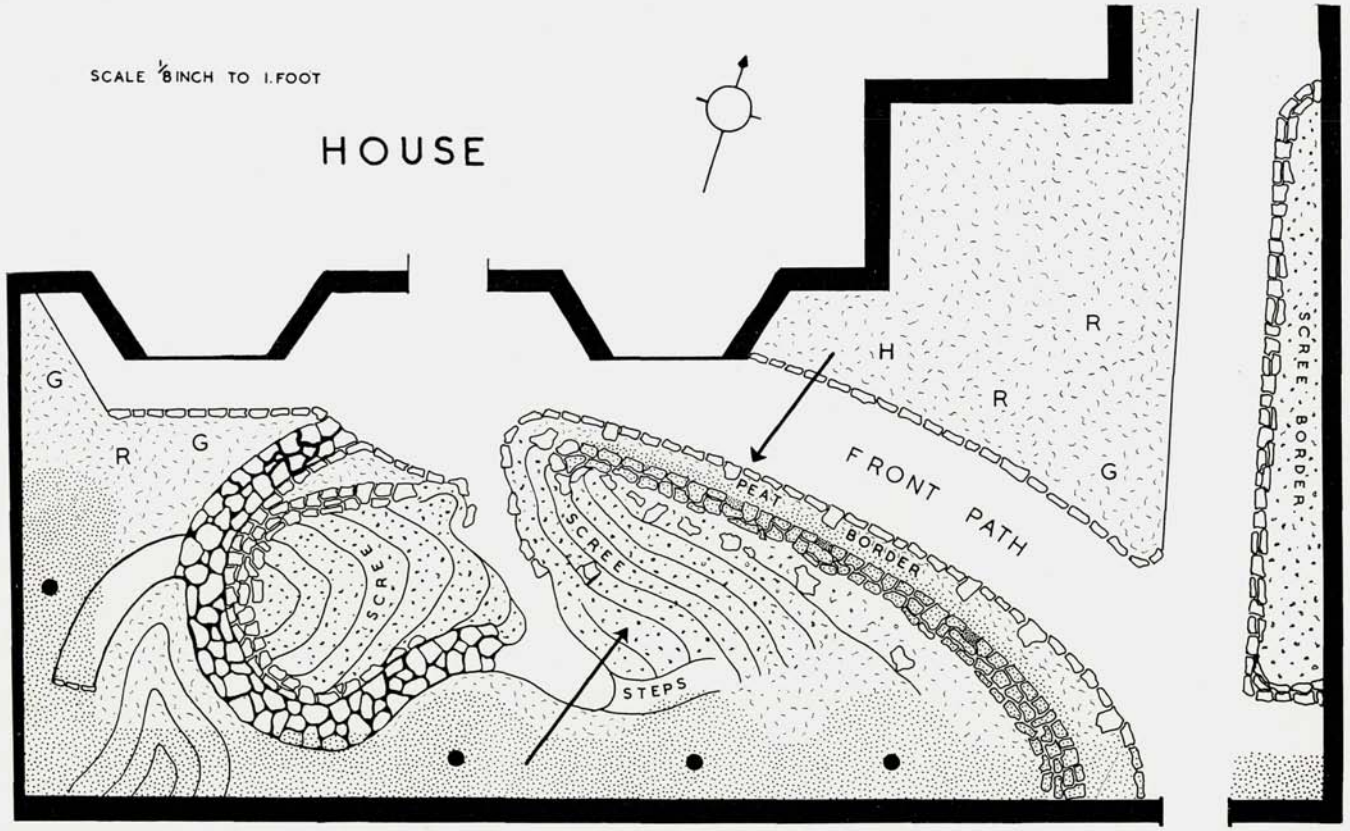
Four years ago, for various reasons, we decided to give up our country home in Perthshire and to move into Edinburgh. Our new home is the ground floor of a largish stone villa, with the front garden approximately seventy feet by thirty feet, and a small bit of the back garden, really just a drying green, about forty-five by thirty feet.

When I first saw the garden it was a typical small front garden plot. Along the south or street side and also on the east side were high and thick privet hedges. There were, too, a number of old overgrown uninteresting shrubs somewhat hacked about. In a grass plot were a couple of beds containing some ancient and decrepit roses, and paths led to the front and back doors. There was also a "Rockery" of the Plum Pudding or Dog's Grave variety.

Before I moved in, the drains were found to be out of order and had to be dug up. As a result the garden looked more like a battlefield than anything else, with seven-foot trenches in every direction. One good thing resulted from this though: the rockery was pulled to pieces and the stones stacked.

The first thing I did was to tear out the hedge and shrubs along the south or street side. The hedge was replaced with a six-foot fence of woven teak type wood, which I also put up along my west boundary. Before putting up the fence, however, I had a lorry load of boiler ash (or cinders) and some tons of gravel, chips, and sand dumped. The soil, by the way, was rather heavy and sticky, with a clay subsoil.

Having been quite successful in my old garden in the Highlands in growing plants, some of them allegedly difficult, my idea was to try to provide similar quarters for my plants in my new garden. I did not propose attempting to try to build natural looking rockwork which is difficult to fit into the rather formal frame of a garden such as mine. I did however want to get away from the dead flatness of the area, which I accomplished by building walls, and planned two screes sloping down from the walls. On the south side, in the shade of the fence supplemented by the shade thrown by four or five small flowering trees, I proposed growing shade and semi-shade lovers such as meconopsis, primulas, etc.



Ground plan of Maj.-Gen. Murray-Lyon's garden.

Dr. R. B. Pike

Cross-section of a scree.

For the time being ignore the scree border shown in the plan along the east boundary, for at this stage there was still a privet hedge there.

Now to get down to a bit more detail. First the walls—I have mentioned that I had a bit of a drying green at the back. I dug up all the grass there in good fat divots, and with them I built walls roughly two feet thick at the bottom, tapering to eighteen inches at the top; the height was two feet six inches. These turf walls gave me something against which to build my dry stone walls, or, as I prefer to call them, stone and earth walls. The turves also provide something for deep-rooting plants to get their teeth into.

As the plan shows, the stone walls were built on the north and west faces of the turf walls, thus catering for plants requiring different aspects. At the foot of the north wall is a narrow peat border.

Now for the screes—There are two of these, each sloping down from a wall, one facing S.S.W. and the other S.S.E. The boiler ash or cinders, of which I had about five tons, was largely for these screes, which contain up to 50% or more of this material in their makeup.

Here would be a good place to mention one mistake I made. The north wall is mainly planted with moisture loving plants, but the wall tends to dry out, and resort has to be made to watering. If a more or less watertight wall of brick or concrete had been inserted between the turf wall and the scree, this drying out would largely have been prevented.

Now look at the plan again: up in the right hand corner are rhododendrons, heaths and gentians—marked R, H, and G; the same families are catered for in the left-hand top corner. Between the west wall and the mound in the southwest corner is a small "pass" with the paved paths going through it. This was christened by my wife "The Pass of Killiecrankie" after a place near our old home. On either side of "the pass" grow plants which are natives of Scotland.

Now, about that privet hedge in front of the east boundary wall, worse than useless and taking up an inordinate amount of space. A year after taking over the garden, having got the other jobs done, I had that out too. In its place I built a wall out of old granite setts from the streets of Edinburgh. Between this wall and the boundary wall I made a scree bed, three feet wide at the south end and tapering off to eighteen inches at the north end. Its height is two feet, which brings the plants up to a height at which it is much easier to see and admire them, especially the tinier ones.

That completes the list of major works at the front of the house. At the back are a small alpine house and frames, and a cutting border to provide flowers for the house.

Photos by Maj.-Gen. D. M. Murray-Lyon

Looking toward the house, immediately after planting.

Now for a little more detail about what I did to try to improve the rather heavy, sticky soil. Apart from the screes, I dug in quite a lot of cinders and granulated peat, which have greatly improved the texture of the soil.

As regards the scree mixtures, no two people will agree as to what is the best; this is hardly surprising, as what will suit one district will not suit another. What is the best mixture for a district with a fairly heavy rainfall is not likely to be satisfactory in a district with a dry climate. A sandy gravelly soil, naturally well drained, is not going to need drainage, or sand and gravel additions which a heavy clay soil would call for.

I am not going to try to suggest what are the best mixtures, but I shall give details of the different mixtures in my screes. East scree: 2 parts garden soil, 1 peat, 1 gravel, and 3 ash; i.e., 3 parts soil mixture to 4 parts drainage material, a comparatively rich scree. West scree: 1 garden soil, 1 peat, 1 gravel, 3 ash; i.e., 2 parts soil mixture to 4 parts drainage material, a poorer mixture than the other. At the bottom of both screes is a layer of drainage about 12 inches deep at the high end and 6 inches at the bottom. So far I cannot say that I see any difference in results, but the west scree will, I suppose, need feeding sooner than the east.

Essentially the same view, three years later.

The East Wall Scree was made differently, and except for a short length at its north end, it consists entirely of soil and ash. From the bottom up it consists of layers as follows: 8 inches of stones, broken bricks and large cinders; 4 inches of reversed turf; 6 inches of a mixture of 2 parts ash and 2 parts soil; 6 inches of a mixture of 3 ash and 1 soil; and on top 1 inch of whinstone chips. The richness increases as one goes down. The length at the north end, which I said is different, has extra soil and peat added to make it more suitable for ericaceous plants. This scree, also, has proved quite satisfactory.

In all the screes the drainage is of course covered by a filter layer consisting of reversed turf, or old carpets and sacks covered with a three or four inch layer of soil.

I suggest that it is best to keep your scree rather on the poor side, then when you are planting, you can add a little bit of whatever you think a particular plant would like: a little leafmould, a dash of bonemeal, or perhaps an extra dollop of chips or gravel, or even a few bits of dry cow manure.

All the screes of course have a top dressing of about an inch of chips, although gravel is as good; this prevents evaporation or at least much reduces it, insures drainage around the necks of plants, and prevents flowers getting splashed with mud.

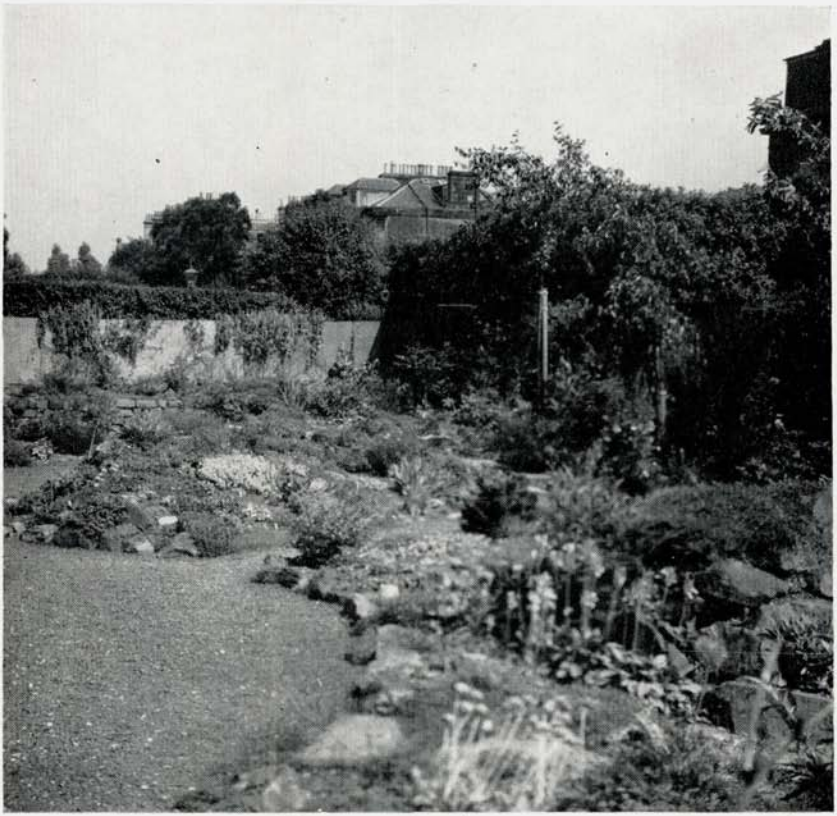
Another view, at planting time.

Chips and gravel should tone in with any stone used. Limestone chips must not be used where lime-hating plants are to be grown. Stones or rocks are not essential in a scree, but a few are an advantage, not only as stepping stones for use during weeding, but also for other reasons. Some plants like to get their roots under a stone, as they find moisture there; some like a bit of shade from the hottest of the midday sun, and a properly sited stone will provide it. A few stones to define roughly the bottom of the scree also help to protect plants from the feet of the not so careful visitor.

A word of warning: boiler ash or cinders obtained from gas, electricity and other works must NOT be used fresh, as they contain sulfur and other harmful chemicals. They should be weathered for six months, or else thoroughly washed. Breeze blocks used for building are (in Britain at least) made from boiler ash, and the ash has to be free from chemicals for this purpose. If therefore you do not want to wait for six months, or wash them yourself, you may be able to buy washed ash from a building contractor; I know I did.

I shall not mention any plants, for that would take up far too much space, and anyway it is another story.

The photographs will I hope give some idea of what the garden looks like. Two were taken at planting time, and two from approximately the same places three years later.



The same, after three years.

WHITE MERTENSIA VIRGINICA

About twenty years ago, on "Mertensia Island" in the Raritan River of central New Jersey, I found three plants of a pure white form of *Mertensia virginica.* One of these was carefully moved to my garden, where it prospered for many years, was divided several times, and the divisions sent to skilled cultivators. The drought of 1953 damaged my plant so severely that it put up only a single leaf the next spring, and perhaps will not appear at all this coming season.

I had not realised that an albino form of this species would be particularly rare, but recent visitors to the island tell me that there is no longer a white-flowered one there, and that they have not been able to find whites elsewhere. Can it be that my plant, which I hope still survives in more favored gardens, is virtually unique?

CRW

A HORTICULTURAL SPREE

HAROLD GODDARD RUGG, *Hanover, New Hampshire*

IT WAS MY GOOD FORTUNE to spend four months abroad this past summer. I wanted especially to see alpine wild flowers and to visit various gardens and nurseries. My friend, Mr. Clarence Elliott, author of that excellent book, "Rock Garden Plants," wrote me that the best and easiest place to see mountain plants in all Europe was at Col de Lauteret in the Savoy-Dauphiny region in France. Accordingly I went to Grenoble and from there by bus to the Hotel des Glaciers at an elevation of about 6500 feet. The hotel buildings face a lovely glacier from which in mid-June swept rather cool breezes. Soon after leaving Grenoble we began to climb.

As we saw many plants in bloom which I was unable to identify, it was exasperating to be in a bus rather than in a private car. In rocky cuts there were quantities of an encrusted saxifrage in bloom, also a lovely long-stemmed dianthus, pink in color, which I was told later was *Dianthus sylvestris. Dryas octapetala* was in abundant bloom as were *Saponaria ocymoides, Lotus corniculatus, Campanula rotundifolia,* and a thymus. As we got higher we saw in the open fields acres and acres of *Narcissus poeticus* in bloom.

Within five minutes' walk of the hotel in all directions I found hundreds of plants in full bloom of the beautiful *Viola calcarata,* also hundreds of *Gentiana acaulis* and *G. verna, Ranunculus pyrenaeus,* not very handsome, *Primula farinosa* in damp places, *Anemone alpina* with its huge white glistening blossoms, *Soldanella montana, Myosotis alpina,* a pink antennaria, a very tiny semperivivum (no cobwebs), *Douglasia vitaliana,* a yellow helianthemum and, strange to say, two old American friends, *Caltha palustris* and *Tussilago farfara.* There were geums and potentillas and other small plants not identified. I saw only one fern here, a single plant of *Botrychium lunaria.* I was too early for *Eritrichium nanum, Ranunculus glacialis,* and *Dianthus neglectus.* In a swampy bit of soil *Habenaria maculata* with its spotted pinkish-lavender blossoms and spotted leaves was seen in abundance. A few plants of *Daphne mezereum* were in bloom. Later in Switzerland I saw many plants of *Daphne striata* in bloom. This is one of the protected plants in that country. In the Col de Lauteret region there are no restrictions about collecting, but in many places in Switzerland plant collecting is not allowed. As the plants mentioned above were so abundant I did not feel hesitant about taking a couple of roots of some of them. For sentiment's sake I collected a few bulbs of *Narcissus poeticus.* I took the collected plants to the Correvon nursery near Geneva and there they were packed for shipment to the United States. I had visited the Correvon nursery in 1927, and so was glad to be able to see it again with its interesting rock garden.

I visited many places in Switzerland where I had seen beautiful alpines in 1927, but this season was late and extremely rainy. Places where I had collected plants previously were this year covered with snow. At Zermatt I took the funicular to the Gornergrat. From the train I could see the gentians in abundance, also *Viola calcarata* as well as *Anemone sulphurea* in quantity. At the end of the funicular where I had hoped to hunt for new plants I found an abundance of snow and so no collecting. In the Zermatt region I did not see any edelweiss which I had found there previously. I was rewarded, however, by views of the Matterhorn on three different days, a pleasure I had not experienced in 1927. The mountain then was covered with clouds the three days I spent there. In this region a phyteuma, possibly *P. scheuchzeri,* was very abundant in the grassy pastures.

All through Switzerland and in some places in Great Britain the maiden hair and rue spleenworts grew like weeds in foundation walls around houses and barnyards, in walls along the streets, and in funicular railroad cuts. I have never seen either in the wild, as one does here in the United States. Other plants seen in Switzerland were *Silene acaulis, Sedum acre,* and other unknown sedums. In one place only I found *Globularia nana* and *Campanula barbata.* At Mürren I was amazed to see *Linaris alpina* growing in coarse sandy fill in a railroad track. Here I also found on a ledge in the village the very rare fern, *Asplenium septentrionale.* On the trip to the Rhone Glacier in high pastures there was an abundance of *Gentiana lutea,* rather coarse and too large for the small rock garden. Higher up in a rocky cut were long sprays of *Saxifraga lingulata.* At Lac Champex, reached only by foot or by bus, the "alpine rose," *Rhododendron ferrugineum,* was abundant. Here, too, is a large rock garden, maintained by a resident of Geneva, open free to the public every day at eleven. Plants are carefully marked. Here I saw the yellow ladyslipper, *Cypripedium calceolus,* in bloom. I had hoped to find it in the wild but was doomed to disappointment. Lac Champex is a favorite center for trampers. Each morning busloads of young people, especially school children, would arrive and hike off into the mountains with knapsack on back. Late in the afternoon they returned. Hanging from every knapsack was a bunch of the "alpine rose" and often other mountain flowers badly withered. Children by the wayside were selling bunches of this rhododendron and the flower shops were full of it. It apparently thrives on picking else it would have been exterminated years ago. In some places in Switzerland there were posters showing in color pictures of a few plants not to be collected. Among these were *Cypripedium calceolus, Daphne striata, Aquilegia alpina* and *Leontopodium alpinum.*

Arriving in London on July 15, I spent the first ten days going out into the country to see nurseries and gardens. Mr. Stuart Boothman has in connection with his nursery an excellent rock garden filled with many rarities. To me the outstanding plant was a large clump of *Rhodothamnus chamaecistus* in full bloom. Undoubtedly the largest collections of alpines may be seen in the W. E. Th. Ingwersen Ltd. Nursery. The rock garden here is most interesting. Many of the rarer and more difficult plants are grown in glass houses in pans. Mr. Walter E. Th. Ingwersen and his son Will, who writes so entertainingly for our BULLETIN, took me to see a famous peat garden which they had built for a client nearby. In a Devonshire garden I saw another peat garden, but the most outstanding one is at the Royal Botanical Gardens in Edinburgh. A high spot of the visit to the Ingwersen nursery was tea served in the charming old home of Mr. Ingwersen senior. Trips were made to the Ascot and Hillier Nurseries and to the smaller but very choice nursery of Joe Elliott adjoining the very delightful garden of his father, Mr. Clarence Elliott. One of the most outstanding displays I saw in all England was large beds in full bloom at the Elliott nursery of *Alstroemeria ligtu* hybrids. I regretted I did not have a chance to take kodachrome pictures.

Private gardens visited were those of Major V. F. Howell and Mr. R. Ginns. In an article in our BULLETIN last year Mr. Ginns kindly invited Americans visiting England to see his gardens. I spent a delightful half-day there. He was most generous with seeds and bulbs. Two outstanding gardens in Devonshire on the west coast are those of Mr. E. B. Anderson and Mr. Norman G. Haddon, his neighbor. Mr. Anderson has an outstanding collection of shrubs, of which the most interesting to me was a very dwarf mountain ash, *Sorbus reducta.* Although not over a foot high the shrub was in full fruit. A "must" for any lover of alpines are the rock gardens at Wisley and Kew.

Then to Scotland for a tour of the Royal Botanical Gardens conducted by Maj.-Gen. Murray-Lyon followed by a visit to his own interesting rock garden and then tea served by his wife. The only other Scottish garden I was able to visit was that of Squadron Leader J. J. and Mrs. Boyd-Harvey, a small garden but full of choice plants including many varieties of meconopsis. Both Maj. Gen. Murray-Lyon and Sqn. Ldr. Boyd-Harvey are officers of the Scottish Rock Garden Club. Then to Jack Drake's delightful rock garden and nursery at Aviemore, Scotland, where I saw several rare American plants no longer available in any American nursery. Mr. Drake's collection of Asiatic primulas in bloom was outstanding and well worth the train trip north from Edinburgh. A much-admired plant in his nursery was *Cyananthus lobatus* Sherriff's variety, with its large deep blue blossoms.

To me, especially interested in ferns, a notable experience was a field trip in the Lake District near Keswick with members of the British Pteridological Society. Unfortunately it rained four of the six days spent there. While there I visited the nursery of Mr. Reginald Kaye, a member of the Society who lives forty miles away. Mr. Kaye kindly took me to his home, a house where Cromwell is reputed to have stayed at one time. Mr. Kaye has undoubtedly the finest collection of ferns in any English nursery and has as well a large collection of rock plants. I also visited, near London, the Perry Bros. Nursery which had at one time the largest collection of ferns in England but unfortunately a bomb fragment destroyed the fern propagating house, so the fern collection now is rather small but growing.

The Scottish moors were aglow in August with heather, both erica and calluna. In acres of *Calluna vulgaris* observed, only one single plant of the white variety was seen. As it is supposed to bring good luck it is much sought for. Plants of it and bouquets could be purchased in the flower shops. Street vendors in the cities and gypsies in the country were asking and getting sixpence for a single sprig!

This has been, I fear, a very personal account, probably too personal, but there seemed no other way of telling it.

MOUNTAIN PLANTS IN MY GARDEN

GRACE F. BABB, *Portland, Maine*

IN 1952 AND '53 I was thrilled almost beyond words to be able to collect some true mountain plants from Mt. Mansfield and Mt. Pisgah in northern Vermont. The stories of these trips were told in the BULLETINS of October '52 and January '54. This is a report of my successes and failures with the plants in my lowland garden. Probably no two members of these trips have had exactly the same luck, and perhaps none except Mr. Mitchell has had a perfect score.

For a more complete picture, I might mention that the summers of '52 and '53 were both hot drouth years here, and I used the hose often, sometimes flooding the surface under the alpines, sometimes using a sprinkler to soak a larger area. In contrast, 1954 was wet and cold, almost continually during spring, summer, and fall, with cool often foggy nights in summer, and light frosts night after night in the fall. This wet weather, tiresome as it was, was probably a lifesaver for my garden since I was away from home for much of that summer, and plants had practically no care beyond a little weeding. This general area is generously peppered with underground springs which help keep some sections of the garden moist, and this seems to the liking of the alpine plants in summer, at least, but may be a hazard in the winter.

From Smuggler's Notch and Mt. Mansfield, the story is short. Many of my plants were woodland kinds, and some of the more rare alpines were not included in my "catch." Of the three saxifrages, *S. aizoon* is usually easy, and its pretty encrusted rosettes seem happy almost anywhere with a taste of old mortar rubble. It bloomed well in '53, sparingly in '54. The leafy *S. aizoides* is much harder to please, and it quickly disappeared here. One scrap of *S. oppositifolia* is still here, just as I found it with a spray of tiniest rosettes in a mat of moss, spread on a little ledge with a boulder at its back for shade. I hope it has spread its roots back into the rock garden soil, and may increase and even bloom a little, some sweet day!

Draba arabisans has grown into a large mound of good-looking gray-green rosettes, and blooms profusely. The flower sprays are nothing outstanding, being only white in color where yellow would be quite handsome,—I wonder if it would be interesting to cross this with a yellow cousin? *Astragalus blakei* and *Castilleja pallida* were complete failures, and the goldenrods proved too large for rock garden plants, even as Mr. Mitchell had predicted. The lovely silky *Artemisia canadensis* grew into a huge clump of silvery foliage in '53, but then weakened and died out in '54 without making any new growth. One lone seedling appeared in late summer, and I am hoping it will prove to be this species.

From Mt. Pisgah, on Lake Willoughby, the total results are much more satisfactory. The tiny rosettes of *Primula mistassinica* have doubled in size,—actually to be seen by the naked eye!—and have increased in numbers, even to seeding here and there around the older plants. Every little plant bloomed in '54, and fat buds hold promise for this year. Probably nothing in the garden gave me a greater thrill of success than these! *Parnassia montana* has also increased, and blossomed profusely. The largest clump contains a dozen or more rosettes, each contributing its share of dainty cream-white flowers in August. The buds fascinated me just before opening, looking like round fancy buttons striped in cream, each on its own stem with a single leaf. Both primulas and parnassias were planted in several locations, and the happiest plants now seem to be those which have some afternoon sun but are shaded through morning and noontime.

Erigeron hyssopifolius seems equally happy in the different spots, only growing more compactly with afternoon sun than in shade. The clumps are increasing slowly, the mounds of fine foliage effective nestled against the rocks. The flowers in May were distinctly pink-tinged when first open, and quite long-lasting. This is a very dainty and worthwhile plant.

Viola nephrophylla delighted me by growing well and blooming a little, on the cool shady north side of a rock, in a nest of moss. I hope it may have scattered a few seeds around, and I wonder if it will make any interesting hybrids with my other pet violets. *Lobelia kalmii* surprised me again in 1954 by appearing in bloom in a new location at quite a distance from where it appeared in '53. I imagine this is annual or biennial and either seeded itself, or a young seedling was collected with another plant. I hope it will continue its "guest appearances" because I am quite enchanted with its sweet lilac-blue blossoms, small as they are.

The astragalus and artemisia from Pisgah apparently died out like those from Mansfield, and also *Rosa blanda,* and the pretty and unique *Braya humilis* which I am especially longing to grow. However, two small seedlings of the Braya were given me in the fall and were still looking well at snowtime, so my hopes are up. Perhaps once established, it may seed itself and keep going.

A nice plant of *Potentilla fruticosa* settled down and bloomed, although I lost one from Mansfield. I don't suppose it will stay very dwarf here, and it is far from a rarity, but I shall enjoy it for its associations. *Clematis verticillaris* also accepted the garden to the extent of trying to cover its neighborhood and a

nearby *Rosa hugonis* with its strong leafy branches! Nary a blossom have I seen yet, but it should be a handsome sight someday.

Smilacina stellata, planted in partial shade, sent up several stems but didn't bloom. I am curious to compare this with plants collected many years ago on a little island in Casco Bay which are apparently the same species but with distinctly varied leaves and berries as I remember. The meadowrue and columbine are growing and probably of no special interest, but I missed seeing the bloom to decide about that. The little bladder ferns were also in my collection, and seem perfectly happy, dripping with their tiny pods, and their pretty reddish fronts are very effective.

THE LIME REQUIREMENTS OF PLANTS

RICHARD C. ANDREASEN, *Department of Floriculture, Cornell Univresity*

THROUGHOUT THE YEARS, many persons have made statements concerning lime requirements based on very poor or faulty evidence. Just because a plant is growing on a limestone cliff, or in a limestone soil is not evidence of plant requirements. Possibly the plant is growing on a lime cliff because it is especially adapted for sticking to such a precarious perch by means of special roots or maybe it grows there because of the lack of competition. It may be that it needs the cool temperatures found at high elevations or needs escape from soil-borne diseases or insects found in more fertile soils. There are a host of reasons why a plant grows where it does and in the company it does and rarely is soil type or lime among these reasons.

Of course, lime is required by many plants in varying amounts. Perhaps it would be more accurate to say that calcium is required by all plants since it serves as the cement that holds cells together. This calcium may be in the soil in the form of calcium sulfate (gypsum) or calcium phosphate or a variety of other forms. Some plants require fairly high pH levels or soils that are alkaline in nature. This alkalinity is often due to lime in the soil but may also be due to sodium carbonates or potassium salts. It is obvious that lime is a useful material because it raises the pH of some soils, adds calcium to the soil and is safe to use in large quantity but plants don't require lime as such.

The more plants are studied, the more we find that they all have certain requirements in common. They are apt to require certain lengths of day to flower or certain combinations of high and low temperature to develop flower buds and break seed dormancy. Perhaps the seed contains inhibitors that must be washed away in order to allow germination. Perhaps the soil must contain a certain organism in order for a plant to grow. Such is the case with many legumes. Perhaps fertilization of the flowers is dependent on a specific insect that inhabits a small region. An understanding of these factors can contribute to success in growing and flowering any plant. Trying to duplicate soil conditions, although it is important as a part of the whole program, is sure to fail as a means of growing most plants.

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Blue lobelia has been quoted as an example of what is not a rock garden plant, yet there is no doubt that if it were but newly introduced, or if it were less tractable, or if it would bloom only occasionally, Lobelia erinus would be cherished in the alpine house, and considered suitable for planting out amongst the gentians and saxifrages every year, its lack of hardiness notwithstanding—Clay.

SOMETHING NEW FOR THE ROCK GARDEN

HELEN DORIOT, *Goshen, Indiana*

WHEN MOST OF US think of dwarf iris, we remember the short stubby plants that grew in our grandmother's garden. There was very little variation in the color; some were purple and some were yellow, a few were a yellowish white, and all were clumsy with little of the personality and appeal that we want in a flower. Of course they were early to flower, blooming with the narcissi and early tulips, giving a nice color pattern to the garden.

Within the past few years, through the efforts of one man, Walter Welch, we have been given some of the loveliest little spring plants that one can imagine. Mr. Welch is not alone in his work of hybridizing these dwarfs, but it is through his foresight and determination that we have them available today. Our old dwarfs were usually a form of *I. chamaeiris* originally found in southern France and western Italy. Some of our hybridizers, recognizing the need for this type of dwarf iris, did quite a lot of work in this field with little improvement over the original plants. They were still the same old shades of purple and yellow, although once in a while a plant appeared that was a combination of colors such as yellow falls with white standards, but this was unusual.

It was not until *Iris pumila* was intercrossed with *I. chamaeiris* that the wall was broken. It was like the sun breaking through the clouds, giving us a vast variety of colors, until there seems no end to the color combinations possible today: little flowers that have white standards with velvety yellow falls; pure bright yellow selfs; blue standards with yellow falls edged in a ruffle of blue; flowers with a peculiar shade of greenish blue like raw oxidized copper appearing in a pattern on the falls; blues so dark they are almost black, with huge fuzzy white beards. These hybrids bloom from one to two weeks later than *I. pumila* and last for several weeks. They increase very rapidly and range in height from five to eight inches. A few of the named varieties offered for sale include: Azurea and Coerulea, both quite old; Primus, our first variegata dwarf; Veri Gay, a brighter variegata a little deeper in color, almost a gold, with a dark brown spot on the gold-edged falls; Sparkling Eyes, with pure white standards and purple falls edged white; Cherry Spot, with light standards and reddish falls; Little Villain, a dark husky fellow that lives up to his name; Butch, a dark red-violet self. With the exception of the first two, these have all been originated by Mr. Welch in the Dwarf Iris Test Garden at Middlebury, Indiana. When one visits his garden while the dwarfs are in bloom, it seems as if one were in the land of make-believe.

The species *I. pumila* is found in Austria, Hungary, and along the Danube river. It grows high on mountainsides in rocky ledges, in pockets of deep red earth. It is an ideal plant to grow in the rock gardens of the northern United States, liking our cold winters. The plants are tiny things from one to five inches high, but averaging three inches, so that it is a fine border plant as well as a rock garden specimen. If one is quite fussy, wanting a border plant that is perfectly even, the tips of the leaves may be sheared, but one should remember that this takes away some of the strength of the plant.

This species is a harbinger of spring, the first bearded iris to bloom. In northern Indiana I have seen it blooming during the late March snows; it would seem that the flowers would be frozen, but as soon as the sun comes out they seem quite happy. One of the very desirable traits of this iris is the number of flowers it produces, for one little rhizome will often send up five or six bloom stalks, so that an established clump will give a mass of color for two or three weeks.

It is in *I. pumila* that we find the lovely clear shade of light blue which is so much desired, along with other shades of blue, yellow, red, and blue-purple. Mr. Welch has been able to secure a number of collected forms and colors from Europe. One of the loveliest is the Crimean Pumila which is very early, with a nice long slender stem and purple flower. Some of the named varieties that are offered in commerce are Sulina, Nana, and Carpathia, which were grown by Robert Schreiner from seed that he secured in Europe a number of years ago. These were almost lost before they became known to the hybridizers. Cretica, a purple with a beard that makes one think of a jewel, was collected in Crete. April Morn, one of the first to flower, is a clear light blue with a long season of bloom; it received the Caparne Award from the American Iris Society for the best dwarf iris last year. Blue Spot is, as its name indicates, a blue with a spot on the falls. Half Pint, a blue with a hint of tourquoise, is about two inches high. Little Balkan is a mulberry self with violet beard. The last four are the result of Mr. Welch's work with *I. pumila.*

There are a number of other small iris that are being used by the hybridizers: *II. mellita, rubromarginata, bosniaca, reichenbachii, bloudowii,* and *arenaria.* While these are not as perfect as some of the hybrids, they have that elusive beauty that is recognized by the lover of wild flowers and of wild things. I hope that in our hybridizing we do not lose this wild loveliness, for some things can become too perfect. All of these come into bloom about two weeks after *I. pumila,* extending the season of bloom.

Lavender Dawn is one of the *I. mellita* hybrids that may be found in commerce. *I. arenaria* crossed with *I. chamaeiris* has produced some nice things in near-pink coloring. These plants are fine-leaved, some of them a bit taller than we like a dwarf to be; a well-balanced one should not be more than eight inches high or ten at the most, for if taller, it loses some of its beauty. Among the newer low-growing plants offered for sale are Cup and Saucer, which looks just that; Promise, the promise of better pinks; and Buster Brown, in tones of brown.

All the above iris may be grown, north of Tennessee, from coast to coast. They need a dormant period in winter. A well-drained soil is better than a wet spot, so that if one lives in a moist region, the iris bed should be raised four or five inches to give good drainage. They are seldom subject to disease, and increase rapidly, giving a great amount of satisfaction for the small amount of space and care that is required to grow them.

In selecting dwarfs for your garden, remember that you want earliness, clear color, flowers well above the foliage, and plenty of bloom that is in proportion to the plant—in other words, a well-balanced plant and flower. By growing *I. pumila,* Pumila hybrids, Arenaria hybrids, *I. chamaeiris,* and the other dwarfs, you can be sure of six weeks of lovely color in the rock garden in the early spring.

These miniatures are not plentiful, but if one perseveres in searching the catalogs, they may be found. There are a few commercial growers that can supply most of them, but if they do not have them contact the breeder of the plant, for he may be able to supply your needs.

* * * *

It withers and affronts me to hear a gardener contemptuous of this dear little flower or that; to meet an arrogant and arid spirit stalking in its garden, with narrow specialist-made talk of rarity, of rigid correspondence with man-made rule, and a cold sweeping of whole lovely classes and families into the outer darkness of his scorn.—Farrer.

FERNS FOR THE ROCK GARDEN

DR. H. S. WACHER, *Canterbury, England*

WHEN PLANTING THE ROCK GARDEN, how many enthusiasts ever give ferns a thought as having an equal claim to inclusion as the many flowering alpines one sees, for I venture to say that very few walks in the mountains will not provide ferns, often in very large quantities and many varieties. In fact it is the contrast of these bright green fronds clothing rock crevices and banks which increases the effect of the flowering plants. When we plan our rock garden at home we should endeavor to form as complete a natural picture as possible, and ferns certainly call for inclusion. In addition there are always places on the rock garden which are difficult to plant effectively, such as steep places in the shade, and it is here that ferns will flourish and give pleasure in winter with the evergreen varieties. Like all alpines the only thing they ask for is good drainage, and given this they are among the most permanent plants one can have. Moreover there are varieties of all shapes and sizes, suitable for either shade or sun, provided there is a cool root run. Many are tufted and form crowns, whereas others are stoloniferous and will get all over the place if care is not taken in selecting the right site.

To the beginner, the names of ferns may be terrifying, for many of the sport varieties of species carry three or four Latin descriptions. But for anyone who is determined to master the subject, it will be found that this multiplicity of names is of real assistance, for it gives an exact description, in an international language, of the plant in question. Unfortunately there is a lot of literature on ferns which contains nomenclature that should be scrapped from nurserymen's lists, for some still continue to use the term Aspidium for Asplenium and even Polystichum, which increases the muddle when seen against a list using more modern terms.

In England, I think the most reliable book is probably "British Ferns and their Varieties", by C. T. Dinery. It is most helpful but of course, does not include types only known wild in other countries, many of which are even better suited to the rock garden and which grow quite happily with us. I feel that the time is now long overdue for a comprehensive monograph on "Ferns of the World", and hope that we may have one to refer to in the near future. It would be a great boon, and perhaps these words may start some enthusiast, with the time and experience, to embark upon it. The actual number of different species of ferns is really quite small, but the varieties of these species are almost unlimited, since new ones keep turning up as time goes on. All these varieties arise as sports of the true species, and many of them are so unlike the type to which they belong that it is difficult to believe their affinity. They range from the beautiful to the grotesque, some being fairly common, but only too often many of the best are unfortunately very rare and difficult to obtain.

For a short article as this I am only describing the ferns that I have grown myself and found suitable for the rock garden, which means that I exclude the larger growing types, limiting my selection for this purpose to those which do not exceed one foot or so in height. But it must be kept in mind that size varies according to the conditions under which many may be grown, for the same plant will grow much larger in moist peaty soil and shade on the flat, than it will in a rock crevice exposed to the sun. Also lack of space precludes me from describing the types of fronds in detail: in fact written description of fronds is beyond many experts, for Mr. Dinery uses pages of prints from pressed fronds, which are far more eloquent than any written description could be.

I take my list alphabetically:

Adiantum is best known as the maidenhair fern—*A. capillus veneris,* which is not hardy. There is however a minute form with fronds only two inches high which I found in the French Maritime Alps, growing in tight crevices of limestone rock facing north, at an altitude of 4000 feet. It is quite hardy in my rock garden, planted in a vertical wall with some peat for its roots, and escapes frost by being deciduous, having come up again freely after some 20° of frost.

A. pedatum—the bird's foot maidenhair—is well named for the shape of its fronds which reach to one foot in height, spreading out fanwise at the top of a thin black stem. It is deciduous and thrives in moist peat and shade at the foot of a large rock.

Allosorus crispus—the parsley fern—is common in the mountains of Europe, with fronds six inches high resembling parsley, and always among granite rocks with its roots deep in shade. It is not an easy plant to do well here, requiring stony peat free from lime. The fronds are evergreen and where the plant is happy it will spread slowly making a good colony.

Asplenium: spleenworts are all well suited to the rock garden, for they are essentially crevice plants, keep quite dwarf, and remain evergreen.

A. adiantum nigrum, so named on account of its black stem, is common locally in mountain districts, growing tightly wedged in crevices of limestone rocks, often in full sun and only four inches high.

A. fontanum (halleri) is quite a rare fern, seldom seen or offered. I have found it in the French Maritime Alps and also in the Pyrenees. It grows only three inches high in almost invisible crevices on the shady side of limestone rocks.

A. ruta-murarica—wall rue—is quite common on limestone rocks, often seen in Scotland, growing in full sun and less than two inches high. It thrives on the minimum of soil and is difficult to keep in any position apart from rock crevices, doing especially well in tufa.

A. septentrionale—forked spleenwort—would never be deemed a fern by the casual observer, for it makes tufts of two to three-inch fronds for all the world like grass except that the tips are forked. It is to be found locally, over wide areas, growing in peaty soil on the shady side of rocks of either formation.

A. trichomanes is the commonest of this group in cultivation, making tufts of fronds some five inches high, quite common in the Pyrenees. It is not particular with or without lime and grows well in a wall facing full sun.

A. viride—green spleenwort— is perhaps the commonest fern to be found all over the mountains of Europe at about 5000 feet. It likes partial shade and a moist root-run of humus in granite rock for preference, and is about four inches high.

Athyrium filix foemina—the lady fern. The majority of this group are too large for the average rock garden, but the following will never be out of place, requiring shade and moist leafmould without lime. They are among the first plants to collapse with the first frost and do best if the old fronds are piled over the crown in winter.

A. alpestre is seldom seen in cultivation and is very local in the wild. I found it in the French Maritime Alps growing at the foot of an old stone wall in the open. It is quite attractive, the main stem being stiff and 8 inches high, while the pinnae tend to curve around, forming an upright concave arch.

A. ff. frizelliae capitatum, 10 inches high, is quite unique, with the pinnae forming small balls on the stem, terminating in a tangled crest at the apex.

A. ff. gemmatum Bolton, 10 inches high is beautifully dissected and crested throughout.

Dr. H. S. Wacher

Adiantum pedatum in Dr. Wacher's garden.

A. ff. minutissimum lives up to, or rather down to, its name, being only 3 inches high, forming close-packed little tufts which increase slowly in moist shade.

A. ff. setigerum setigerum, 8 inches, is exactly like parsley in form, much more so than the parsley fern itself.

Blechnum Spicant is evergreen with hard narrow fronds which vary in height according to position. They average 10 inches on a shady bank of leaf-mould without lime, on the dry side, doing well under trees.

Blechnum penna marina is a comparatively new introduction from southern temperate and antarctic regions. It is stoloniferous and creeps even through rocks, forming little tufts some 3 inches high, of leathery evergreen fronds rather similar in habit and looks to *Lomaria alpina.*

Botrychium lunaria—moonwort—is quite unlike a fern in the accepted sense, being common in alpine pastures, where it sends up a single stem, succulent and 5 inches high, but seems to have no root system when one tries to collect it. After many unsuccessful attempts I have had some plants coming up, for the past two years, in moist gritty leaf mould.

Cetrach officinarum is quite the best variety for the rock garden, for it will grow anywhere and is quite unkillable. It grows to 4 inches in ordinary soil, but keeps to one inch growing in rock crevices where it sows itself freely. It stands full sun and during drought the evergreen leaves shrivel up and turn brown, looking quite dead to the world, but with the first rain quickly come to life again.

Cystopteris—the bladder fern—includes several types, all saxatile and deciduous. They will grow in sun or shade in rock crevices provided they have a

Dr. H. S. Wacher

Colchicum agrippinum flowering through a ground cover of *Polypodium dryopteris.*

deep root-run, and spread slowly by stolons. Those most often seen are: *C. alpina,* 4 inches; *C. bulbifera,* 6 inches; *C. dickeana,* 4 inches, and *C. fragilis,* 6 inches. All are very similar in the shape of the fronds.

Lastraea filix mas—the male fern: most of this group are far too big for the rock garden, but those which keep within a foot of growth are easy, with fronds that are practically evergreen although they fall to the ground in winter.

L. lepidota alpina (1 foot) includes a crested form and belongs to the *L. dilatata* group, being very effective in shade in the middle distance. *L. pseudo-mas* and *L. propinqua* are very similar to each other (1 foot) with stiff stems like whale-bone and crisp fronds, including several crested and fringed forms. They grow easily anywhere, but need protection from strong winds as the stems are brittle.

L. thelypteris is quite unlike other members of this group, for it runs about underground in moist peaty soil, like a polypodium. In a wet bog the fronds are a foot high, but if moisture is reduced the plant is less tall and perhaps not quite so invasive a menace. It is deciduous and dislikes lime.

Lomatia alpina comes from the mountains of central Europe. It is 4 inches high with blackish green tough evergreen fronds, making a thick mat of stolons in moist lime-free leafmould and shade. There is also a rare crested form.

Polypodium comprises a large group, all stoloniferous, the evergreen *P. vulgare* types making hard woody roots on the surface, while the deciduous ones make thin wire-like roots beneath the surface and spread more rapidly.

P. calcareum (6 inches)—the limestone polypody—is very common in the Alps, where it runs about in old loose stone walls in full sun, but the roots are so deeply placed that it is difficult to collect, for the wiry stems are brittle and break off short. It is not too easy to grow well.

P. dryopteris—the oak fern—(8 inches) is very similar in appearance to the preceding, but is always found running about in loose leafmould in shade, and flourishes easily under similar conditions at home, in fact when happy perhaps too easily.

P. phegopteris—the beech fern—(6 inches) is similar to the oak fern in habit and requirements, the difference being in the shape of the fronds which grow upright tapering to the apex, whereas with the latter the fronds lie flat at right angles to the top of the stem.

P. vulgare is a common plant often seen growing in large clumps on the roof tiles of old buildings, giving evidence of its capacity to withstand drought, although the varieties I describe should not be risked in this way, but should be given a fairly moist root-run of heavy soil and leafmould on a bank with part shade. There are a great many varieties but not all are strong growers and tend to revert to the common type, in which case the offending piece must be cut right out as soon as discovered. The best I grow are *PP. v. cambricum, prestoni, cornubiense follisum, bifido-cristatum, plumosum pulcherrimum, barrowi,* and *trichomanoides,* all up to 10 inches high.

Polystichium is another group in which the majority are too big for our purpose. They are all evergreen and make handsome symmetrical shuttle-cocks. Among my best dwarfs are: *PP. aculeatum congestum* (10 inches), *angulare congestum minus* (6 inches). They are all very easy and will flourish anywhere, sun or shade, lime or otherwise.

Polystichium lonchitis—the holly fern—is common in the European Alps, although scattered. It grows in the open, fully exposed, but with its roots buried deep in humus between rocks. It is decidedly capricious in cultivation and dislikes lime. When once established it is not wise to risk moving it, for it may not survive.

Pteris cretica (10 inches) is not usually regarded as hardy and is used largely to decorate bowls of forced bulbs. I have had it quite happy outside without protection for the past ten years, planted in moist leafmould at the foot of large rocks. Although evergreen under glass, it is usually cut to the ground by frost but always comes up again, even after —8°F in 1947. With its crested form it is quite attractive.

Scolopendrium vulgare—the hart's tongue. There is only one type plant under this name, but endless varieties include an extraordinary mixture of bizarre specimens, many quite unrecognizable in relation to the type. All are easy to grow on rock banks or crevices in shade or sun provided they have a cool root-run. They do not object to lime and being evergreen are decorative throughout the winter months. The size of the fronds varies from two inches to one foot according to position, the smallest being self-sown plants in cracks of rocks or tufa where there is a minimum of soil. They can be increased easily by pulling side crowns off large clumps. The best I grow are *SS. v. ramo-cristatum, laceratum, marginatum multifidum, undulatum, crispum, sagittato-projectum, abruptum, coronatum,* and *curiosum.* As with other varieties of ferns, these names are a dreadful mouthful, but they do at least describe the fronds adequately. Most of these varieties are difficult to propagate in quantity and consequently are rare and not easily obtained.

Woodsia is a small group of minute ferns, only 2 to 3 inches high. I have *W. hyperborea* and *W. scopulina,* both collected in the European Alps. The fronds are deciduous, like a small version of cystopteris. They will grow only in tight rock crevices with a minimum of humus soil and plenty of shade, and will repay the care needed to do them well.

I make no pretense of having included all the ferns that can grace the rock garden, but hope that these brief notes will stimulate enthusiasts to try their hands with an interesting group of handsome but sadly neglected plants. Added interest attaches to the fact that many, such as athyrium, ceterach, and scolopendrium will sow themselves freely, and in such cases they always seem to choose just the right spot where you would never think of planting them—if you could! Also, if you have crested varieties, especially of athyrium, many of these seedlings will also produce atypical fronds, although not traceable to any particular plant. It is in such ways that quite new first-class varieties may arise.

COLORFUL CONVOLVULUS

CARL STARKER, *Jennings Lodge, Oregon*

ALTHOUGH THE BINDWEEDS as a family have a reputation for being persistent and awful spreaders, there are some members of the group that merit wider acquaintance. A few that are safe in the rock garden, although not always too hardy unless grown in the proper situation, will include *Convolvulus cantabricus, C. cneorum, C. lineatus,* and *C. mauritanicus.* These are all plants for the hot well drained spots, perhaps a sunny moraine or stony light soil where drainage is good. The foliage is hairy, the growing habit is either trailing or in tufts; and the flowers are profuse and showy.

C. cantabrieus grows into an eight or ten-inch rounded mound that is perhaps sixteen or eighteen inches across. It has hairy small foliage and rather wiry stems. It has attractive rosy buds that open to handsome pink salver-shaped blooms, which are produced in profusion in midsummer. It sets seed readily, but will take about three years to produce a real show.

C. cneorum has particularly handsome foliage. It grows rather upright on woody stems to a foot or so, with fair sized obovate leaves that glisten with a silvery satin sheen. The buds are rosy pink and open to a soft pale pink. For a hot spot this plant is attractive for its foliage alone, but due to its rather late flowering it has an added value, since it tends to prolong the color show in the rock garden.

C. lineatus has tufted rosettes of narrow silky leaves that sit just at ground level. They spread by stolons and soon make pleasant mats of handsome silver foliage which, if they never bloomed, would still earn them a place in the sun. They want lime, perhaps scree and some stones, or so the books say, but seem quite happy in an ordinary nursery bed without any particular thought as to soil or drainage; in fact they run happily out into our sawdust paths and seem to flourish particularly in the barrenness of pure sawdust. They bloom a long time. Buds are deep pink and open to a lovely opalescent pale pink that is especially handsome with the flat silvery rosettes of leaves. The flowers are almost stemless. Propagation by division is easy. They do not set seeds for me.

C. mauritanicus is a most useful trailer. It throws its long, slender, pendant branches in all directions from the main stem, and flowers are borne in each leaf-axil, so that it is a colorful and attractive plant for a long season. Foliage is hairy and dark green, and the rather large flowers are a lovely clear periwinkle blue. It wants a light soil and good drainage, and makes a cascade of loveliness all summer through. As a porch box or basket plant it has much to offer, and is handsome as a wall plant. It comes readily from cuttings or seed. If in a well-drained position against a protecting rock, it is apt to be quite hardy.

TROUGH GARDENS

PETER P. KRIEGER, *Princeton, Iowa*

FOR THOSE OF US who are not the lucky possessors of an alpine house, the trough garden may be a boon to take care of the little alpine plants whose needs are often so difficult to satisfy in the ordinary rock garden. This does not mean that the trough garden is the final solution and cure-all for all of our troubles in keeping high alpines alive and happy, but it certainly is a great help towards this end.

A trough garden is simply a container in which to make a miniature rock garden; an old wash tub, or the top of an old washing machine, is ideal for this purpose. In fact any container not less than six inches deep is suitable, so long as it has several drainage holes in the bottom.

For aesthetic reasons the container should be covered with stonework, cemented around the outside; coloring may be used to mellow the appearance of the raw cement. The trough garden can be placed on the edge of a patio, on a low brick or stone wall, or any other easily accessible and desirable place. One can build a little pedestal from brick or stone, or just use a few flat rocks to set the container on, to give it the right height. The surface of the miniature garden should be about thirty inches from the ground for easy maintenance and observation of one's plants. For convenient watering, we make some tubes of small-meshed hardware cloth, covered on the outside with sphagnum moss to prevent the soil mixture from getting in the watering tubes.

Before we fill in the soil mixture, we cover the whole bottom of the container, to the depth of one or two inches, with broken flower pots, or limestone chips for calcicole plants, granite chips for calcifuge ones. On the top of the broken stone we put a thin layer of sphagnum to prevent the soil getting into the drainage material and clogging it.

The next thing is to make the necessary soil mixture for the particular alpines we intend to plant: for the lime lovers, a mixture of equal parts fresh sifted garden loam, sharp sand, peat, and agricultural limestone or limestone poultry grit; for the calcifuge plants, we omit the limestone and use instead sphagnum rubbed through a sieve.

Next we fill the container with soil to about one inch from the rim, and planting can now begin. It is good policy to set a few plants, creeping genistas, or others of similar habit, around the edge of the miniature rock garden, so that they will hang over the sides of the container, to mellow and partly to cover up the raw cement in the stonework. With the exception of bulbous material, all plants used should be evergreen, and not more than four or five inches high.

After planting is completed, the surface is covered with one-fourth inch of lime or granite chips according to the liking of the plants; this covering of chips acts as a mulch to preserve moisture in the soil mixture.

A few advantages of such an arrangement for high alpine treasures are that it does away with the museum-like look of long rows of flower pots containing a collection of alpine plants, that it is an easy way of watering and tending the plants, and that plants needing winter protection can be covered with cloches or evergreen branches. All plants grown in a trough garden will need some protection from hot afternoon sun.

A partial list of plants that have been successfully grown in the trough garden includes *Androsace charpentieri, A. carnea, Campanula arvatica, C. morettiana, C. piperi, C. radicosa, Dianthus acaulis, D. neglectus, Gentiana alpina, G. verna,* and Saxifrages of the Kabschia group. All plants needing moraine treatment, that is, plants that should be watered from below, do well in the trough garden.

MY ALPINE HOUSE

ROBERT M. SENIOR, *Cincinnati, Ohio*

An Englishman who wrote a book about greenhouses, remarked: "Where one does not possess a greenhouse, however small it may be, he cannot be said to derive half the enjoyment from gardening. I have seen so many tiny greenhouses that it was a wonder that the glass was able to stay in place—and literally a mass of brilliant bloom all the year round." The author of this book might have added one more observation: "And for a person who is no longer young, and can no longer bend and kneel outdoors like one more youthful, raising plants indoors can be a delightful avocation."

We have had a small greenhouse for many years. It consists of three compartments: first a tiny potting shed, with a door leading to an equally small "warm" room, and then another door leading to a somewhat larger "alpine" section, and since here we keep the ventilators open nearly all winter, there is just enough heat on cold days to keep the temperature slightly above 32 degrees.

In our middle section, or warm room, which in winter we keep approximately at 60 degrees, we have a fair sized box filled with sand, and placed over the hot water pipes. Here we place our cuttings, which are mostly alpines. Even when we insert cuttings in mid-winter, a large percentage of them takes root, and any time thereafter we pot them up, keeping them in this room, until we judge they can take care of themselves, and then move them to the cold room. Here too, often in February, we start some of our annuals.

Our "alpine" compartment is about sixteen feet wide, with benches around the sides. In the center of the room we have a rectangular concrete pool about four feet long, in which we keep a few goldfish. One advantage of the pool is that the water in it contributes toward keeping the room somewhat moister, which is a distinct advantage when the weather turns warm.

Above the pool, resting on metal legs, we have built a table about six feet square, which is enclosed by wooden boards, and on this table, every year, we build a little rock garden. I believe this is a rather unique addition to the Alpine House, at least I have never seen one like it in this part of the country. It is a source of endless pleasure to us, since the plants in it thrive much better than those that are kept in pots. Usually we plant this garden in late December or early January, bring inside most of the potted plants that we have kept in the cold frames and which, outside, have undergone a resting period. It is astonishing how many little plants can be inserted. This year we counted approximateiy 180 plants that had been used. Moreover as the flowers of some plants fade, we often replace these with others that are still in bud. Thus, until hot summer weather starts, we have a procession of bloom. Of course before midsummer, we dismantle the garden, level off the soil, and plant chrysanthemums for fall display.

Possibly the main difficulty with an Alpine House, at least in southwestern Ohio, is that it often becomes insufferably hot in summer. On several occasions last year, the thermometer registered 105 degrees, which ought to be sufficient to roast almost any alpine. Out of curiosity we kept some plants in this room all summer, including *Campanula saxatilis, Armeria caespitosa,* and *Erodium chamaedrioides,* and rather surprisingly, given plentiful supplies of water, they all managed to survive.

One advantage of a greenhouse is that seeds can be planted indoors early in the winter, and thus given an earlier start than those in a coldframe. Incidentally it seems to us that more seeds germinate when kept as far as possible at about 40 degrees Fahrenheit than when kept at a higher temperature. Moreover, after germinating, the seedlings can be transplanted into flats, and this often can be effected even in February.

Photos by Robert M. Senior

The table rock garden in Mr. Senior's alpine house.

We usually start our seeds in flats, and this year we experimented with several soil mixtures. In one instance, after inserting the compost, we topped one with vermiculite, in which we planted the seeds. In another, we covered it with a fair quantity of tiny pebbles, and in a third box we placed them in a half-inch of sifted, sterile sphagnum moss. The interesting observation that we made was that one species would often germinate more quickly in a box that was covered with vermiculite, than it would in sphagnum. In other instances, the germination was quicker in sphagnum. If there is any deduction to be made from this experiment, it is that the seed of a much desired plant should be tried in two flats, each containing a somewhat different compost.

In the winter of 1953 we filled a couple of six-inch pots with sifted sphagnum, which incidentally we first wetted thoroughly and pressed down, so as to

Silene pennsylvanica and other plants blooming in the greenhouse rock garden.

make the mass as compact as possible. In this we planted two or three different kinds of seed, all more or less rare, including *Gentiana macaulayi.* The germination during the following spring was very sparse, but we kept the pots in the greenhouse over the summer, and this spring, much to our delight, the gentian germinated freely. This is not an easy plant to raise in our climate, but we think we will have a better chance of success if we continue raising it in sphagnum, giving it occasional treatments of liquid fertilizer. We feel there is no question that certain plants have a better chance to succeed in this medium than they have in a soil compost. For example, for the last two years we have had a couple of Indian paint brushes growing in sphagnum and if they will survive another summer in the greenhouse, we may then conclude we have a way of raising these intractable plants. Incidentally, the surface of these old pots is covered with green moss, which may possibly be of some benefit to the plants. Similarily, we have a pot containing an astragalus, native to Alaksa, of which we planted the seeds in the winter of 1953.

Incidentally, in one of these sphagnum pots, a couple of "Hardtack", *Spirea tomentosa,* appeared. The seeds must have lain dormant in the sphagnum, since we had never planted them. Last summer they were about two feet high, and bloomed profusely. The branches died during the winter, but this spring they again came up from the roots, and give promise of blooming again.

For those who derive a certain amount of pleasure from raising a considerable variety of plants, the greenhouse is ideal. Even if he retains only one or two plants of each kind, he can tend them carefully, and hasten their growth to maturity. No matter if later they perish, he will have had the satisfaction of observing a species that he had never seen before.

HIPPOCREPIS COMOSUS, ALIAS LOTUS PINNATUS

HELEN C. SCORGIE, *Harvard, Mass.*

A FEW YEARS AGO, I purchased from an Eastern nursery a small prostrate pea under the name of *Lotus pinnatus*, but when the tiny gold flowers appeared, it was obvious that the plant was misnamed. Peek's Manual offered no clue, except the negative one that the nativity of the plants was not Oregon, which made the chance of its being from the West Coast very slim.

Recently Professor William Dress of the Bailey Hortorium identified the plant for me as *Hippocrepis comosus,* a native of southern Europe.

Mention will be found of this hippocrepis in various British rock garden books. Farrer says of it, "one of our prettiest natives, like a refined, neater Lady's-finger, with a better-furnished head of golden pea-flowers flopping from the neat mass of leaves in June, is an admirable plant for a sunny bank in ordinary light soil, and by nature a lover of lime."

That is a vivid picture of this little pea. But it should be stressed and underlined that the place for it is a "sunny bank", and not among the choicer plants of the rock garden. It is a highly invasive plant, forming a thick mat of foliage which steamrollers over everything in its path. It grows here freely and abundantly without lime, and unless one wants it by the yard, it is better to go without it.

The name "Hippocrepis" refers to the shape of the seedpod. It is from two Greek words, hippos, a horse, and krepis, a shoe.

Lotus pinnatus is probably not in cultivation. It is a larger, coarser plant of the West Coast bogs, would probably be difficult in ordinary gardens, and not especially desirable. The wings of the flowers are white, and the other petals light yellow.

VISIT TO JAPAN

PART III

HAROLD EPSTEIN, *Larchmont, N. Y.*

Another trip out of Tokyo was to Nikko, which is about 85 miles north in the mountains. Our party for these few days consisted of the Ozawas, Yoshie, and Mr. Matsumura, who had been director of the Nikko Botanical Garden. The first part of the trip was by train as far as Utsunomiya, where we were met by a car which drove us through a most rural area. Wheat was drying on mats on the roadsides in front of homes, with the dust of the roads settling on it. We stopped at Mashiko to visit Shoji Hamada, the famous potter who uses a very primitive Korean method of kiln baking. He has taught ceramics on several visits to the United States and England and now has as students a young American girl and a man living with him as apprentices. Mr. Hamada's home was a huge old farm house the interior of which had been magnificently reconstructed. After having our lunch which we had brought with us, we left and drove directly to Nikko where we were met with some torrential rain. We first visited the Botanical Gardens meeting the director, Mr. Shichiro Nakamura, and remained indoors hoping the rain would cease. Meanwhile we were shown some unusual old books, many with hand painted and colored illustrations of alpines. With the rain persisting, we taxied to the nearby Kanaya Hotel and rested after another very complete day.

The following morning we revisited the Botanical Garden nestled in the mountains and were pleased to find it in far better condition than many others we had seen. The rock garden is constructed of lava and has a varied flora including many North American natives. The trip through the other areas produced some beautiful vistas and many familiar trees and shrubs. Unfortunately rain and mist persisted for the few days in this area where we would have enjoyed weeks of exploration. We did get to Lake Chuzenji via trolley and cable car, seeing the falls there and then to a beautiful inn at Nanma which overlooked a huge field of birch and lupines near a lakeside. We were continuously experiencing new customs and foods which Mr. Ozawa was seeking for us. We shall not forget our food at the Nanma Hotel for one dish defied our many guesses. It was boiled greens which appeared to be spinach but was far more bitter than any we had experienced. We were relieved to learn that we had our first experience with chrysanthemum leaves. Our diary is complete with all details of names, description and components of all these dishes and it would be space consuming to attempt to relate them here. Naturally, we enjoyed some foods more than others throughout our stay in Japan, but cannot say that any of it disagreed with us. Our favorite of the native foods is Tempura, which is deep fried fish and vegetables of many varieties, dipped into soya sauce with grated white radish.

Nikko, besides being a famed mountain resort and retreat, contains the renowned Tashugu shrine with its most colorful and elaborate temple. The buildings are immaculately maintained and are continuously in a state of care and repair. We wished that we could have devoted more time to this part of our travel. Our trip back to Tokyo on the train permitted much conversation with the Ozawas and the comparing of plant experiences.

Our days were always fully occupied with new experiences and congenial company. It is just impossible to recount all of our visits or experiences and we can only touch upon a few more of the most interesting. We visited Sendai (about 250 miles northeast of Tokyo) where Mr. and Mrs. Matsumura and Miss McCoy, a teacher at the school, were our hosts. We stayed at this girl's school where Mr. Matsumura is principal, and visited the fascinating Matsu-

shima Bay area. We were impressed with the new Sendai Botanical Gardens which had just been opened that spring and were interested in the use of many natives of the area in this garden, *Iris gracilipes* being used as an edging and underplanting through many borders, and large groups of *Rhododendron wadanium (reticulatum), R. semi-barbatum* and *Indigofera decora.* This should be an outstanding garden within a few years.

Our original plans were to travel north from Sendai by train and then ferry to the northern island of Hokkaido, but such travel is slow and so time consuming that we decided to return to Tokyo by train and then fly direct to Hokkaido. But this did not materialize for upon returning to the Tokyo airport we found our flight cancelled (the second such experience). With a limited plane schedule, we feared depending upon the airline and cancelled that appealing excursion.

Among our new acquaintances whom we visited in Tokyo are Mr. and Mrs. Takanaru Mitsui, who were in the midst of constructing a new home and rock garden. With their keen interest and enthusiasm in alpine gardening, this new venture should produce one of the finest gardens of its type. We hope to see it after completion upon our next visit to Japan. We must at this time give praise to the creative art called "Sensai," which is another interest of Mrs. Mitsui. This is a highly skilled and tedious avocation that has been passed on for many generations in this family after originating many years ago in China. It consists of creating extremely detailed three dimensional pictures from specially dyed silk of many gradations of color, which has been cut in intricate and detailed fashion. The process requires painstaking, slow, fine work which words cannot adequately describe. Of all her creations, the most elaborate and prized is the portrait of her pre-war rock garden with its unusual detail and precision. Only actual viewing of this fabulous creation can give an understanding and appreciation of this extraordinary art.

In the course of a few days' trip to the Hakone area, which is about 60 miles southwest of Tokyo, we were the guests of Mrs. Mitsui at the family villa at Miyanashita. Again we were handicapped by incessant rain during the day, so that our attempt to expore this garden on its steep hillside was much too superficial. But we were impressed with the lavish use of *Enkianthus perulatus* as a hillside ground cover, neatly clipped to produce an undulating effect. This was only about 3 or 4 feet high and intermittently there protruded through this thick growth huge clumps of Lilium auratum which is also native in this area. The most prominent trees throughout this extensive garden were cherry and maple, which literally translates the meaning of the villa's name UNKINSO. This also means "tapestry of coloring in fall". We also recognized some other familiar plants through the garden—magnificent specimens of *Leucothoe keiskei* and tremendous humps of *Tsusiophylum tanakae,* many flowering plants of *Conandron ramondioides* growing on moss covered rocks with water trickling down and over them. We could easily imagine the beauty and serenity of this beautiful garden during its peaks at spring and autumn.

Part of this immense villa had been converted into a fine native inn managed by the daughter of Mrs. Mitsui and our visit was all the more memorable due to the lavish tempura luncheon served us. We were also cordially greeted by Mr. Mitsui's mother, a rather spry woman of 84, who still devoted a great part of her time to fine detailed embroidery. We shall value the opportunity of again visiting this impressive garden and its gracious hosts. Although this region is near Mt. Fuji, the inclement weather did not give us even a glimpse of this inspirational mountain. Fortunately our plane entry into Japan had given us a magnificent view of it. Space does not permit detailing the experiences in this area for the next few rainy days, and we again returned by train to our headquarters in Tokyo.

Incidentally, this traveling about by train was of considerable interest to us for it permitted a more leisurely means of observing many native customs. Native food was easily obtained for vendors were usually at railroad stations with a variety of packages. The most common were small wooden boxes containing an assortment of rice and raw fish snacks called sushi, all eaten cold. Tea is also sold in small clay pots with cups, which are left emptied on the train. Of course dining cars are also available on the express trains which cover longer distances.

A few days later we visited Yokohama, which is only about an hour by train from Tokyo. Our immediate objective that day was to locate Mr. Wada, proprietor of Hakoneya Nurseries, a pre-war source for the best and most varied of Japanese plants. We had been in communication with Mr. Wada during the past few years and learned that his business was now primarily the exporting of native bulbs, mainly lilies. After a bit of wandering about, our taxicab finally located the office and packing warehouse of Mr. Wada. After observing the lily sorting, grading and careful packing in fine sawdust, we were driven about by Mr. Wada to inspect his nursery, which was on one of the highest hills on the outskirts of Yokohama. We also visited one of the very few remaining alpine nurseries in Japan (owned by a very keen plantsman by the name of Suzuki). We were fortunate in being guided here by Mr. Wada for it would have been impossible to locate this spot outside of the city. Here we also saw some rare and beautiful native material although very little was in bloom at the time. A visit to the home and garden of Mr. and Mrs. Wada completed the afternoon and we then proceeded to the U. S. Army area where we were scheduled to have dinner with some childhood friends who had been with the forces in Japan since the end of the war.

Our final week was devoted to Tokyo and its vicinity and we were privileged to meet and visit with the family of Dr. Rokujo. Another visit to the Ozawas permitted a more leisurely visit through his garden and a more careful scrutiny of his extensive collection of plants, most of which are cultivated in pots. As one of the foremost amateurs in Japan, Mr. Ozawa has assembled approximately four thousand varieties or species, most of which are Japanese natives. His interest is broad and covers plants from other continents. Above all he is a skillful grower and propagator and it seems certain that we could learn much from his methods. What was most prominent was his use of different growing mediums. The first was live sphagnum moss for orchids, bog plants and other woodland plants. The second medium was well crushed lava for the higher alpines. And the last and perhaps least used was soil and a fine clay for other plants. It is hoped that some day he will write for our BULLETIN a series of articles to familiarize us with his very successful methods of plant growth.

The final few days were crammed with additional experiences, with meeting people and with trying more strange foods. One day as guests of Mr. and Mrs. Nakashima, we were introduced to an early dinner of charcoal broiled eel and then a visit to the Kabuki Theatre. Although the performance begins at 4:30 P.M., our hosts were considerate and suggested that we arrive after dinner at about 6:30 P.M. The final curtain was at 11:30 P.M. so that the five hours was a thorough indoctrination in this form of Japanese art. There were two additional showings of our Kodachromes that week. One was at the home of Mr. and Mrs. Ichikawa, where our audience included several enthusiasts who had already viewed the pictures at the Tokyo Wild Flower Society meeting, but who found that projection too hasty and the explanations too curt. Another showing was mainly for a group of botany students of Tokyo University, but here again many in the audience were repeaters from our first lecture. It was

evident that there was extreme enthusiasm among the plantsmen and women for greater familiarity with our flora, gardens and technic.

We also had the pleasure of becoming acquainted with Mr. Eikichi Satomi, a keen plantsman, majoring in camellias, who has written for some U. S. periodicals and is known to many people here.

These days were interspersed with visits to other gardens, botanical and private, last minute shopping, and shipping of the many kind gifts and mementos presented to us. Even our last few hours before departure were occupied with a visit to another outstanding bonzai collection on the outskirts of Tokyo. This was the private collection of Mr. Kunitaro Shibahata. While this collection consisted of many different species, there was a preponderance of different forms and species of azaleas and one extraordinary specimen of dwarfed camellia which we were assured was priceless. We were privileged to observe at work a 79-year-old artisan, Mr. Mankichi Fujizaki, who was training, trimming and generally "manicuring" some of the aged specimens there. This elderly man is one of the most skilled of these passing artisans, having started training when he was but 9 years of age. Much effort was expended in taking numerous individual portraits of the finest of these specimen plants, but we learned later that all our efforts were in vain for the film in our camera had jammed and not one picture taken on that day or on the previous few days was recorded.

Our Japanese holiday ended that evening and it was with much regret that we left for the airport to continue to Hong-Kong. It had been for us a period of maximum pleasure, a fulfillment of a dream come true, and the satisfaction of having added many new friends to our huge family of horticulture enthusiasts. We have many uncompleted projects and know that we shall revisit Japan before the passing of many years.

THE SEED EXCHANGE CALLS

In this second week of August I stopped in the Herbarium Rock Garden about five o'clock yesterday just to congratulate myself and the plants for having survived the heat wave. There I heard the faintest of popping noises, as if it were the call of the Seed Exchange. Surely enough, *Genista tinctoria* pods were unsnapping, faint echoes of other leguminous plants: the pattering of the prolific Siberian Pea-Shrub or the husky plop of Wisteria in early spring. Immediately, I responded with the pruning shears and a big grocery bag.

I hope that many of you have heeded the call through the season and the wide geographical range of our gardens has permitted a good harvest in spite of local weather vagaries and upsets.

No changes in procedure are contemplated. An effort will be made to start distribution as promptly as possible. Seeds or lists of what will be sent should be in my hands by November fifteenth when the seed list will be typed for the printer. More use of air-mail will be made to overseas members so that they will have an equal opportunity to participate.

BERNARD HARKNESS

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Nototriche auricoma has very small and densely hairy cushions. The individual leaves are little podgy hands, that have been who knows how many thousand years ahead of fashion in showing orange finger-tips to tone with the yellow face of the flower. — Clay

SALAMAGUNDI

AS THIS BULLETIN goes to the printer, reports, all too tentative and alarming, are coming in regarding the terrible floods in the northeastern states that followed in the wake of hurricane Diane. A large proportion of the members of the Society live in the stricken area, and to them we extend our sympathy, and the hope that they may have been spared serious loss.

Here, "far above Cayuga's waters", we felt only the edge of the storm. At Ithaca, twelve miles away, there were rather heavy but intermittent showers for several hours, yet at home there was only a slight drizzle. Connie brought much-needed rain, and her eye was scheduled to pass directly over Ithaca, still suffering from the wrath of Hazel last October, but she veered to the west, and caused no damage locally.

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This region has been plagued by severe drought since early May. Such showers as occurred were brief and extremely local, usually bringing little relief. Temperatures have run perhaps fifteen degrees above normal, often with high humidity. The combined results of drought and heat have been interesting, although distressing, to observe. Our own small rock garden, and the large one at Cornell, have not suffered from lack of water, and the losses are definitely due to temperature. It is clear that large clumps, especially of rosetted plants, have been the worst sufferers, while young plants, even new and unestablished divisions, of the same species, have come through unscathed. The tendency of old plants to mound up, bringing roots of many of the individual bits too close to the surface, seems to be responsible for most of the losses. Apparently much loss can be avoided by planting clusters of small plants fairly close together, rather than by permitting plants to develop into large individual specimens. Strangely, many species which prefer cool temperatures seem as yet not to have suffered: Asiatic gentians and primulas, cyananthus, and others have so far come through without serious damage.

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The June Bulletin of the Alpine Garden Society marked the hundredth appearance of that distinguished publication, which for more than a quarter-century has remained indispensable to the alpine enthusiast. This number opens with a lengthy and fascinating review of the activities of the Society, and of the part played in them by the Bulletin, and continues with Pedicularis' intriguing commentary, which contains some interesting sidelights on Farrer and nostalgic reminiscences of American plants no longer available. Of especial interest to eastern gardeners is, perhaps, Marjorie A. Brough's "Primulas, Meconopsis and Nomocharis"—three genera of temperament unsuited to this part of our country; her account of growing them under relatively unfavorable conditions may offer a clue to at least partial success over here. Among the other articles are two by contributors well known to members of the A.R.G.S.: Mr. Ginns writes of his Northamptonshire garden, and Mr. Rugg tells of New England ferns.

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The July Quarterly of the American Primrose Society begins a series entitled "Errata to the Pictorial Dictionary", which is really an extension of the comments regarding various species, and a summary of additional information accumulated since the appearance of the original articles. Roland E. Cooper reminiscences most entertainingly about his collecting experiences in the Himalayas.

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The April number of the Journal of the Scottish Rock Garden Club is

graced by five beautiful colored plates, as well as by numerous excellent black and white photographs. As usual, it contains a number of short and rather informal articles on a wide variety of subjects, from which the reader can acquire a great amount of information. Of especial interest is an article on Kilimanjaro and the plants growing there. A survey of most of the important books on rock gardening and related subjects; notes on winter-flowering plants; a visit to the Cascade Mountains; the cultivation of hardy primulas; dwarf conifers; these are a few of the topics discussed.

* * * *

It is almost time to send in seeds for our Seed Exchange. Mr. Harkness has called the matter to your attention elsewhere in this number. We have taken the liberty of advancing the date by which he must have your seeds, or at least lists of those which you expect to send, in order that the seed list may be distributed with the BULLETIN in early January. We hope that all contributors will make note of this new date.

Perhaps not all members of the Society realize the importance of the Seed Exchange, nor the impossibility of obtaining many of the species offered from any commercial source. There are occasional complaints of poor germination, or of seeds not correctly named. Only those who have had dealings with foreign seedsmen, or with botanical gardens, can appreciate the difficulty of obtaining good seeds true to name. Perhaps two or three British seedsmen are above reproach, but seeds purchased on the continent last winter have germinated poorly, and so far as it possible to determine at present, not a single one is true to name! Too many good, and rare, plants have come to this garden from the seed exchanges of the British and our organizations to permit more than passing regret that some lots have not germinated, or that an occasional plant has been falsely named. The Seed Exchange is an invaluable adjunct to our Society.

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Not long after the arrival of the BULLETIN, members will start thinking of Christmas shopping. For a garden-minded friend, there is no more appreciated gift than membership in a society devoted to his (or her) horticultural interests. Among the myriad specialist plant societies, we should like to remind readers of the following, and of what they offer to members.

The Alpine Garden Society publishes four superbly illustrated Bulletins, totaling over 300 pages, and a Yearbook consisting largely of show rules, reports of officers, and membership lists; the seed exchange list appears with the December number. Visitors to the British Isles are offered many other privileges. All this is for $2.80 per year, and at present there is a special inducement to join: those who apply between the date of issue of this BULLETIN and November 15 will receive, in addition to full membership privileges for 1956, the December 1955 Bulletin, which will permit participation in this winter's seed distribution. Membership applications may be sent to the editor of this BULLETIN.

The Scottish Rock Garden Club issues two Journals and a Yearbook, of excellent quality, and has an equally good seed exchange. Membership is $1.50 per year—and worth far more.

The Royal Horticultural Society offers for its minimum overseas membership of one guinea ($2.94), twelve numbers of its excellent Journal, and participation in seed distribution, with free admission to shows for members visiting England.

The American Primrose Society issues four quarterlies and conducts a seed exchange of a limited number of items. Membership is $2.50 per year.

The American Penstemon Society issues one rather large volume per year, and exchanges Penstemon seeds. Membership is only $1.00.

Of course our own Society must not be omitted, but members are already aware of the advantages of belonging to it.

If one wishes to give a membership, but is uncertain whether the proposed recipient may already be a member of an organization, the editor will, on receipt of a self-addressed postcard, check the membership lists of any of the above except the Royal Horticultural Society. This service (as well as his handling of memberships in the Alpine Garden Society) is his contribution to the development of these organizations: the more members each organization has, the greater service it can render to its members, and the more extensive can be its publications. So, in making a gift of a membership in a society to which you belong, you help yourself and the organization, and bring pleasure to the one who receives the membership.