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Albert M. Sutton, Editor

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THE MINIATURE LANDSCAPES OF JAPAN

STEPHEN AND SUZANNE JAMES, *Monterey, California*

The miniature in its many alpine forms has long been a source of delight to the rock gardener, and in the form of miniature gardens has probably reached one of its highest points in the diminutive English gardens designed by Anne Ashberry. Miss Ashberry uses only naturally dwarf plant material in her gardens, and in her book, *Miniature Gardens* (Van Nostrand, 1952), constantly emphasizes the importance of scale and proportion which is the secret of their fascination.

The miniature landscaping arts of Japan will also capture the imagination of those who love both nature and miniaturization. In this aspect of picture gardening in a container, the Japanese have been centuries ahead of us. They have mastered three different facets of miniature gardening: bonsai (dwarf shrubs, trees and vines in containers), bonkei (tray landscapes) and bonseki (tray stones).

SCALE WITH PROPORTION

In all these forms, the three-dimensional effect of scale with proportion is emphasized. The difference between a collection of plants in a container and a miniature scene of nature is the maintenance of a proportionate relationship between all aspects of the garden when the scale of feet is reduced to inches. The leaves and flowers of the trees, shrubs and other plants must maintain the same proportions as their larger counterparts in full-scale scenes. This rule of scale with proportion applies to everything in the miniature garden from the texture of the gravel to the figurines and accessories which are used to put man into the picture.

WHAT WE CAN BORROW FROM THE JAPANESE

Although Westerners may not want to copy the Japanese techniques exactly, study and experimentation will show that adaptation of their methods will result in some unique and very satisfying miniature picture landscapes. From the Japanese, we can borrow the following techniques and apply them to our own miniature gardening:

1. The use of rocks, and of different colored soils and sands.
2. The modelling of mountains, islands and rocks for temporary arrangements.

3. The use of perspective.
4. The bonsai technique of dwarfing small-leaved, small-blossomed material, and the pruning and wiring methods used to shape this material.
5. The value and appreciation of appropriate containers and exquisitely made accessories.

THE GARDEN TRADITIONS OF JAPAN

Japanese gardens, both large and miniature varieties, are a unique kind of landscaping in that they are an attempt to render in reduced scale a stylized reproduction of the natural landscape of Japan.

To depict their natural landscapes, the Japanese use two methods. One method is a faithful reproduction of the landscape in reduced scale as in the Artificial Hill Garden and in bonkei, where there is detailed, accurate reproduction.

The other method represents the landscape in a more abstract symbolic manner as in the Dry Landscape and in the miniature representations, bonseki and bonsai, in which the details of the landscape are furnished by the imagination of viewer.

Humanized Naturalism. Rock gardeners are, of course, familiar with the naturalistic style of gardening where the pictorial aspect of the garden is the important consideration, rather than a design imposed upon a site.

The Japanese approach to landscaping has been called Humanized Naturalism, and many of today's landscape architects consider this the modern approach to landscaping in lieu of the either-or tradition of the Formal and Informal (Naturalistic) styles.

The Japanese landscape designer thinks of himself as an equal partner of nature and art and has been using this "modern approach" for centuries: he has used naturalism and asymmetry in his design and, in addition, has integrated nature and architectural forms into a harmonious unit.

THE MAIN ELEMENTS OF A JAPANESE GARDEN

For a moment, let's discuss the physical characteristics of Japan which will help explain their predisposition in gardening. Japan is made up of islands which are long and narrow in shape, and consequently no part of Japan is more than one hundred miles from the sea. Sharp, steep mountains dominate the landscape, and the vegetation is luxuriant.

Thus it follows that the main elements of a Japanese garden are water features, rocks and evergreen materials, and these are used to depict their natural landscape of seacoasts, mountains and forests, and fields and streams. This applies to both miniature and full-scale Japanese gardening.

Rocks. Hard-textured rocks with a weathered and aged appearance are used in Japanese gardens to suggest mountains, seacoasts, waterfalls, islands and river beds.

Sharp, craggy rocks are selected for the mountains, gently sloping rocks for hillocks and rounded rocks for streams. To represent the various kinds of islands, appropriate rocks are also set in sand or water.

The Japanese feel, as undoubtedly do rock gardeners, that rocks and plants are the perfect complement of each other. The plants soften the hard lines of the rocks, and the rocks, in turn, give the plants a feeling of solidarity, which, at the same time, the combination emphasizes the textures and individual characters of both plants and rocks.

Plant Materials. The principal plants used in the Japanese garden are evergreen, both the broad-leaved and the needle varieties. Deciduous material, such as the maple, plum, and cherry trees, is used mainly as an element of contrast, patterned after the drama of nature herself.

Picturesque, asymmetrical-shaped shrubs and trees are used for the most part with the exception of the area near the house where plants are geometrically pruned to integrate them with the architecture. Sheared, rounded azalea shrubs are also used symbolically to depict islands and mountains in a landscape scene.

Water Features. Streams, ponds, lakes, waterfalls, and stone water basins are the major water features used in the Japanese garden. Streams suggest motion in the garden and may be either fast-moving, or shallow and slow-moving. In a simulated garden, a dry stream bed is laid out with the plants and rocks along the edges. The placement of the rocks and the way the sand is raked indicate the rapidity of the stream's motion.

In a simulated version to suggest the coastline, a level area of fine white gravel is raked into patterns suggesting waves, and rocks are carefully placed to represent islands.

There are at least seven different kinds of waterfalls which a Japanese may use in his garden design. These are categorized by the different ways in which the water comes down the cliff.

Man-made Features. Such features are used to humanize the landscape, and to link man with art and with nature. These include fences, walls, gates, hedges; stepping stones and pavements, bridges; water basins, sculpture and stone lanterns; and plants pruned in geometrical shapes. Each such feature must fit the scene so that the human element blends with nature rather than intrudes.

PERSPECTIVE AS USED IN JAPANESE GARDENS

One of the most interesting aspects of the Japanese Garden Tradition is their use of perspective in an effort to create the illusion of spaciousness in their small gardens and, in addition, to make these gardens more realistic and true to nature. These same principles of perspective are used in bonkei and bonseki to enhance their realism.

For example, in the foreground, near the viewpoint of the viewer or near the house, the Japanese garden-maker places large objects such as tall hills, and large trees, shrubs and rocks. Also in the foreground are placed the plant materials with coarser texture and brighter colors, and attractive and unusual garden features.

In the middle distance (or in the foreground, if desired) the trees and shrubs may be arranged in groves, making the garden appear further away through the framework of the tree trunks. A curving path that appears and disappears among the shrubbery also extends the depth of the garden.

In the background are placed low hills, smaller objects and rocks, shrubs and trees, and plants with finer foliage and darker color.

BONSAI, BONKEI, AND BONSEKI

There are three main streams of Japanese miniature garden art which exemplify these garden traditions: bonsai, bonkei and bonseki. Many gardeners in this country, particularly on the West Coast, are now familiar with bonsai, but relatively little is known in the United States about the two other Japanese miniature arts of bonkei and bonseki.

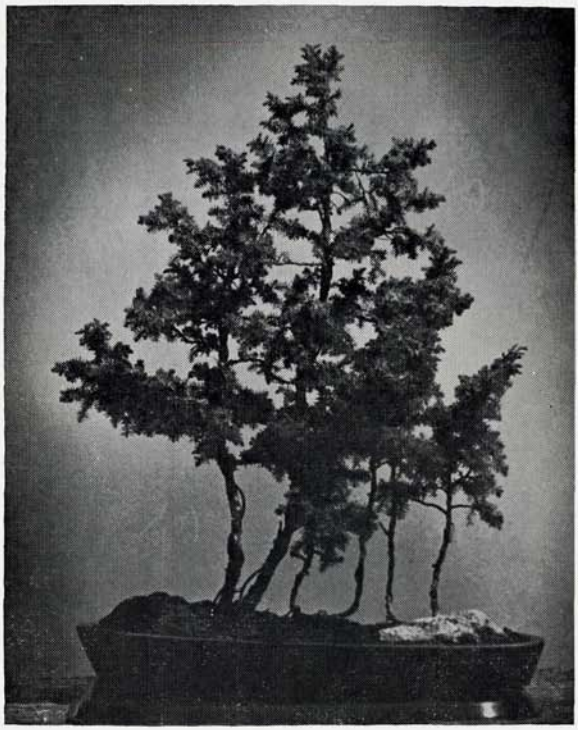

Fig. 1

A bonsai which conjures up visions of a woodland scene. From the bonsai nursery of Frank Nagata, West Hollywood, California.

BONSAI. (Fig. I)

A bonsai is an artificially dwarfed tree, shrub or vine which is grown in a shallow container with a limited amount of soil. This nanization has been called a triumph of horticultural achievement because the combination of scientific knowledge and observation, and tender, loving care can enable a bonsai to live for centuries. There is, for example, a record of one bonsai belonging to a sixteenth-century Japanese shogun which is still alive today.

A bonsai is not merely a potted plant. It is an art that will suggest to the viewer a whole landscape and will deepen his appreciation of nature and beauty.

Classification. According to its shape there are four main styles of bonsai: upright, semi-cascade, gnarled, and cascade. It is classified also according to its size which may range from the two-man bonsai, which is so large that it needs two men to carry it, to the finger-tip bonsai in its thimble-sized container which is small enough to balance on a fingertip.

Plant Materials for Bonsai. The plants used for bonsai are heavy-trunked to indicate age, with small leaves and small flowers in proportion. Any plant with these qualifications can be made into a potential bonsai by keeping the roots pruned and confined in a shallow container.

Among the Japanese, favorite plants to be used for bonsai are small-needled pines, mountain cherry, and maple trees. They also use apricot, azalea, bamboo,

beech, wild camellia (with tiny blossoms), cedar, juniper, persimmon, spruce, pomegranate, willow, and wistaria. Deciduous trees are particularly prized because the foliage and flowers show seasonal changes.

A bonsai may be grown from seed, from cuttings, or by layerage. In Japan a favorite pursuit is to find trees that are naturally dwarfed by poor soil and by climatic conditions. They are then carefully transported and transplanted, thus producing an age-old bonsai in a much shorter period than if the bonsai had been started from a seed or cutting. This avocation, however, has been so popular that there is now a dearth of such trees in Japan.

In America, if we are lucky enough to find some appropriate specimens and are able to obtain permission to dig them up, we can also accelerate the process by starting with a climatically dwarfed tree. However, if this is not feasible, we can hunt for stunted, asymmetrical trees and shrubs at the nurseries, and be able to get a good start this way.

To help define the shape that the bonsai-maker has in mind, the tree is pruned and wired so that the tree can be bent to the desired shape.

Containers and Accessories. The container is very carefully chosen to the age and shape of the bonsai. Its color is subdued rather than gaudy, and should suggest earth or rock. The Japanese favor such colors in their containers as black, gray, dark brown, dark blue, red, or purple.

No accessories are used with a bonsai except perhaps a carefully selected rock. The more realistic aspects of the landscape suggested by the bonsai are detailed in the viewer's imagination.

BONKEI (TRAY LANDSCAPE) (Fig. II)

Whereas it takes years to attain the desired effect with bonsai, a bonkei or bonseki may be completed in an hour or less. The disadvantage of these two art forms in contrast with bonsai is, of course, their temporary nature: the bonkei with care will last from two weeks to a month, although there have been some that have been carefully preserved for a year; the bonseki, as long as its tray is not jarred.

Hakoniwa (Box-yard). Bonkei was originally a derivation of hakoniwa which is a miniature garden meant to be kept for years. Although not as popular now as bonkei, some Japanese who like their landscapes more permanent than bonkei and more detailed than bonsai, still construct hakoniwa.

Hakoniwa uses natural stone and small living evergreen and flowering shrubs such as box, cryptomeria, juniper, larch, spirea, and zelkova, and bamboo and mosses growing in regular soil. Its container is usually made of select woods and may be just about any size; a hakoniwa is occasionally planted in a shallow pottery container. It is kept on a table in the garden but, like bonsai, may be taken inside for short periods.

Bonkei. Bonkei has been popular since the beginning of the twentieth century when keto-tsuchi, a form of peat, was discovered in the vicinity of Tokyo, and used as the material for modelling hills and mountains and other parts of the scenery where natural rocks had formerly been used in hakoniwa. There are now over forty different schools of bonkei popular in Japan.

As a substitute for this special peat, which is difficult to obtain even in Japan (and is not exportable to the United States because of quarantine laws), old newspaper soaked in water and mixed with clay, or a mixture of earth and sphagnum moss, may be used for the modelling. Once the scenery is modelled

with the hands and spatula to the desired shape, a white clay (hena-tsuchi) is used as a base coat for color pigments which are brushed on to add details to the landscape. The nearer parts are covered with a fine moss and 'path sand' or a different colored earth than that used for the foundation is used to delineate the paths. The accessories, made of baked clay or cast metal, are exquisitely detailed.

Bonkei trays, ranging in size from one to three feet, may be concrete, bronze, porcelain, metal or heavy white plastic, and are round, oval or rectangular in shape.

Equipment. In addition to the foundation material and the tray and accessories, other equipment needed to make a bonkei include various shades of blue, green and white sand which will represent water in the scene, powdered pigments to add detail to the foundation and live and/or artificial plant material.

Also needed will be spatulas for modelling the details on the mountains, sieves for sifting the sand, and brushes to apply the color.

Plant Material. In some schools of bonkei only live material is used in the miniature landscape; in other schools only artificial material is used, while other schools use live material in the foreground and artificial trees and shrubs for the background and for variety.

The live trees and plants used principally are picturesque-shaped pines, cryptomerias, Japanese spirea, and Hinoki cypress, and also those already mentioned for use in hakoniwa. The artificial material includes pines, cypresses,

Fig. 2

A garden in the round—an American adaptation of bonkei—using bamboo and jacaranda that have been dwarfed according to the bonsai principle.

cryptomerias, flowering prunus, cherry trees, maples, persimmons, and irises.

Perspective is a very important aspect of this art and gradated plants and accessories are used along with pebbles, sands, and mosses in progressively diminishing sizes and gradating color.

Saikei. Bonkei now appears to have come full cycle and there is a movement (principally among the bonsai artists) to again give bonkei a more permanent form. The bonsai people have evolved a new form to which they have given the name of saikei. Sai means to plant trees or grasses; kei means scenery.

In this method there is the return to the use of natural stones, and natural trees are planted by the method called toriki. The toriki method calls for propagating the miniature trees by means of air-layering of the roots. We have seen a picture of a forest scene in which seventy tiny spruce were propagated from a single root. This, however, took twenty years, but in bonsai circles, twenty years, of course, is merely a tick of the clock. (To be continued.)

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SEED RECOVERY FROM FLESHY FRUITS

CORNELIUS H. HAAS, *Norwalk, Conn.*

At the fall meeting of the North Atlantic Regional Group, the question was raised as to the best way to extract small seeds from fleshy fruits. The specific example was *Vaccinium vitis-idaea,* which has pea-sized fruits with tiny whitish seeds. Miss Carol Beckwith, who raised the question, kindly distributed fruits which she had collected on Mount Mansfield in Vermont.

The consensus of those familiar with the problem was that the fruits should be crushed in water and the skins and pulp separated from the seeds. It was further suggested that the presence of the pulp inhibited germination in many cases. No details of the process were given, although the use of a "suitable" sieve was mentioned.

The following procedure was tried on the *V. vitis-idaea*:

A fairly deep glass with a smooth curve between the walls and the bottom was selected, the fruits put in it and then enough water added to float them conveniently. The fruits were then crushed against the side of the glass and more water was added to make a thin suspension. In this case the skins floated and were fished out at once (with a fork). The pulp was further broken up until seeds began to accumulate on the bottom of the glass. The whole mass was allowed to stand over night to soften any dried pulp with seeds in it.

The pulp, as well as the seeds, settled to the bottom of the glass. It was found that a gentle swirling motion of the glass would put the pulp in suspension again but leave the seeds on the bottom of the glass. Careful decanting of the liquid would carry off part of the pulp. More water was added and the swirling and decanting repeated until no more pulp was seen in the glass.

At the final decanting, enough water was left with the seeds to wash them out of the glass onto a sheet of filter paper or absorbent tissue. Note that the pores of the absorbent paper should be fine enough not to trap the seeds when dry. For coarse seeds, paper towels could be used. If the fruits are dried out, they should be soaked long enough to soften them before trying to crush them.

Seeds separated this way were planted while still wet in a starting pot of rhododendron soil topped off with a thin layer of sand and the seeds covered with milled sphagnum moss. They germinated within two weeks and at one month seemed vigorous and healthy.

Since the first trial I have used this method for fruits of one of the aronias and *Vaccinium macrocarpum*. Neither of these has yet shown.

This method is not being proposed as new. I seem to recall that an old Italian gardener used it to obtain seeds from his favorite plum tomato strain.

GEMS ALONG THE MOUNT WHITNEY TRAIL

MRS. D. S. CROXTON, *Folsom, California*

In my photo album, flanking the views from the Mount Whitney trail, is a dried flower cluster. For years its fragrance lasted. Its incomparable blue color finally has faded. *Polemonium eximium*, sometimes popularly called Skypilot, is one of the rare high alpines found in the Sierra Nevada Range and the Mount Whitney region and those who, during the summer months, climb this mountain are rewarded by the sight of brilliant blue flower clusters that fill the air with delicate fragrance.

The dried flower was acquired some thirteen years ago when, as a newcomer to this country, I spent my first summer vacation in the mountains at a base camp run by the Sierra Club. As luck would have it, enthusiastic professional botanists were along to collect alpine plants and these people were most generous in sharing their knowledge. We climbed Mount Whitney that year, going up the trail on the western side. The bright blue flower clusters of the rare *Polemonium eximium* were pointed out to us. They were numerous that year and so I was permitted to pick two clusters, which I carefully dried.

This summer my husband and I decided to end our hiking vacation with a three day trip up Mount Whitney. This time we went up the east side. Our trip was carefully planned so as to coincide with the blooming season of *Polemonium eximium*. This depends somewhat on the year's snow conditions, but one can usually depend on it being early in August. (We were there August 8th this time).

Our climb started at Whitney Portal at 8,367 feet. This is part way up the steep-sided valley down which Lone Pine Creek flows out of the Sierra into Owens Valley, which separates two big California mountain ranges, (Sierra Nevada and White-Inyo ranges). The excellent Mount Whitney trail follows up Lone Pine Creek and leads up from one basin into another, crosses the crest at 13,335 ft. to the west side of the mountains and contours from there on to the summit, (14,496 ft.). The change in flora is interesting. From pines and desert sagebrush, the usual bright red Indian paintbrush and lush stands of blue larkspur, one comes to the reddish mountain heather *(Phyllodoce breweri)* and its lake and streamside forest companions. In seepage along the trail a few rosy primroses were blooming. In alpine meadows and along the stream were masses of dodecatheons. Growing in comparatively dry places along the trail and on granite shelves were silvery cushions of *Eriogonum ovalifolium* (probably a subspecies), carrying their reddish woolly flower-heads in profusion closely above their tiny dense leaf-carpets. I have seen pictures of *E. ovalifolium* grown in a scree trough and thought this species might be grown that way.

We had passed the 12,000 ft. trail camp with its tarn and rock shelves and were working our way up to the switchbacks that lead to the crest when I spotted the first polemonium. It had been blooming for some time and the flowers were beginning to fade. Soon we began to see more clumps and further along the switchbacks they were quite numerous and were in full bloom. I was sorry to see some flowers on the trail here and there where hikers had evidently picked and dropped them.

Polemonium eximium grows mostly on shelves of decomposed granite and in crevices, obviously with perfect drainage. In places the soil seemed rather dry on top and I thought this plant must have need of a long taproot to survive. Aside from the fact that it is very rare, it would be next to impossible to transplant. Plants were growing well on the eastern and the western side of the mountain, although it seemed to me that they were more numerous where east or north-east exposures prevailed. The foliage is fine and dense along the stems, slightly sticky, of medium to olive green and it has a definite musky odor which I find wholly unlike the flower fragrance. Although height is variable, I'd say the plant, including the flower clusters, is about six inches high. I think this alpine might be grown from seed but I do not know that it would retain its brilliant flower color or its alpine characteristics.

We found two other alpines in the same locale as the *Polemonium eximium* that are worth mentioning. On the east side of the mountain, close to a spectacular ice wall, sculptured with crystals and icicles, we found a tiny clump of what we thought was *Draba lemmonii.* Hairs on the leaves were quite noticeable. It was a bright patch of yellow, blooming through a layer of ice. Blooming clumps of this minute plant were growing in many places that were wet with snow seepage. The plants I saw were east-facing and were growing in crevices in decomposed granite and often sought protection in the lee of a rock. The genus *Draba* happens to be one of my favorites, but, so far, I have not had much luck with plants of this genus ordered by mail from rock garden specialists. Only *Draba polytricha,* growing in a can, seems to do reasonably well. *D. mollissima* quit on me. Maybe a moraine-like condition with water seeping through is the answer.

On the west side of the mountain, just over 13,000 ft., clumps of neatly-rayed yellow flowers were blooming in protected spots. I did not remember seeing them before and could not place them. The leaves were crinkly and furry. A picture of *Hulsea algida,* shown in Lemmon and Johnson's *Wildflowers of North America,* and listed as a high alpine, looked just like these. A botanical list of flowering alpines collected by the botanists on my first mountain trip in 1949 did list *Hulsea algida.* It was collected at two different locations above timberline then, and I think that it could have been what we saw on our trip this summer.

SEED RAISING (A FURTHER COMMENT)

RICHARD LANGFELDER, *Chappaqua, N. Y.*

(Editor's Note)—See articles on seed raising by Mrs. Klaber and Mrs. Gosling in the *Bulletins* for January and October, 1962.

Raising alpines from seed is sometimes not only a rewarding experience, but often a necessity. There are some plants that you cannot buy in America and should you import them, you cannot be assured that they will grow successfully in eastern North America. If raised from seed, the chances of success are considerably higher—and the cost is much less. Then there is the pride of accomplishment, and your love for your 'babies' is, of course, much greater than it would be for purchased plants.

For three years I have studied and tested various methods of seed raising, particularly the European way, the system advocated by Mrs. Klaber, and the Gosling method, the one more or less generally practiced. Also I have tested the method of using polyethylene bags as described by Mr. Adamsen in the April 1961 Bulletin, as well as many other ideas which are mentioned in L. D. Hills' book, *The Propagation of Alpines.* This book I can recommend to all newcomers and, in fact, to all alpine gardeners. There is a lot of information in it and it

helps to answer quite a few pertinent questions which arise in the course of propagating alpines. Always searching for a foolproof, easy method of seed raising, for two years I have divided each of about forty packages of different alpine seeds into four parts, as follows:

Part I—Seeds are planted in the cold frame, as described by Mrs. Klaber in her book, *Rock Garden Plants,* 1959. Here I use regular glass sashes.

Part II—Seeds are planted in pots, which are put in cold frames and left until germination.

Part III—Seeds are planted in pots, which after freezing in my freezer or outside in the cold frame or on the north side of my house in the open, are brought into my root cellar, (temperature about 35-40 degrees) and later after germination, into my greenhouse. If there is no germination by April, they are planted in the cold frame to stay.

Part IV—Seeds are planted in pots, which are enclosed in polyethylene bags and frozen, then as in Part III, transferred to a cold frame or to the cellar.

I ready the cold frames in the fall. At first I followed Mrs. Klaber's recommendations, but later I modified them somewhat. I now use more grit and sand and less vermiculite. I do not use newspaper, but I am very fond of the 'Lumit' shader, which I put on in March, that is, if the sun is shining. I start with the 64% shader and in May, when the seedlings are getting large enough, I use the 50% ones. I put them on about ten o'clock and take them off about three or four o'clock. I water with a 'Schneiderkanne', a German watering can with a very fine rose, or I water right through the shader.

By the above method you can sow 100 to 150 varieties in one 3 x 6 foot frame and it takes about one or two hours. Of course, the labels must have been prepared in advance and stuck to the packages. Germination is good but depends much on the condition of the seeds; how they are treated after collecting and cleaning. Many seeds are stale and dried up when the gardener receives them. Where they are kept is also very important. I keep my seeds in the vegetable tray of my refrigerator and put there all the seeds I get. I trade seed with fellow gardeners in other countries and we send the seed right after harvesting, even though they are not yet cleaned. They can be used right away, which helps a lot. Most seed will germinate easily right after collecting. Another thing I do is to sow another batch of seed of a different variety right on top of those that did not germinate the first year. Sometimes, to my great surprise, both varieties come up and can be told apart quite easily.

In comparison with pot-grown seedlings, those grown in the cold frame are sturdier and stronger. Against the cold frame method is the fact that mice and birds may eat and destroy a lot of seed, ants may carry them away and slugs are very fond of young seedlings. Only a good and tight frame with banked up soil all around will prevent these accidents. Slugdust will control the slugs and ants to a certain extent. I sprinkle rotenone powder over the whole frame against ants and some other soil pests. I also look for slugs under and on the sides of the pots. Later on the shader will help to keep the birds away. If I have only a small quantity of valuable seed, I agree with Mrs. Gosling that planting in pots is the right thing to do. For sowing in pots and flats, I use a double amount of loam, as I find that I can let the seedlings remain longer in the pots or flats, and that they are sturdier than when planted in the usual mix of 1/3 parts each of loam, sand, and peat or leafmold. I add 1/6 part of stone grit and some bone meal or ground phosphate. For androsaces and saxifrages etc., I mix 1/2 part of loam, 1½ parts of leafmold and 2 parts of sand and grit.

L. D. Hills, in his book *The Propagation of Alpines,* tells about the different mixes for the more difficult alpines, such as putting coal dust on top of the

mix to control moss for those which either take longer to germinate or have to stay in the pots for a long period before being transplanted. I also have handy a mix of fine sand and fine sifted leafmold with which I like to cover the larger seeds. For the fine seed, I put about 1/8 to 1/4 inch of fine grit over the mix and then sow the seeds very thinly without further covering. I stand all the pots in a deep tray partly filled with water and let them soak up what they will and then I remove them. Those pots which go in the cold frame, I cover with screening or hardware cloth of not more than 1/4 inch. It should be bent down hard over the pots as a protection against mice and birds. With screening, most of the slugs are kept away from the seedlings.

In my cold frame the soil is removed to a depth of about 8 to 10 inches and replaced by a mixture of 75% fine peat and 25% sand and in this I bury the pots up to their rims. My reason for this is that in this way they are kept moist longer and it is easier to take the pots out and put them in again and there is less breakage of pots, too, when hard frozen. If there is snow, I put a lot of snow on top, very gently, close the frame and that is all. I leave the pots until a good germination has taken place, then I remove them to the other cold frames, which are located in the sun. Here the young plants are handled with the same care as are the seedlings in the cold frames.

Test III consists of pots planted as in test II, discussed above, but they are frozen either outside or in the freezer and after a short time I take them to the root cellar or direct to the greenhouse. After three years of this system I have found that it requires too much work and daily inspection. I have also very often found some mold and damping off. Sometimes I do not inspect when I should, and in that interval between inspections, seedlings come up and become drawn and spindly and cannot be saved. I have had no damping off in the cold frame sown seedlings and none in those pots which stay in the outside frames. These cold frames are in dappled shade and have no shader; they have light wooden sashes, mostly 1 x 2 inch lumber with cellotex tacked on. These are light and easily removed. The cellotex has about 15 to 20% shade built in.

Test IV involves raising seeds in prepared pots placed in polyethylene bags, as Mr. Adamsen has done for some time. I freeze them and put half of them in a cold frame and the other half in the root cellar. All pots indoors are inspected daily and those outside, every three to five days. This treatment is excellent for tropical plants, for cuttings and such. Overall germination is good, growth is fast, but damping off and the always prevalent moisture make the seedlings too tender, so they must be hardened off and one is forced to transplant them in a hurry. Many seedlings are lost in this process. I, myself, am against quick transplanting. I have wonderful results when I keep the seedlings in the pots or flats as long as possible. I am talking about the rarer and more difficult plants such as androsaces, the *Kabschia* saxifrages, ramondas and many more. The most important thing is to sow all the seed very, very thinly, as Mrs. Gosling recommends.

Some seeds will germinate only in daylight and others will do so only in the dark; some want to be frozen and some, like *Adonis,* should be soaked in water for at least one day, otherwise they will lie dormant another year. This kind of seed is loved by the mice.

Some German books list seeds which will germinate only in daylight, as for instance: *Primula acaulis,* auriculas, anemones, aquilegias, alpine asters, *Digitalis, Erinus* etc., etc. Those which will germinate only in the dark are: delphiniums, hellebores, lupines, *Myosotis* and many more.

On the following page is a table of seeds as planted in the four sections described above:

	Sown Direct In Cold Frame	Pots Left In Cold Frame	Pots Frozen and Put In Greenhouse	Pots In Polyethylene Bags
Primula minima	Came strong and good	More germination but smaller	None	None
Androsace pyrenaica	Not enough seed to sow	Very good	None	None
helvetica	Not enough	Very good	A few	A few
carnea brigantiaca	Good	Good	Not good	Spindly
chamaejasme	Lots of them	Good	Some	Spindly
Aquilegia jonesii	Good	Better	A few	None
Adonis vernalis	Very good still coming	Good but fewer	Not good	None
Cornus canadensis	None—mice??	Good	None	None
Daphne various	None, maybe this year	Good	Good	None
Draba pyrenaica	Very good	None	None	A few but died
Gentiana acaulis clusii etc.	Good and strong	Good	None	A few but died
Asian species	Good	Good	Good	Good
Loiseleuria procumbens	A few	Very good	None	None
Onosma helveticum	Very good	Very good	Spotty	None
Saxifraga Kabschia div.	Not too many but strong	Good	Spotty	Spotty
Anemone vernalis	Very good	Very good	Spotty	Spotty
sulphurea	Good	Good	Spotty	Spotty
narcissiflora	Good	None	None	None
Campanula Alpine species	Good and stronger	Good	Good	Good

In order to be perfectly fair, I intend to try ten pots by Mrs. Gosling's method. I shall sow some of the rarer seeds in the cold frame, too, to check. Easy alpines like *Alyssum, Myosotis, Linum, Anacyclus depressus, Antirrhinum asarina, Aster alpinus, Astilbe chinensis,* aethionemas, aubrietas, and many more. I sow directly outside in the ground at the same time I plant my peas. I dig in some sand and rake it well, make little furrows and sow the seed. I water well with a fine spray, cover with one of the cellotex frames, with each corner resting on a brick. This gives a little shade and plenty of air. The frame is removed as soon as the seedlings start to appear. This saves some time in a usually crowded schedule.

Seed raising is just one part of the business of getting young plants for my garden. Transplanting is just as important. But here I disagree with Mrs. Gos-

ling and Mrs. Klaber. Fast transplanting may be all right with the quick-growing alpines, but for the rarer choice alpines like *Kabschia* saxifrages, aretian androsaces, ramondas and haberleas as well as the *acaulis* group of gentians and many more, I prefer to transplant very slowly. When I transplant slowly I have very gratifying results here in the northern part of Westchester County in New York. It may be very different in other parts of our big country! Is it?

While I was visiting Mr. Boughton Cobb, author of *A Field Guide to the Ferns,* he showed me his method of fern raising. He uses a one-loaf, plastic breadbox in which he places three 3-inch pots. It is a kind of tiny greenhouse, easy to carry around and the cover fits tightly. I intend to try it for other varieties of seeds. It is easy to open and to check, and holds moisture better than do the polyethylene bags. After germination, when the seedlings have grown a little, one can harden them off by removing the cover a bit at a time.

INTERCHANGE

Seeds Have Germinated—What then?—Mr. Wellington F. Barto, 3600 North 27th Street, Arlington 7, Virginia, writes that seeds obtained from the Seed Exchange were planted according to the detailed instructions of Nell Lee Gosling, that appeared in a previous *Bulletin,* and that germination was surprisingly good. However, in the absence of specific directions as to handling his seedlings, he lost almost all of them. His question: "What should the poorly equipped amateur do with the seedlings after germination?" Is there someone, knowing the Virginia climate and the cultural requirements of plants there, who can help Mr. Barto?

A Book Wanted—Anyone who has a copy of *The New Flora and Silva No. 14* for sale or knows where one can be obtained, please communicate with Mr. Ray Williams of 108 Meidl Ave., Watsonville, California. One possible lead—write for Wheldon & Wesley's catalogue. The address is Codicote, Hitchin, Herts., England. No. 14 is Vol. IV No. 2 and was published in January 1932.

Dwarf Bearded Iris Again—Perhaps Mr. Walter Welch's article in the *Bulletin* of January 1963 may have stimulated interest in these colorful little iris and information concerning them may be obtained by writing to Mr. Welch at Middlebury, Indiana or to Mrs. Leona Mahood, Supervisor of the Northwest Test Garden, 11250 First Avenue N. W., Seattle 77, Washington.

Madrona Leaves—Many northwestern members have these beautiful native trees, *Arbutus menziesii,* on their property. Although they are broad-leaved evergreen trees, it is their habit to shed their unwanted leaves in August. The resulting leaf blanket is a headache to all as the rejected leaves seem to sulk and resist decomposition. Has anyone discovered a use for them or any easy way of disposing of them? There are many who would welcome such information.

Mentha requienii—There are members who have loved this tiny carpeter and then lost track of it. Many may even have forgotten that such a plant exists or that it has the power to charm. Should anyone wish to reclaim this plant with the minty fragrance, it is suggested that the advertisers in our *Bulletin* be contacted. Several of them list this plant.

Coptis laciniata—Major General D. M. Murray-Lyon, Ardcuil, Pitlochry, Perthshire, Scotland has this suggestion followed by a request: "For what it is worth, may I suggest that quite a good way to describe the requirements of an uncommon plant is to say that it needs the same treatment as so and so, some better known plant. Perhaps someone could do just that for me with regard to *Coptis laciniata.*

White Flowers—Mr. Roy Davidson, 905 Western Ave., Seattle, Washington has entered into the spirit of the Interchange innovation with much enthusiasm. He writes, "I am particularly fond of white flowers of good clarity and would invite the opportunity of corresponding with others so addicted".

He Knows What He Wants—Roy Davidson again. His request: "I am wondering if anyone has growing and will share the albino *Iris verna* or *I. lacustris* or any of Mrs. Henry's *Iris verna* or *cristata* selections which were registered with the American Iris Society? These were 'Vernal Dawn', Vernal Evening', 'Vernal Fairy', 'Vernal Night', 'Vernal Simplicity', 'Crested Fairy', 'Crested Gem', and 'Crested Ivory'. In primulas, I am at the moment seeking any of the older Juliana hybrids (except 'Wanda'), such as 'E. R. Janes', 'Pam' or the hose-in-hose 'Sparkler'; or any of the Garryarde hybrids, especially 'Enid' or the true 'Guinevere', soft pink. In penstemons, I am interested in the low shrubby kinds, but particularly am seeking the true 'Six Hills' hybrid, mauve in color; this was possibly in the late Cleveland Morgan's garden as he made frequent trips to England and could well have brought it back. What we have here by this name is red-flowered. Does anyone know if the mauve one could have been in his garden or of anyone who might have obtained a rooted portion of it? Another thing I'm seeking is the true 'Dudley Neville' *Alyssum,* cream-colored on a lower plant than other saxatiles."

Miss Merna E. Spring of Arkansas is Answered—Subject: Rock Garden Books. Mrs. R. S. Peterson of 16414 12th Ave., S. W. Seattle 66, Washington, recommends two books, both of which, she thinks, may be obtained from Mr. Lynn M. Ranger, 41 Lynn Shore Drive, Lynn, Mass. They are E. B. Anderson's *Rock Gardens* and Alan Bloom's *Alpines for Trouble-free Gardening.* Mr. Edgar L. Totten, our secretary, states for her benefit that the Brooklyn Botanic Garden, 1000 Washington Ave., Brooklyn 25, N. Y. had published a very good little book on rock gardens for only a dollar.—Subject: Freezing of Seeds. Mr. Totten suggests that Miss Spring send for the catalogue of the Pearce Seed Co., Moorestown, N. J.

Mrs. Willard E. Robbins of New York is Answered—Subject: Those dwarf bearded iris again. Mr. Totten mentions an ARGS member, Vivian Grapes, Big Springs, Nebraska, who has a long list of them. She operates under the name of Franklin Gardens.

An Edging Plant for Mrs. Peterson of Washington State—Mr. Totten writes: "Mrs. Peterson asks for an edging plant less rampant than thyme. *Chrysogonum virginicum* (Virginia star flower) everblooming would be nice. I use it extensively. Clumps may be divided every year or so and in a short time a large stock can be accumulated."

MIDWINTER IN THE ALPINE HOUSE

REX MURFITT, *Cold Spring, New York*

The alpine house is probably appreciated more at this time of year than at any other time. The long winter still persists and the consecutive snows still cover the rock gardens and terrace beds. The temperature today is below zero and a cutting wind of 30 m.p.h. howls across the nursery. Alpine gardening, as a hobby, is at its lowest ebb, and it seems much more than just a few months since the fields and woodlands were green. Yet there is a touch of spring in the alpine house even on this cold day. The sun has warmth through the glass and the temperature slowly rises, despite the evil wind outside.

As the door is closed and the first look around is taken, the eye is immediately drawn to the glowing magenta of a pan of *Cyclamen coum* in full flower. It is a beautiful pan and somehow the flowers have arranged themselves in tiers with the taller stems at the back. The sun shines right through the petals, and it is not difficult to see how Reginald Farrer comes upon his description, "bejewelling the January days with little glowing sparks of color". The buds appear in the fall and lie among the leaves waiting for a sunny spell to call them to their feet.

Cyclamen species react very well to pan culture, especially in the eastern states where they are not easy to establish outside. A ten to twelve inch pan, liberally drained, will accommodate six or eight corms in a mixture of loam, leaf mould and gritty sand. Their summer quarters are a shady cold frame where they remain until the fall frosts begin to get severe.

The fall-flowering *Cyclamen cilicium* finally stopped sending up its flowers a week ago. This Turkish species is smaller with a delicate flower, similar in color to *C. neapolitanum,* without the little ears or auricles at the mouth. The other cyclamen pans are doing very little. *C. repandum* is beginning to produce some leaves, the blooms of this spring-flowering species follow the appearance of leaves. *C. balearicum* has a very attractive heart-shaped leaf with silvery-gray central markings, and one pallid bud is there to prove that the flowers will be white. This uncommon little species is valuable for that reason. There are white forms of many *Cyclamen* species, very beautiful but difficult to obtain. *C. neapolitanum album* and the hybrid *C. atkinsii* are the most frequently encountered white forms. Gradually the number of pans in the cyclamen corner grows. Last year *C. rohlfsianum* and *C. graecum* were added. *C. libanoticum* has yet to be obtained. The two year old seedlings of the wild *C. persicum* from Cyprus have no flower buds yet.

Morisia monanthos has started to flower earlier this year. The bright cluster of almost stemless yellow flowers is much bigger now that the plant has had time to settle down after its long trip from Vancouver, British Columbia. This neat, rosette-forming Crucifer hails from Corsica and Sardinia, where it grows at by no means alpine elevations, preferring the rocky wastes almost at sea level. It is a great tap rooter and needs a deep pot of sharply drained soil. The *Kabschia* or cushion saxifrages are among the earliest alpine house plants to flower. They have a wide range of colors and all have flat, hard gray cushions. Even in the most favored of climates they are worth growing under glass for their early-flowering habit, for the wild, wet and windy spring weather invariably shortens the life of these flowers outside in the garden.

The eastern rock gardener has a difficult time with his saxifrages in the summer months. It is a depressing sight to watch them turn from gray to brown before your eyes. Temporarily increasing the shading is about all one can do, but this cannot dispel the humid heat which hangs in the air. Watering, of course, is disastrous during these spells. *Saxifraga apiculata, S. elizabethae* and *S. haagii* are three hybrids with flowers of varying shades of yellow. They have two things in common; *S. sancta* as one parent, and they are the most durable *Kabschia* in the rock garden. They have found a home in a terrace bed built against an old field stone wall. They are tucked at the back of the terrace where the soil meets the stone of the wall, so they have additional protection from the slight overhang of the rounded stones. *S. apiculata* forms a mat of dark green foliage and bears its pale yellow flowers, several together, on three inch stems. *S. elizabethae* has soft yellow flowers on red-shaded stems. *S. haagii* is glaucous with grayish-green tinged foliage. The golden-yellow flowers are freely produced, several to a stem.

The plants of *Saxifraga burseriana* 'Gloria', from England, are going to

be magnificent this year. The cushions of gray, needle-like leaves fill a six inch pan and the sturdy red stems are all over them. There is no finer *Kabschia* than 'Gloria', large pure white flowers with bright yellow anthers on stems fully four inches high. *S. b. crenata* is of dwarfer stature and the white petals are frilled and crimped at the edges. *S. irvingii* has its stemless mass of pink buds huddled down against the hard steely cushion, ready to burst any day now. *S. irvingii* has been with us for three years and is still quite happy in a four inch pot.

A plant of *Saxifraga diapensioides lutea,* bought from a collector in Vancouver, British Columbia, is two inches across now and has five buds. Soon we shall know whether it is the primrose-yellow form or the white type; as yet the buds are too tight to show any trace of the petals' color. The three remaining seedlings of *S. grisebachii* are slowly pushing up their red, velvety flower stems from the flat symmetrical rosette. In this early stage the flower stem is compressed and beset with scale-like leaves, heavily clothed with velvet. As it grows it telescopes into a perfectly-shaped crozier. The flowers are pinkish and quite inconspicuous; the plant's beauty lies in the development of the flower spike.

It is at this time of year that the subtle characteristics of some plants are most appreciated, particularly the silvery plants, although they are always with us, they slip into the background of our appreciation when there are so many bright flowers vying for out attention. The New Zealand edelweiss, *Leucogynes grandiceps,* is a dwarf shrub-like plant with small silvery overlapping leaves. The tiny composite flowers are completely surrounded by the white woolly 'edelweiss' bracts. While looking at silvery New Zealand plants we see *Raoulia australis,* planted in the two pots of *Podocarpus nivalis,* has made a perfect carpet of silver beneath the dark green trees. *Raoulia lutescens* is a minute gray-green film complementing the only specimen of *Juniperus communis compressa.*

There is a garden in the alpine house containing a gnarled old *Chamaecyparis obtusa nana,* a piece of tufa, *Arenaria balearica* growing over the roots of the tree and *Raoulia australis* clothing the open slopes; the whole thing in a shallow pan only six inches in diameter. In complete contrast there towers a fifteen-inch specimen of *Convolvulus cneorum,* a southern European with silky leaves. This pleasant relation to an awful family is by no means hardy here; even in England it is considered questionable. It needs watching as a pan subject or it will suffer from starvation. It produces clusters of white flowers touched with pink on the outside, blooming in summer and on into September.

Chrysanthemum haradjanii is completely new. It was described in an English alpine catalogue as having leaves of sheer filigree silver, and I can do no better than repeat this description. It arrived in a sad, soggy condition, but it finally came around and has a promising shrubby, much branched habit. Judging from its root ball it seems to be a free feeder; this may or may not be a good characteristic. It may need starving to retain its unbelievably silvery pectinate leaves. It was found by Peter Davis in Asia Minor in 1949, and described as an aromatic shrub, one foot or more high. *C. haradjanii* will be a very interesting plant with which to experiment. Mr. John P. Osborne of Westport, Connecticut has a plant which he was brave enough to plant out in a raised bed by his alpine house. I shall be most interested to see if it comes through the winter.

Anacyclus depressus deserves a place in the choicest alpine house, even if it is but a simple daisy. Given a large pan with a rich but well-drained compost, it will produce countless white flowers with scarlet reverse, beautiful in bud. The foliage is radiated from a central tuft, the flower-bearing stems are floppy and will drape the sides of the container. The effect can be further enjoyed if the pot is raised a little. It is described by many as having finely cut silvery foliage,

and it is easily raised from seed, so several of the more silvery forms can be selected for specimens and the remainder can go into the rock garden.

The dwarf bulbs are beginning to show a little color now. Yellow *Iris danfordiae* has its elongated buds well developed, the *Narcissus bulbocodium* forms have one or two flowers appearing, but the alpine house bulbs are another story and they would need almost a *Bulletin* to themselves to do justice to their true value.

INTERCHANGE OVERFLOW

The Interchange column was initiated in the *Bulletin* of January 1963 with two requests for information. One came from Mr. Henry Fuller of Fairfield, Conn., who wanted to know more about the genus *Lewisia,* and the other was a request for *Draba* culture from Mrs. D. S. Croxton of Folsom, California. Communications resulting from Interchange items that are too lengthy for inclusion in the Interchange columns of subsequent *Bulletins* will appear under the heading "Interchange Overflow". They will appear there as regular articles or as pertinent excerpts from letters and will be grouped by subject matter.

GROWING LEWISIAS

CHARLES THURMAN, *Spokane, Washington*

Growing wild within a two hundred mile radius of Spokane are found three of the best and hardiest of the lewisias. These are *Lewisia tweedyi, Lewisia columbiana* and *Lewisia rediviva.* Let us take a look at them in their native habitats and see how they grow in the wild.

Lewisia tweedyi is endemic to the Wenatchee Mountains in the Canadian Life zone and grows among granite boulders in decomposed granite soil or scree and does its best in the partial shade of Douglas fir *(Pseudotsuga taxifolia)* and ponderosa pine *(Pinus ponderosa).* The healthiest plants are found growing in a horizontal position or in fissures of the granite rock. This range of mountains is in a 15 to 25 inch rainfall belt, most of which comes during the winter months and the summer temperatures are very hot and the humidity low.

Lewisia rediviva is found mainly in the Arid Transition zone and grows on scabland formations of the great Columbia lava flow or on the dry sandy terminal moraines left by the Continental glaciers of the Ice Age Under either condition the soil is very wet in winter and early spring. About mid-May these soils dry out and become very hot and dry and are literally baked under the summer sun with temperatures near 100 degrees until the fall rains set in late in September.

Lewisia columbiana comes from the Hudsonian or Alpine zones where it grows mainly on granite rocks in very shallow, rather peaty soil which also dries out completely during the short hot summer months.

With this picture in mind, let us move each of these gems into the garden and see what happens there.

In the rock garden with extra good drainage in a peaty loam soil supplied with coarse sand, *Lewisia columbiana* is fairly easy in full sun and with ordinary moisture. It is completely hardy to minus 30 degrees with no cover and will increase yearly in size and floriferousness with little difficulty. With the other two lewisias the story is different.

Since *Lewisia rediviva* is found in the wild on practically pure sandy soil on the moraines, let us give it just that in the rock garden in a hot sunny spot where it can dry out completely after blooming and sleep through the hot dog days of summer. A very small amount of pine needle leafmould in the top two inches of sand is all the food it asks but it must have plenty of spring moisture.

It will repay this treatment handsomely with its clear pink or white three inch 'waterlilies on the sand' about the first of June. They will get larger and more beautiful with the passing years.

I collected my first plants of *Lewisia tweedyi* in 1935 and would advise that this is a very poor way to get specimens of this most gorgeous of all rock plants. I started to dig a plant which appeared to be growing in the scree on top of a huge boulder. When I finally got the plant it had a root the size of one's thumb and six feet long. It had seeded, probably, in a deep scree on top of the boulder and its roots had gone deeper as the scree eroded until it found permanent moisture in the hillside above the rock. This reveals that it must have a deep root run and access to moisture, but *sharp drainage* away from the crown. I noted, also, that here in the wild were signs that the center rosette or crown had rotted away during some wet season, and that side shoots had taken over. Some of these plants had several rosettes of the meaty leaves on two-foot rope-like stems radiating from a common axis where the center crown had rotted away years before.

My first few years of growing this plant had its disappointments because about the time that a large plant would come into full bloom, suddenly, on a warm day, it would wilt flat and the whole crown of leaves and flowers could be lifted off the root, revealing a bright orange slime where the crown had been eaten away. After several tries on flat beds with the same results, I began reviewing in my mind the native habitat of this plant. I also noted about this time that a plant I had planted on top of a dry wall seemed to be doing much better. The crown of this plant had thrust out over the edge of the wall exposing about two inches of the stump of the root. Around this exposed portion of the root little shoots formed which grew into large rosettes of leaves. The next year several crowns on this plant produced flowers and it was a sight never to be forgotten, until one day in mid-May it flopped like a wet dishrag, along with my heart. I took out my knife and dissected the remains, looking for the cause. There were no signs of insect activity so I came to the conclusion that *air around the crown was of vital importance.*

I took the side crowns and cut away all rot and put them in wet sand in the shade of the house where most of them rooted nicely. It was here that I decided to try the dry wall as a place to grow *L. tweedyi.* This was a real long step in the right direction, but I still lost the large plants when the crowns became compound, usually about the second year. Being a butcher by trade at this time I decided to try my skill on this challenging plant. Since I was going to lose it anyway I thought I might as well get some vengeance in the process. I took a long, thin boning knife and reached down into the thick crowns, in early March, and pared off the side crowns from the main stump, leaving the poor thing completely girdled below the top rosette of leaves. Having made cuttings of the severed crowns, I figured that that was that and left what remained of the mutilated plant to die. Much to my surprise, as the weather began to warm, buds began to form in the leaf axils and many multi-flowered stems with huge, gorgeous, apricot-colored blooms which burst forth in May and which, to my mind, outshone the finest primulas. Later these flowers produced a large quantity of seed which I found resulted in the best plants, and if seeded early, could be flowered in the fall of the first year.

Since that year I have never been without quantities of this magnificent plant. Here then is my method of growing my favorite of all rock plants:

First—Give *Lewisia tweedyi* a horizontal position with a deep root area of moist gritty soil behind a dry wall with the crown protruding out from the rocks at least two inches. I try to plant it near the top of the wall so that a rock may

Lewisia tweedyi on a dry wall.

be removed to facilitate pruning in early spring, which is the second cultural requirement.

Second—I do this pruning as early in the spring as possible to give the cuts time to heal. Remove *ALL* side shoots, rosettes and buds from the stump just below the center crown. A percentage of these will root in wet sand, giving a welcome increase.

Third—A neutral soil with good drainage is the last requirement, but it must be deep behind the wall with constant moisture, but not wet.

I have the best results with an east exposure, as *L. tweedyi* seems to appreciate plenty of sun in the morning and some respite from the heat of the afternoon. It is perfectly hardy to 30 degrees below zero in this exposed position. The California species, *Lewisia cotyledon, L. leana, L. howellii* and *L. heckneri* gave up the ghost under such treatment. They all departed from the dry wall.

We have grown *Lewisia tweedyi* in many ways, but find that the only way it is permanent and floriferous is in the horizontal position with plenty of air around the crown, especially at blooming time and while it is in active growth in spring or when the foliage is soft. An extra precaution in the more humid climates during this period might be taken in the use of a good fungicide for damp off, such as Semesan, Captan, etc., around the crown.

Since the California species mentioned are not hardy here in a wall, we have been growing them successfully in a sloping bed in very sandy soil in part shade with constant moisture and very little humus. These all should have a thick layer of stone chips under the leaves and around the crown to insure surface

drainage, which is imperative with all lewisias. In cold climates where little snow cover is anticipated, we would suggest the use of a covering of pine needles or excelsior on this group for winter protection.

VARIOUS EXPERIENCES WITH LEWISIAS

ROY DAVIDSON, *Seattle, Washington*

After twenty-five years it still gives me ecstatic pleasure to recall the first flower of the genus *Lewisia* I encountered. It was a single silken blossom of *Lewisia tweedyi,* an inspiration that persists for me still, and drives me to learn more about the genus.

At this time I lived in the arid climate of the Columbia Plateau, near Pullman, Washington, where the soil is slightly on the alkaline side. One of several lewisias I purchased from Carl Purdy came to me as *Lewisia finchii.* I planted it in a crevice in a lichen-covered basalt outcrop in a mixture of grit and leaf mould from the woodland. The exposure was west on a north-facing slope so that no sun fell directly on the foliage in the winter when the soil was frozen for long periods, with or without snow cover. Here the soil remained cool even in the hot dry summers. For a number of years this plant dazzled me with an annual profusion of rose-striped, pale apricot flowers, but as lovely as it was I could not help imagining it with larger flowers, the size of those of *Lewisia tweedyi,* for instance.

So I set about to find the latter in the wild in order to transplant it into my garden, for I hoped to induce a hybrid of the two, if it might be genetically possible. Most of the records I could discover placed the habitat of this plant in the most remote places in the Wenatchee Mountains of Washington, so I was surprised to find it right alongside the road on Blewett Pass, on a high bank above the road. The 'grandaddy' rosette was nearly a foot across with a couple of dozen flowers displayed against the craggy bole of *Pinus ponderosa.* This picture lingers brilliantly in my memory, too, for the highway has been relocated and I fear the rocky bank and its population are now roadbed.

By this time I was established part time in Seattle and the few small plants of *L. tweedyi* I had collected were planted, some in the ranch garden and some in the dank air of the Puget Sound trench. In the dry Pullman garden they have grown but not flowered; hence no seed. In the humid atmosphere of the other planting there were some blossoms but no seed set and in the wet cold spring of 1962 the plants were miserable, as was I. Here I had attempted to duplicate the conditions under which the plants grew in the wild. There the soil seemed to be composed of fine white sand, the coarse grit of decomposed granite and the deep, black humus one finds in such places, nearly greasy. However, the plants that fared the best were under a fir tree in the lee of a rock to the south, where no moisture fell directly on the crown and the air is dryer than elsewhere in the garden, being in an open and sunny situation, not shaded.

Another time I acquired plants of *Lewisia cotyledon* hybrids, grown by a nursery from seeds from Scotland. They were blooming riotously in their second year when I got them and they transplanted readily. After four years of spectacular blossoming, I lost them in the spring of 1962 from dreaded crown rot. Unfortunately, to prolong the display of flowers, I had not let any plants set seed. However, the now bare slope, once so brilliant in its season, sprouted a number of small seedlings from the few late-set seeds fallen, so now I have hopes of recovering this strain. I might mention that seedlings left out on the slope grew well, whereas those put into pots only persisted and grew hardly at all.

On one of my trips in search of penstemons I stumbled upon an entire canyonside of *Lewisia cotyledon* ssp. *heckneri* in the Trinity Mountains of northern California. Here a cliff of some 70 to 100 feet high was solidly upholstered with mosses and clubmosses, and this verdure was heavily festooned with the rosettes of this *Lewisia,* so closely packed that often the rosettes overlapped. This is in defiance of all prescribed rules for their garden culture, but here nature was having splendid success with it. A later visit in a pouring rainstorm showed how effectively the moss drained away all the excess moisture; the canyonside was dripping but the soil was just precisely damp enough; exactly the right amount of water filtered through and the rest was drained away on the surface. Underneath, the feeding roots were loosely established in the humus and the end of the taproots were fast in crevices. Were it not for the moss all of the soil would have been washed away.

This was a narrow canyon, running north and south and the exposure of the plants was to the west so there was little likelihood of much damaging sun in winter. For long periods in the summer the daily temperature may be over 100 degrees, during which time the mosses serve to trap the dew and shelter the underlying rocks from the sun, maintaining a cool soil.

How these conditions, if desirable, could be adapted to the garden, I do not know. The few plants I collected there, moss and all, I planted in my garden and took note again of the necessity for a cool soil, a dry crown and a soil rich in humus, moist but not wet. The high summer temperature there in the canyon dried old leaves off completely; there were no half-decayed remnants in which the lethal rot could start. Hand picking of old leaves must be resorted to in the garden.

Lewisia columbiana I have found to be easy in the garden. It is profuse on the hot, dry rocky cliffs, particularly at the headwaters of the Yakima River. This one is probably more interesting in foliage than in flower, for its pale rose flowers are too small when compared to others of its ilk, and it certainly does not make a great show on its too-tall stalks. Its constant companions seem to be the two hot-rock ferns, *Cryptogramma acrostichoides* and *Cheilanthes gracillima.* Its ease of culture is, nevertheless, a point in its favor and it colors nicely in winter to a ruddy but interesting blend of bronze-red and dull green.

So goes it with the genus *Lewisia* and me.

LEWISIA CULTURE

In answer to your appeal for contributions to "Interchange", here are a few notes on how some lewisias do in my garden in the Highlands of Scotland. The garden is 600 feet above sea level, the average rainfall is 34 inches. Winters can be severe with sub-zero temperatures at times, sometimes without snow, too. The natural soil is stony, poor and acid. I grow three species of *Lewisia: L. brachycalyx, L. rediviva* and *L. tweedyi* as well as some hybrids. I find they all do well in scree, drainage being most essential. *L. rediviva, L. cotyledon* hybrids and *L. trevosiana,* with me, require VERY sharp drainage. The other two, *L. L. brachycalyx* and *tweedyi* prefer the drainage rather less fierce and the soil richer with plenty of humus.

My oldest plant of *L. tweedyi* is now over thirteen years old. It is still healthy, but getting a bit tired and not flowering so well nowadays. Some years ago it had 74 flowers. Some plants of *L. brachycalyx* are seven or eight years old and going strong. The cotyledon hybrids in pinks, yellows and orange make good wall plants and self-seed themselves.

Major General D. M. Murray-Lyon, *Pitlochry, Scotland.*

DRABA CULTURE

The request for notes on the culture of the genus *Draba* took my eye:

I have *Draba aizoon, Draba azoides* and *D. olympica* growing on a mound of what is probably about 7/8 sand and 1/8 leaf mold. They survive the winter without protection from the northeast storms or from sunburn in February and March when the sand is frozen below, and alternately freezing and thawing on the surface. They do not seem to object to salt spray or an acid soil, although they might be a lot happier if conditions were different.

However, grown this way they increase in clump size more slowly than even the tiniest sempervivums in the same spot. Apparently my drabas are not able to self-sow, although in this same spot pimpernel self-sows as do a variety of weeds. Originally I grew *Draba aizoon* from seed planted inside in the spring and, as I recall it, the seed germinated easily and without event and I transplanted it outside while quite tiny.

In the summer the sandy spot where the drabas grow is entirely unshaded and I water them once in a while when the sempervivums look tired. No piece of any of these three drabas have ever expired.

These are, you realize, about the most unshowy plants you might grow; the only excuse for planting them for their flowers is that they bloom wonderfully early, not with the first species of crocus, but somewhere in the middle of the crocus range. Once I potted *Draba aizoon* with a crocus, for a friend, and the tiny (about 1/16 inch in diameter) yellow flowers looked in scale around the crocus and the little hummocks of leaves covered the bare earth in the pot.

As a clump in a crevice I think you could not ask anything to give you less trouble. My preference is for *Draba aizoon* which has, to me, a more distinct character. I'm afraid I can't be of help with sources for seeds or plants because I have looked for them in my original source catalogues and they are no longer listed. Your seed list offers so many species that I am embarrassed even to have written about drabas.

Bea Holmes, *Manomet, Mass.*

In Interchange you asked for cultural direction for the genus *Draba.* Those I grow all do well in scree and crevice without any winter protection. Species I grow are: *D. D. aizoides, andina, bruniaefolia, dedeana, dedeana* var. *zapateri, incana* and *oligosperma;* not outside, but in a cold frame, *D. D. imbricata, mollissima, polytricha* and *frigida.*

Major General D. M. Murray-Lyon, *Pitlochry, Scotland*

WELCOME! NEW MEMBERS

Mrs. W. E. Anderson, Underwood, Iowa.
Mr. Harris Armstrong, 180 South Sappington Rd., St. Louis 22, Mo.
Mrs. Chas. G. Ayers, 3833 N. E. 155th St., Seattle 55, Wash.
Miss Florence E. Beaujean, 422 New Rochelle Road, Bronxville, N. Y.
Mr. Kurt Bluemel, Box 219 A, Bluemount Rd., Monkton, Maryland.
Mr. Paul E. Case, Pleasant Grove Nursery, Peach Bottom, Pa.
Mr. Carroll E. Collins, 401 Morris Avenue, Mountain Lakes, N. J.
Mrs. Jerry Coultas, R.D. 1, Box 227 B, Buchanan, Michigan.
Miss Maridel Davidson, 104 Scott Avenue, Ironton, Ohio.
Mrs. Eleanor G. Davis, Stoneleigh R.D. 32, Lebanon, Pa.
Mrs. Ralph W. Deuster, 2117 Link Road, Lynchburg, Virginia.
Mr. Theodor Egli-Meile, Berghuus Sunezyt, Hutten-Zh, Schonau, Switzerland.
Mr. Stanley L. Glowinski, Station "A", Marlboro, N. J.
Mr. A. B. Graf, 19 Prospect Terrace, East Rutherford, N. J.

Mrs. Ronald S. Gray, 64 North Street, North Reading, Mass.
Mr. and Mrs. Reese H. Harris Jr., Saw Mill Lane, Greenwich, Conn.
Mr. Fred Hausman, 424 Old Long Ridge Road, Stamford, Conn.
Miss Fayme Haverty, 7730 199th S.W., Edmonds, Wash.
Mr. Edward G. Hicks Jr., 71 Valley View Road, Lake Mohegan, Westchester County, N. Y.
Miss Bea Holmes, 109 Commonwealth Ave., Boston 16, Mass.
Dr. Peter A. Hyypio, Curator, Arboretum & Botanical Garden, Sapelo Island Research Foundation, Inc., Sapelo Island, Georgia.
Mr. Stanley Jenereski, Stanley's Nursery, 3863 Gibsonia Rd., Gibsonia, Pa.
Mrs. David C. Knight, 56 Briary Road, Dobbs Ferry, N. Y.
Mr. Joseph A. Lakowicz, 57715 West Eight Mile Road, Northville, Michigan.
Mrs. Henry N. Marsh, 50 Ramsey Road, Wilmington 3, Delaware.
Mr. Robert J. Mattison, R.D. 2, Bristol, N. H.
Mrs. I. C. Mayhew, 5 Brunswick Ave., Gardiner, Maine.
Mrs. R. L. Merz, 8120 Craig, Overland Park, Kansas.
Mrs. Charles E. Miller, Box 339, Tonganoxie, Kansas.
Mrs. J. H. Moore, R.D. 1. Hagerman, Idaho.
Mr. Kinji Nakabayashi, Migi-2-go, 17 Chome, 6 jo, Asahikawa-shi, Hakkaido, Japan.
Miss Katharine Ordway, Goodhill Road, Weston, Conn.
Mr. Kenneth O. Peck, 446 Greeley Avenue, Webster Groves 19, Mo.
Mr. Hollis N. Phillips, 7550 39th N.E., Seattle 15, Wash.
Mrs. Erik Porterfield, R.D. 2, North Greenwich Road, Armonk, N. Y.
Dr. and Mrs. Hammond Pride, Pride's Aftermath, Bearwallow Road, R.D. 2, Hendersonville, N. C.
Mrs. Laurence Ruth, Box 44, Silver Lake, Wash.
Mrs. Linda Sharp, Blue Eagle Ranch, Tonopah, Nevada.
Mrs. Oakley Sheldon, 131 East 66th Street, New York 21, N. Y.
Mr. Clyde J. Smith, Box 216, Clyde, Mich.
The Don Smiths, Watnong Nursery, Morris Plains, N. J.
Miss M. C. Squires, Box 544, Columbia, Mo.
Mrs. Kenneth D. Thorson, 16527 74th N.E., Bothell, Wash.
Mr. Harry T. Webster, 13008 108th Avenue, North Surrey, B. C.
Mrs. Richard C. Wheeler, 525 Belden Hill Road, Wilton, Conn.

NOTES FROM THE NORTHWEST

SALLIE D. ALLEN, *Seattle, Washington*

A NEW APPROACH:—The writer is attempting (with some misgivings) to deviate from the established pattern of reporting the programs and activities of the Northwest Unit of the American Rock Garden Society. Rather than relate the subject matter of our programs, the speakers etc., as such, it is hoped to extract from our activities items applicable to the wide range of our membership. Perhaps it will be something we have learned about a new plant, a method of propagation or cultivation, a publication or just a provocative thought. The items will not necessarily appear in chronological order and there may be, on occasion, an inclusion of a thought or two from a varied and interesting correspondence. The writer is, in no way, attempting to create the impression that she has any special knowledge or authority, only reporting bits of information, hopefully of interest to all of our members.

AN "ODD CASSIOPE":—We always enjoy a visit from our ARGS friend, Mr. E. J. Greig, nurseryman from Royston, British Columbia. Mr. Greig not only specializes in species *Rhododendron,* but has spent many years exploring the alpine heights of Vancouver Island as well as most other parts of British Columbia, studying the native flora in which he is so keenly interested.

Twice during his plant hunting trips he has come across what he calls an "Odd Cassiope". Instead of the pendulous white flowers, typical of the genus, they are upturned and pink, reminiscent of *Phyllodoce empetriformis,* although the foliage is that of *Cassiope mertensiana.* One's immediate conjecture is that it is a bigeneric hybrid between *Cassiope* and *Phyllodoce,* however, Mr. Greig tells us that the botanists whom he has consulted do not accept this conclusion. Another oddity concerning this plant is that when propagated vegetatively and grown on to flower in his lowland nursery, this *Cassiope* flowers white instead of pink, but retains its upright inflorescence. How interesting it will be to watch this plant to see just what it will do and to learn how it will be classified.

WITH AN EYE TO THE FUTURE:—Most alpine enthusiasts that we know seem to be less familiar with the northern Cascades than with many other plant-hunting areas in Washington. A collection of slides of almost inaccessible areas in these northern mountains, showing breath-taking scenery, makes us wonder how many treasures we might discover if long pack trips were attempted. Perhaps new species are there waiting to be discovered, or other plants may grow there that are not now known in our region. Isn't that always the dream of a plant hunter?

CASTILLEJA FOR THE ROCK GARDEN?—Work is being done with *Castilleja integra* on the thesis that a host is not necessary in the soil. Seed planted in unsterilized soil, mainly composed of sand, have germinated and gone on to flower. L. R. Heckard has worked on many species of *Castilleja* on the same thesis, his results having been published in *The Botanical Gazette,* Vol. 124, No. 1, September 1962. These experiments seem to disprove all existing theories on the genus and, perhaps, someday when the ecological requirements are understood, *Castilleja* may add its colorful interest to the rock garden.

GROUP COOPERATION:—We eagerly accepted the challenge of raising $75.00 for a share in the fruits of an expedition to Turkey, planned for this spring. A plant sale was held with each member donating a few choice plants, already priced. To our amazement over $115.00 was added to our treasury. There were many interesting plants, but the two most notable ones were *Rhododendron radicans* and *Cassiope lycopioides* so tremendous in size that they were truly a bargain at $10.00 each. A garden that can spare specimen shrubs such as these, must be a fabulous place to see.

OFFICERS FOR 1963:—The following officers for the Northwest Unit of the ARGS have been elected and introduced:

Chairman—Mr. Brian O. Mulligan
Vice-Chairman in Charge of Program—Mrs. David Metheny
Hostess Chairman—Mrs. W. M. Read
Secretary-Treasurer—Mrs. Jeff Stearman
Corresponding Secretary—Mrs. Rodney B. Allen

JUNIPER:—*Juniperus communis* is the most widely distributed tree or shrub in the world, ranging from sea level to 14,000 feet elevation. In form this species varies from prostrate mats to trees 60 feet in height. The adaptable nature of

junipers has made them extremely difficult to classify, and to add to the difficulty, this plant is capable of hybridizing freely in nature.

G. A. R. Philips, author of *Rock Garden and Alpine Plants,* states: "For the small rock garden, *Juniperus communis compressa* is given first place. Commonly known as 'Noah's Ark Tree', it is one of the most fascinating and slow-growing of all conifers. It is effective planted in groups of three or more on lower slopes."

THE TREE HEATHS:—None of the tree heaths can be considered rock garden subjects although they can be used in background planting. In one garden in the Seattle area, *Erica arborea* may be seen growing to a height of 14 feet, massed in the background of a very large garden. The dense foliage and the plumes of feathery white flowers behind plantings of lower growing rhododendrons, with spreading heathers in the foreground, created a picture of great beauty for late spring. Although *Erica arborea* var. *alpina,* native to the mountains of Spain and Portugal, is considered more reliably hardy, and is more often used, perhaps the dense plantings around them affords the protection that they need. Other tree heaths used in our area are *Erica lusitanica, Erica australis,* with large, rosy-red bells, and its white variety, *E. a.* 'Mr. Robert' and the hybrid, *Erica veitchii, (E. arborea x E. lusitanica).*

NEW ZEALAND ALPINES:—Now that our attention is upon New Zealand flora, due to the two fine articles written by our ARGS members in New Zealand, and the recent publication of Prof. Philipson's valuable book, it is hoped that it will not be presumed that these fascinating plants are 'not reliably hardy'. Are the alpine areas of New Zealand basically so different from those found elsewhere in the world? The true alpines grow roughly between 4000 to 8000 feet and between the limits of the trees and the permanent ice fields. These plants receive a six months snow cover in winter, and in summer (December to February) they are exposed to the capricious whims of nature that are typical of mountain areas everywhere. There can be unbearably hot days, or sudden bitter wind and rain storms, as well as snow and sleet showers. In the Southern Alps of New Zealand there are 17 peaks that exceed 10,000 feet; the highest is Mt. Cook, 12,349 feet.

A NEW PUBLICATION:—*The Heather Family (Ericaceae) of British Columbia,* by Adam F. Szczawinski, was published in January 1962 by the British Columbia Provincial Museum, Victoria, B. C., price 50¢. It is a handbook (no. 19) of 205 pages, describing all members of the *Ericaceae* family thus far found in British Columbia, each species illustrated by a full page drawing, and can be highly recommended, especially at this price.

ROCK GARDENING ON A SAND BAR

VICTOR GREIFF, *Rockaway Park, N. Y.*

(Editor's Note)—Mr. Victor Greiff, who lives on Long Island, New York, was asked by Mr. J. A. Lukins, North Atlantic regional chairman, to contribute an article for use in the *Bulletin.* The editor, knowing this and not having had any word from Mr. Greiff, wrote to him and received in answer a combination letter and article, which appears in full following this note.

We have Mr. Greiff's authorization to use all of his letter or any part of it in the *Bulletin.* Reaction of the members to the publication of this letter-article may be mixed. In it is some criticism of the Society, of the *Bulletin,* of rock gar-

dening as the sole and superior way of expressing man's desire to grow plants, especially diminutive and unusual plants for their color, grace and beauty; of economics that touch gardeners everywhere and of the very name of our Society. Yet it is gentle criticism, born of a great love of plants and of gardening and of deep and constructive thinking.

Mr. Greiff's voice is the voice of a true gardener; one frustrated by environment, including climatic conditions far from ideal, by understandable though good-natured envy of those living in areas where gardening conditions are happier. His is the protesting voice of all the small gardeners; a voice raised above the roar of the Atlantic Ocean that hurls its endless marching waves against the very sand bar where he labors to brighten the gray land and seascape with the gay colors of his "rockless garden", to blend the fragrance of "socially inferior flowers" with the brisk saltiness of the ocean winds, and to strengthen our Society by bringing into its fold many new members from the ranks of the "small gardeners". Further, his voice is raised in an attempt to alleviate the disaster that is faced by the few suppliers of choice plant material that remain.

Whether you agree or disagree, in full or in part, with Mr. Greiff, certainly you must agree that there is much food for thought contained in his letter. Each member should feel free to comment on it in any way he chooses, for much good may come from thoughtful discussion of its contents. Following is the letter:

Dear Editor:

When in a moment of weakness I promised Regional Director Jerry Lukins some copy (who could refuse Jerry!) I did not expect to deliver until asked.

I am a 'foreign body' in the A.R.G.S. and like it! An unschooled amateur, gardening on a barrier sand bar out in the Atlantic Ocean, with nothing larger than a pebble for many miles; how do I fit in? Frankly, I recognize and appreciate the zeal and the scholarship of the distinguished members of the A.R.G.S. and their learned *Bulletin*.

Of course, I am sometimes saddened by horticultural success stories from your West Coast which make us Easterners feel inferior and depressed! There is, we are told, increasing evidence that east coasts of continents have a different flora from west coasts, for reasons obscure and puzzling.

Half a century ago, L. H. Bailey (or one of his specialty writers) said that rock gardening would be successful (only) where the growing season was not over 100 days. While this is not strictly true, it represents a limitation, especially to us eastern gardeners. It has proven so discouraging that many eastern growers of rock garden plants have been starved out, and turned elsewhere for a livelihood.

Meanwhile, on myriads of small properties, has arisen the need for small gardens, sometimes entirely without rocks. Even on large properties, labor shortage and the special requirements of the plants, make these personal, individual projects. They can be of great importance in the gardening world.

If we could liberalize our scope, democratize our flora, we could perhaps serve many 'small gardeners' and build up our growers to meet the demand.

I am told by Harold Epstein that at the inception of several Rock Garden Societies, it was recognized that the term was limiting and incomplete, but was the best practical one. The name "Alpine Society", etc., referring to the regions they explored, seemed most apposite, and well favored. But I have known and enjoyed the Society, and the gardens of its amiable members, as a source (sometimes literally) of plants out-of-the-ordinary, rather than of strictly alpine origin.

Whatever the name, the Society faces the challenge and the opportunity of catering to the new and rising generation of sophisticated small gardeners. They

may lack the correct geological strata but are able to grow and enjoy many plants discouragingly marked "R" in catalogs.

In many professional planting plans for small properties, the 'material man' of the designer's office, after naming the trees and shrubs to be used, cross-hatches and numbers the small areas and notes—"flowers" or *"Pachysandra terminalis"*. This is gardening by default, heading toward horticultural bankruptcy.

The remedy is more knowledge and utilization of the flora familiar to this Society to grace and glorify small spots which occur in every garden, rocks or no rocks.

Bailey's writers include in a long and nostalgic list of rock garden plants some that the rank amateur (e.g. myself) would do well to avoid, e.g. *Loiseleuria procumbens* and *Linnaea borealis* (unless they grow wild in the backyard). Yet there are plants, considered as mere weeds, or 'groundcovers' by some (whom I call Philistines) such as *Saxifraga sarmentosa,* aquilegias, epimediums, trilliums, *Arabis alpina, Alyssum saxatile, Saponaria, Aubretia, Sempervivum, Ajuga* and *Hosta* which, if appreciatively used, can create a satisfying small garden without the classical equipment of rocks. Bricks, concrete, cobblestones, or even the despised concrete blocks may function, as may containers or walls, or small gardens minus 'rocks' may harbor a rich flora. In fact, in a recent address, President Epstein expressed a broader view of the extent of the term 'rock plants' to include choice species (not hybrids) of plants, herbaceous perennials, shrubs, annuals; generally small, compact and floriferous.

Devoted and skillful British gardeners grow potted saxatile gems in cold houses, in pots, with a dressing of stone chips to remind them of their origin. We small gardeners can only gaze in rapture, having no aspiration to compete. Perhaps in some microclime in our garden this plant might prosper.

Nor is the small garden motif absent from the large estate. Our regional chairman, who has a half acre sheer rock face under intensive cultivation, finds a need on his property for the sophisticated development of a couple of small bracket plots in Japanese style, veritable gems. Were it not for the rock we would be minus a regional chairman.

Can we not emancipate the Society from the semantic limitation of geology, and popularize, to all who can grow them, the choice perennials that give us so much pleasure?

Of course, I confess to pleading a special case because there is no rock, no lime, and little stone on Long Island, except glacial boulders. In a recent bulletin of the Horticultural Society of New York appeared an article in which a perennial grower admitted the use of a computer to adjust his plantings to the demand. This is perfectly legitimate and justifiable, but will inevitably result in the extinction of rare and little known plants. It is up to us to create the demand for fine plants.

Ruth Manton, in her nostalgic article in January 1962, states well that "The specialists have driven the art of rock gardening from the common door." She herself gallantly maintains a three page list of rarities, ten androsaces, more campanulas, two dozen gentians, more primulas. This is a labor of love, but presages the extinction of sources for these plants in this age of the computer. The British, she observes, cherish these plants in their many small, individualistic, non-conformist gardens.

In self-defense, to avoid starving out our sources of plant material, the American Rock Garden Society must broadcast the doctrine of plants for the plants' sake, and while giving due worship to the miffy saxatiles, maintain an open mind toward the 'socially inferior' plants that can give the ordinary gardener so much pleasure in his small garden.

If we could promulgate this doctrine we would share our unusual horticultural pleasure with many fine gardeners, and hopefully, bring them into our fold, while giving added sustenance to the growers who need it so grievously.

NOTES ON SEED SAVING

BERNARD HARKNESS, *Rochester, N. Y.*

That there has been an expression of need for advice on seed collection for the Seed Exchange is evidence enough that Lawrence Hills' *The Propagation of Alpines* is a somewhat neglected text. Its chapter 10 on seed saving and seed storage can be only faintly reflected here and the serious student of the subject will wish to consult it for its graphic illustrative drawings and its exhaustive details.

Those of us who make dragonfly-like dartings into distant mountain regions at various vacation periods know that it is most unlikely that we will find more than a very few plants at the stage of ripened seed, and even the more systematic seed seekers, such as Carl Worth, are frequently frustrated. Also for optimum seed collections one needs to watch the garden almost daily. It is demonstrated every year that in a matter of three days seed pods may ripen, open, and the seed be scattered. Not always to be lost, though, for I have many times picked crops off the ground, should they be comparable to the large and shiny, black, weather-proof-coated seeds of *Jeffersonia biphylla* (twin-leaf).

The most accommodating seed plants are those with multiple spikes which can be plucked when the lowest capsules begin to open (or for the contrary Liatris, the top seed heads to disperse), up-ended in a big grocery bag and stored to dry and ripen off. This usually results in a rich harvest in the bottom of the bag. Penstemons and others may open rather reluctantly and when the contents are completely dry, I lay the bag on its side and tread on it to break open the capsules.

A change of color of the fruit frequently indicates the approaching maturity of the seeds within. This is particularly true of the pods of the pea family and the siliques of the cress family. Both of these should then be closely watched as they often start exploding to scatter their seeds widely. Some *Corydalis,* too, are triggered the same as the touch-me-nots of our childhood pleasure.

A driving rainstorm will cause a lot of seed to be lost and this should be prevented when possible, by gathering in, ahead of the storm, the ripe and the almost ripe seeds, since much of the latter can be ripened inside. Certain rare late-flowering plants may be cut and held in water in a deep container, in light, for several weeks until the seed matures. I have done this with *Campylotropis macrocarpa* (Chinese clover-shrub) and with *Caryopteris divaricatus,* to use non-alpine examples.

It is a peculiarly pleasant operation to strip the woolly head of the European wood anemone *(Anemone nemorosa).* If left too long they begin to separate from their base in ragged bits; the woolly and plumy anemones are ripe when they can be detached easily.

Chaffy seeds are a problem. Mr. Hills notes that one's preconceived ideas of what a seed should look like should not interfere with the harvest. Later, if doubt is still strong, place a generous sample in good light on white paper and examine with a hand lens. Crush it well and examine the results. If there is a recognizable number of objects of the same shape and color it is reasonable to suppose they are a seed crop. Such things as *Galium* and *Statice* will be very minute.

After this kitchen table operation, if time is available, assemble an assortment of sieves of varying opening sizes to experiment with separating the chaff from the equal-sized particles, which are, hopefully, the proper seeds. Dust and

dirt can be screened out from many seeds by use of the smallest aperature. This year I had the help of Margery Sassaman with much of the re-packaging, which at best is a slightly messy operation that left her house in need of extra work just before the holidays.

It is best to keep seeds as dry as possible in storage, but without high temperatures. Use paper sacks in the first step, then after separation, paper boxes or envelopes are called for; but not at all in sealed glass jars or in closed polyethylene bags. Mr. Hills discourages the use of glassine envelopes which is contrary to the practise of the Exchange. It has seemed necessary to use something for the very tiny seeds and sometimes for a safe enclosure for a very few seeds, as the coin envelopes vary in secureness at their corners. If anyone has a source for a second envelope smaller than the #1 coin, I should be glad to use it.

With nearly 300 mailings, the last Seed Exchange made out reasonably well. I know there were disappointments toward the end of the shipments, but certain genera, such as *Primula, Saxifraga* and *Penstemon* held up in supply better than in the previous year. Supplies were too quickly exhausted in Viola, Geranium, Erodium, the ericaceous group, *Cyclamen* and certain of the native plants, *Shortia,* for instance. Many of these offer especial difficulties in seed collecting.

I have always enjoyed the work of the Seed Exchange and shall be willing to continue with it for three more seasons, after which I must pass it along for good. In the winter of 1966-1967 I hope to spend a month in Dominica, and subsequent winters I intend to be in the southern hemisphere, from which travels, I hope, a few Afro-alpines and Andean species may trickle into the Seed Exchange.

SAGA OF A SEED SAVER

MARGARET PINNEY, *Armonk, N. Y.*

Heavens! The Seed Exchange! What can I send them?
Rush to the garden, hopeless but dutiful;
How could they want what I've got?
Seeds must be sent or the S. E. will falter;
Rush to the garden, weedy and fruitless;
Seeds to delight them I have not.

What would they want with those silly oenotheras?
Bellis and *Bellium,* that grow like the mischief.
Pooh! There's nothing interesting there.
Nobody wants my purple aubrieta
Dull arenaria, white potentilla.
WHAT have I got that is rare?

One piffling head of *Anemone fulgens?*
One little curlicue cyclamen seed pod?
Don't make me laugh, I implore!
Yet I must gather, yet I must winnow;
Clean out the dust and blow out the chaff.
What is a seed exchange for?

Iberis, Scabiosa, nana alyssum,
Pinks, anacycluses, aethionemas—
Cross the fools off, one by one.
Who wants my alliums, who my verbenas?
What is *Dianthus* to rock garden maestros?
Yet must my duty be done.

Fine gentians bloomed, but seed pods never set,
Likewise *Ranunculus,* poppies, geraniums;
What can I do about this?
Deer gulped my violets, rabbits my statices,
Cutworms and bugs ate my choicest campanulas.
(Gee, isn't gardening bliss?).

Finally gathered, now comes the sorting;
Horrible hours of picking and blowing
Loathsome capsules and siliques!
Hurry! The seed must be in before Christmas.
Hurry! The frost's coming down on the garden;
Gosh! This is taking me weeks!

Well, Mr. Harkness, I just couldn't conjure
Silk from sow's ears or rare seeds from plain plants
And, though I'm sure you don't need
Dullest achilleas, common anemones,
Alliums strong or impossible arabis,
Please take the will for the deed.

JAMES E. MITCHELL

The funeral of James E. Mitchell of Barre, Vermont, who passed away after a long illness, is today (March 15, 1963).

The memories of one who had the rare privilege of having taken many collecting trips with him in the Green and White mountains are precious.

He was a kindly teacher as well as a profound botanist. His nursery of native flora flourished for many years. His articles are in the *Bulletin* for many to profit by and to enjoy.

As snow melts in my rock garden this spring there will be many plants and rare ferns growing there that were collected with Mr. Mitchell as our leader. He has been missed in his failing years but the memories of him shall remain with many of us in the New England Unit for our life time.

AHB

OMNIUM-GATHERUM

You will be spared a lengthy Omnium-Gatherum this time. That the *Bulletin* for April was not in the members' hands by April 15th at the latest was due mostly to the inexcusable length of time it took a new trucking company to cart the *Bulletins* from New Jersey, where they are printed, to North Carolina, where Mr. Totten prepares them for mailing to the members. Actually the printing company mailed the editor's supply of *Bulletins* on March 29th and they were received in Seattle on April 2. That three weeks should elapse after printing before the members received their copies is a situation that must be remedied.

Interchange activities have indicated that a word should be said for the suppliers who advertise in the *Bulletin.* It should be noted that all of our advertisers are ARGS members. We are sure that an inquiry or an order or even a request for a catalogue received from a fellow member would give these nurserymen an added thrill over and above the normal business satisfaction derived from responses to advertising. We wonder how many of our members, those interested in securing special plants and special information, have availed themselves of the services offered by our advertisers? As a result of requests for plant sources appearing in the April *Bulletin,* the editor is already being bombarded with such comments as: "Why don't these members look in the catalogues of our own ad-

vetisers?" or "Tell Mr. A. that the plant he wants is listed in Mr. B's catalogue and that his ad appears regularly in the *Bulletin*".

You will be reading this about the middle of July, unless you are away on vacation, but whenever you do read it, let your thoughts dwell for a moment on the part you are going to play to insure the success of the 1964 Seed Exchange. If you contributed to the 1963 Seed Exchange, it is hoped that you will do so again in 1964. Nearly 12% of our members contributed to the 1963 exchange to make it a little better than average year for this activity.

But what can be said here that will entice some of the other 88% to enter the seed saving scramble and help to strengthen and enrich our 1964 exchange? Perhaps, very little, but we can try. Seed collecting can be fun and generally is. Preparing seeds for shipment to the Exchange, if properly done, is not always fun but remember that some work and some self-sacrifice makes a good deed better. Do not let Mrs. Pinney's frantic and melancholy verses discourage you, for after all, she did contribute to the Seed Exchange.

Seeds may be gathered from your own garden, from the garden of friends, neighbors and relatives; from the plains and the hills, the woods and the high mountains. Always, when you gather seeds, whether from near or afar, you are out in the open in the world of plants; you are visiting them, perhaps not at their loveliest, but surely at the most exciting and important time of their life's cycle. When you harvest seeds, in effect, you are joining the birds, the winds and the furred animals as an agent of dissemination, especially when you send the seeds to the Exchange for distribution throughout the world.

In what other way could you plant flowers in so many far places? Seeds taken from just one of your beloved alpines may produce blossoms the following year in England, in Japan, in New England and in neighboring states and provinces and bring joy to many persons unknown to you—people whom you are never to see, but people to whom you are invisibly bound through the mutual love of beautiful plants. Seeds are wonderful! These little pellets, so chock-full of vitality and potential beauty, scattered afar by the Seed Exchange of our Society, are ambassadors of good will, envoys of good taste, and gifted missionaries telling the people of other states, other lands, that beautiful things, precious plants should be shared and shared joyfully.

Westerners—one more word! In the 1963 Exchange you did not pull your weight in seed contribution in comparison with your efforts in former years. Ahead of you now are several months in which seeds may be gathered, prepared and sent to the Seed Exchange. Will you make Mr. Harkness happy by improving on your 1963 efforts? The editor, for one, will help. Last time his name was not on the list of contributors. This time it will be there.

BACK VOLUMES OF THE BULLETIN

We have for sale an accumulation of back volumes and individual numbers of the BULLETIN. The available material is listed below.

VOLUME 1 Individual numbers 2, 4, 5, & 6
VOLUME 2 Individual numbers 2, 3, 4, 5, & 6
VOLUME 3 Individual numbers 1, 2, 3, & 6
VOLUME 4 Individual numbers 1, 3, & 5
VOLUME 5 Individual numbers 1 & 6
VOLUME 6 Individual numbers 4 & 5
VOLUME 7 Individual numbers 1, 2, 3, 4, & 6
VOLUME 8 Individual numbers 3, 4, 5, & 6
VOLUME 9 (6 issues) $5.00
Individual numbers 1, 2, 3, 4, 5, & 6
VOLUMES 10, 11 and 12 (4 issues) $3.50 each
Individual numbers 1, 2, 3, & 4
VOLUME 13 Individual numbers 3 & 4
VOLUME 14 Individual numbers 2, 3, & 4
VOLUME 15 Individual numbers 2, 3, & 4
VOLUME 16 Individual numbers 3 & 4
VOLUME 17 Individual number 4
VOLUME 18 Individual numbers 2, 3, & 4
VOLUMES 19 & 20 (4 issues) $3.50 each
Individual numbers 1, 2, 3, & 4

All individual numbers are one dollar each.

A large accumulation of certain numbers permits us to offer ten different numbers, the Society's selection, for $5.00. (Order the "Bargain Package.")

Postage will be paid by the Society.

Members desiring issues containing articles referred to in the index by volume and page number may obtain the issue, if available, by referring to volume and page number in ordering. Order from the Secretary. *Please make checks payable to* —

American Rock Garden Society
1220 Everett Place **Hendersonville, N. C.**