

BULLETIN

of the

AMERICAN ROCK GARDEN SOCIETY

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Dorothy Ebel Hansell, Editor

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SEED COLLECTING IN GARDEN AND WILD

DR. C. R. WORTH, GROTON, NEW YORK

... seed gathering is simply the most harrowing form of gambling as yet invented by humanity." Reginald Farrer (*Eaves of the World, II, page 205*)

SEED COLLECTING involves as debatable territory as does the growing of difficult species once they are bagged. Not only am I certain that experienced seed collectors will find much to disagree with in what I am about to set down, but by the time this article appears in print, I shall probably not be entirely in accord with my own opinions of the moment. I can only offer suggestions here on a crucial subject, without stating positive opinions as to why seed from one professional collector will germinate like cress, while that from another will put up only an occasional feeble sprout. The gardener is completely at the mercy of the seedsman or collector, and often is uncertain whether to blame himself or his source of seed for failures and for falsely named plants.

The first essential in harvesting seed is to find a source where the seed will be pure and not cross-pollinated. The collector in the wild has little to worry about on this point, for natural hybrids (with the exception, perhaps, of Saxifrages and European Primulas) are surprisingly few and rare. I can recall, in years of collecting in the Rockies and South America, meeting only one plant which appeared to be a hybrid. However, to play safe, seed may be collected from the center of a large stand, where there is even less likelihood of encountering stray pollen.

In the garden, of course, the situation is completely different. Probably only a few plants of a kind are grown (even in commercial production of the rarer species), with other closely related species of the same genus near at hand. Aquilegias are notoriously prone to hybridize, with the exception of the multiple-named charmer best known as *A. ecalcarata*; as these almost invariably breed back toward *A. vulgaris*, garden saved seeds are rarely worth the effort of sowing. I have noted here that volunteers of *A. scopulorum* NEVER came true, although there was no other Columbine in bloom at the time, unless possibly *A. canadensis* a mile or more away. *Dianthus*, *Aethionema*, *Saxifraga*, and Lilies of the Regal group are others that are reputed to hybridize freely in gardens. Ignoring the last two, on which I have no positive information, I am inclined to regard such statements as considerably exaggerated and to blame incorrectly named seed packets as the real source of the trouble. A reliable expert known to most members of the American Rock Garden Society told me that one of the best-known distributors of alpine seed had once revealed to him the following: except for a few favored customers, all orders for various species of a genus were filled from the same batch of seed, into which had been dumped some seed of the species ordered, along with whatever else of that genus had set seed recently. No wonder that his customers thought that hybrids were of more than frequent occurrence!

In my garden, *Dianthus alpinus* has invariably come true from home-saved seed, although only once have I been able to purchase seed that gave the true species. Other *Dianthus* seedlings untrue to name have been so uniform that no evidence of hybridization could be discerned. Moreover, among vast quantities of volunteer *Dianthus* and *Aethionema* here, there has been little or no evidence of hybridizing. Do you wonder that I feel that hybridization is much more likely to take place in the seed packet than in the garden? Of course, occasional chance hybrids do occur, but the probability is so much less than is generally assumed that the gardener may harvest most of his seeds with full assurance that they will produce the same type of plant as their seed parents.

Seed harvesting should, in general, and as far as present knowledge extends, be done at the instant that the seeds are beginning to be shed. The wise gardener will go around with a few empty packets and a pencil, for once seeds start to fall, they usually waste little time in completing the job. While most seeds have a brownish color (anywhere from golden to nearly black) when they are ready to fall, a few kinds shed while still apparently green; several *Anemones* (those without plumes) and *Ranunculi* are of this type. If *Violas* are allowed to wait until the capsule splits, the seeds will be far away. Well-developed capsules, still green, should be pressed rather firmly between the fingers, and if the capsules open, showing brown seeds, the harvest is ready. *Erodiums* and *Geraniums* fling their seeds to a considerable distance when ripe, as do *Cyclamen*, so that the gardener must anticipate and pick the seeds as soon as the seed structure turns brown.

If one cannot be at hand at the crucial moment, it is well to go around the garden, plucking and opening a seed pod here and there. If the seeds seem brown and are fairly hard, they can be picked with assurance of complete development even before the capsule has shown signs of bursting.

Two very important problems about which very little is definitely known at present, are those of plants which shed their seeds while still actually green and apparently immature, and of plants which will germinate better if the seed is gathered before it is fully developed. I have long suspected that many of the western plants, once the seed is fully developed, can be picked while still apparently green. In recent years, I have put the question to the test with fair success. My criterion for good seeds is simply to observe whether capsules and seeds shrivel after picking, or seem to dry normally.

The tendency of *Primulas* of the *Petiolares* Group to scatter their seeds while still green has been much publicized lately, and rumor has it that unless the green seeds are sown almost immediately, they will not germinate. A pot of lusty seedlings of *P. edgeworthii*, which had remained packeted for several months, proves that this is not always the case.

In my 1947 collecting, two very strange situations arose. *Primula ellisiae*, still rare in gardens, was far from ripe and plants were unnegotiable, so that nothing could be done but gather some of the more plump capsules in the hope that they would contain a few well-developed germs. Two lots, from different mountains, were sown. One of these contained a number of well-browned seeds and looked fairly promising, but so far there has been no germination. The other lot consisted of seeds still green when dried out, obviously undeveloped; yet these gave a good germination of seedlings which have developed normally.

The remarkable color forms of *Aquilegia scopulorum* likewise had not fully ripened and the seeds were later separated into two groups, one of shiny black ones, apparently ripe and ready to grow; the other of discards, partly or wholly brown. Out of curiosity, the second lot was sown. It germinated promptly and profusely, while of the "good" seed only a few seedlings have as yet appeared. In

both the species mentioned, germination is often slow, and it may well be that the second season will show a good stand from the presumably better seeds. Yet this experience poses a serious question: will some of the western species, and which ones, germinate better if obviously immature seed is sown? Solution of the problem will require the aid of some one who can visit stands of various species several times during the season to harvest seeds at different stages of maturity.

I have quoted these instances not to encourage collecting of seeds while still green and immature; the poor germination of the seeds from at least one professional collector seems at least in part due to harvesting immature seeds. Whenever possible, seeds should be harvested fully ripe, unless it is known that green ones of a species will grow. If it is impossible to return for seeds at a later date, the green seeds should be collected on the chance that they may give fairly good results. Of course, such immature seed should always be so marked on the packet.

In harvesting seeds which are fully ripe, the simplest procedure is to shake the flower clusters into an envelope, or on to a paper spread on the ground. These seeds will be fairly free from chaff and will need little or no cleaning. If the seeds do not fall freely, it is much better to pick the entire stalk rather than individual capsules. But please do not pull up entire plants of rare species, as is sometimes done with cushion plants. These stalks should be placed head foremost in a paper bag (pre-war salt and sugar sacks of muslin are preferable) and hung in a dry place till the seeds are fully ripe, at which time a good share of the seeds will have found their way to the bottom of the sack.

In dry weather, the bags and envelopes may be set in a box in the car or in any place where they will not be rained on, until they are ready to be cleaned. In more humid climates, they should be hung in a moderately warm, dry place, such as an attic. If the seeds are at all damp when gathered, they will mold unless spread out thinly to dry. Of course, the spread-out seeds must be placed where no breeze will reach them, unless they are large and heavy.

Cleaning the dried seeds should be done at the earliest possible moment and is at best a major undertaking with which I have had no real success. The commercial houses use different types of screens and miniature fanning mills, I believe; but even so, much of the work must be done by hand. The amateur must resort to a series of sieves larger and smaller than the seeds being cleaned—though it is astonishing how seeds will pass through a mesh apparently much too small for them. Fine dust can be removed by blowing (watch that the seeds don't blow away) or by pouring the seeds down a piece of yellow manila paper inclined at a small angle. Placing the seeds in a pan which is then shaken with considerable violence will, in some cases, separate them from most of the chaff. Yet no method is altogether satisfactory, and it may be necessary to go over the seeds by hand to remove bits of pod and chaff.

Thorough cleaning of the seeds is, unfortunately, more than a mere virtue. Pots sown with seeds mixed with debris have an appalling tendency to mold on the surface, and there seems to be no way of removing or checking the mold without some damage to the surface of the seed pot - a serious matter when dealing with fine, and uncovered, seeds.

To distinguish good seeds from immature or from chaff is, in most instances, quite easily done with the naked eye, though a hand glass will be found useful. The seed itself, if properly ripened, will be uniform in size, shape and color; immature seed will be off-color, often shrunken and otherwise deformed. Chaff and other debris will be irregular in shape and usually varied in color.

After cleaning the seeds, they should be stored in airtight containers, such as coffee or tobacco tins or screwtop fruit jars. If the seeds are packeted, one

prominent seedsman advises that this be delayed until the last possible moment. Cellophane or oil-paper envelopes should be used in preference to ordinary paper envelopes, which absorb moisture from the seeds. Finally, the tins containing the seeds should be placed in a cool room. Whether freezing seeds of hardy plants while they are in a dry state, will cause damage is questionable. As a precautionary measure, low temperatures should be avoided.

THREE NON-INVASIVE GROWERS

VIRGINIA STEWART, SAN ANSELMO, CALIFORNIA

IT WOULD seem that no matter how carefully one plans and plants a rock garden, there will always be some species that, even though they are described as low growing, will reach up to a foot or more and likewise ramp in vigorous fashion all over their small compact neighbors.

However, it is with great confidence that I recommend three plants that are lovely as well as cautious in their growth, making them invaluable for the small rock garden and for growing among the slow, rare alpine that we cherish.

A few years ago, we came upon *Adenophora nikoensis* quite by accident in Mrs. Frye's "Green Pasture's" catalogue. We were intrigued by Mrs. Frye's description of the plant as having "style and pride"; certainly, other *Adenophoras* we have known, have neither. When our plants arrived, *A. nikoensis* was set out in a sunny protected spot, given sharp drainage and grit, and has proven to be one



Arabis blepharophylla

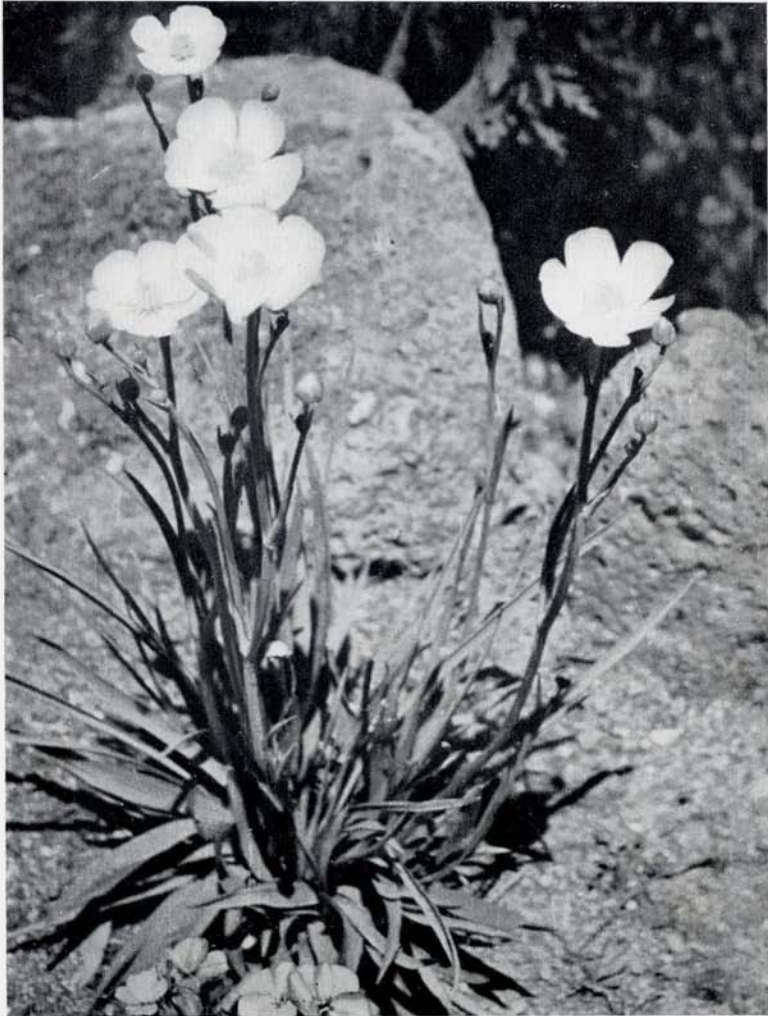
of our loveliest rock plants. The large lavender-blue bells are borne on stiff stems of four to six inches. Last year for the first time, we were able to collect a few ripened seeds. Propagation by division does not seem advisable. The blooming time here in central California is June and this is appreciated by us as most of the spring flowering is over and our midsummer gardens are usually restricted to annuals.

Arabis blepharophylla, a native of California, is so unlike other members of its family that one would never recognize it except, perhaps, on very close examination. The rosettes are neat and compact, the leaves rounded, dark grey-green and slightly hairy. The flowers, carried on four to five-inch stems, are

glowing pink. From a distance, *A. blepharophylla* resembles a very robust Primula. Give it full sun, poor limy soil and good drainage, and a very self-reliant plant it will prove to be. I believe that this plant is still rather scarce, because seed is rarely set and the plant grows so slowly that propagation from young shoots after blooming must wait until the plant has reached some size.

Last year, in an order of plants from Saxton & Wilson we received gratis a plant of *Ranunculus gramineus*, one of the tuberous-rooted species new to us. We planted our gift plant in a semi-shaded spot in the moraine garden in a sandy leafmold mixture. The grasslike foliage interested us and in early spring when lovely clear yellow flowers were borne on ten-inch stems, we were, indeed, grateful for the introduction. The blooming season is very long, extending over four months, and in our dry climate that is a record! The plant set seeds which ripened while we were away and so were lost.

These plants all have the same qualifications - good form, lovely flowers and, being slow growers, are non-invasive.



Ranunculus gramineus

ALPINES FROM SEEDS

G. G. NEARING, DEMAREST, NEW JERSEY

EVEN the beginner at rock gardening must feel strongly the lure of alpiners which are rare, remote or hard to obtain. When such treasures are "dug" for bringing home, the roots will usually have to be pried from crevices or torn from among stones too heavy to lift, with consequent injury from which the plants may not recover, even if the difficulties of packing and transportation have been provided for.

In any case, mature plants do not readily adjust themselves to the change from friendly snows to freezing rains, from a short summer with cool nights to a long hot one, from pure mountain air to fumes of the automobile and oil burner. Out of a thousand natural seedlings germinating on the mountain - each individual with traits a trifle different from every other - the dozen or two which eventually survive are probably the very ones least fitted to live in a far-away lowland rock garden.

The best hope of success with a stubborn species is to find individuals that deviate from the type in the direction of adaptability to lowland culture; to start with the seed and raise great numbers of plants, not because many are wanted, but because only among numbers are you likely to find the desired variants.

Professional plantsmen often secure one or a very few plants and from them propagate by cuttings until a stock is built up. This practice may sometimes be necessary. Frequently, it is both unnecessary and inadvisable. Cuttings lose a small fraction of the vigor of the parent plant. Chain propagation, a cutting from a cutting-grown plant which, in turn, came from one cutting-grown, may after several such cutting generations become so enfeebled that the stock had better be thrown away. Of what use is the finest alpine if it will not thrive? Where cutting propagation is practised, an individual of superior quality and especially of unusual vigor should be set aside and all cuttings taken directly from it or from the first cutting-generation following it.

The advantage of using seed is that the sexual union which produces seed, guarantees perpetual renewal of vigor and a wholesome degree of variation. Where possible, the seed should be collected only from superior plants; and where successive seedling generations are employed, the seed parents should be selected in each generation. It is so easy to breed a better strain that not to do so is sheer carelessness.

No rules for seedling propagation suit all types of alpiners, and none is equally successful in all weather. So many methods score so many victories that the best each writer can do is set down the results of his personal experience and advise, in addition, a liberal application of the one ingredient common to all success - intelligence.

Most seeds are best sown as soon as received, but very light chaffy seeds, such as those of *Rhododendron lapponicum* or *Loiseleuria procumbens*, may prefer to be kept in a dry place until spring before sowing. A bureau drawer is ideal.

While professional growers can sow in a cool greenhouse, thereby shortening the period during which they must wait for their profits, this practice has little to recommend it. It lengthens the growing season by several months, while alpiners expect and crave a short season. It involves more expense and labor than most of us can spare.

More to their liking, and requiring much less expense and care, is the cold-frame. This may be built of anything handy, but best and simplest of ordinary building blocks laid together to form a wall on smooth ground, without any foundation and without any mortar. Such a frame may be moved, rebuilt or abandoned with no loss and little labor. The dimensions should be planned so that

the glass sash, when laid across, will fit with reasonable accuracy. However a few cracks, not too wide, seem to do more good than harm. The south, east and west walls should be two or three blocks high, the north wall lower. Thus the glass will slope toward the north.

This slope of the glass distinguishes the cold coldframe from the warm one. The ordinary warm frame, facing south, grows good lettuce but poor Gentians. If you also have a warm frame, it can be used for the more sun-loving species, especially at later stages. The cold coldframe works best if shaded from the south by a building or shrubbery, but wide open to the north sky. So placed, it will need little or no ventilation except in summer, and ventilation is the source of many ills.

For winter, it may be advisable to cover the glass with reed mats, which maintain a more uniform temperature and admit about as much light as a blanket of snow. If not obtainable from the seed dealer, these mats may be quickly and easily made from the reed grass (*Phragmites communis*) of the neighboring marsh.

Flower pots or earthenware pans are best for sowing, though wooden flats will do. I have found standard four-inch pots most useful. They should be more than half filled with broken pots, or better, broken soft brick, which is now hard to obtain except from the wreckage of very old buildings. A layer of fine breakage should be placed above the coarse, to keep the soil from sifting down between.

Soil should be prepared separately for each batch of seeds, because some want sand, others clay, still others lime, while others again would be killed by lime. A battery of garbage cans containing the following will serve you well: granite chips, limestone chips, river gravel, sand, clay, topsoil, leafmold, sedge peat, peat moss. The containers should be covered to avoid contamination by your friends' matchsticks and cigarette butts.

For the requirements of each unfamiliar species, consult all your reference books. A good average soil will consist of one part sand, one part leafmold, one part river gravel. For ericaceous plants, such as *Vaccinium vitis-idaea*, add to this one part sedge peat. For Saxifrages, use limestone chips, topsoil and sand. For *Gentiana acaulis* and its relatives, try topsoil, clay, sand and gravel. Most seed pots should have more sand in the mixture than would be used to pot the seedlings. For alkaline soil plants, use limestone chips liberally; for acid soil plants, peat. And by all means experiment. It adds to the fun. Remember that commercial peat moss is good only for acidifying or for lightening the soil.

It is important *not* to sterilize the soil or use any chemical recommended to control fungi. Many of the most difficult plants require fungi in the soil, some insisting on a particular species of fungus with which to form a mycorrhizal association. In any case, a live soil full of bacteria is better than a dead one. It does not even pay to wash the pots. Keep them encrusted with algae, fungi and bacteria in natural balance. Clean only the ones in which disease has appeared.

Many alpine seeds require a period of freezing. These, and the others, too, for convenience, should be sown in fall if possible. After preparing the soil and filling the pot with it right to the rim, stand the pot in water nearly to the rim until moisture appears on top. Then sow the seeds and cover thinly with fine sand. Place the pots immediately in the coldframe, cramming moist peat around them and put the sash in place for the winter. During thaws, look if the frame has dried out and water if necessary; but better open the frame and let snow fall on the pots for a few hours. This, however, is risky unless the pots have been filled with soil to the very rim.

About March first or earlier, the reed mats should be removed and as much light admitted as possible, but little direct sun. If four-inch pots are used, these

may be lifted from the peat and placed in level pans with about one quarter inch of water constantly in the bottom. Thus no overhead watering will be required and the pots may be kept so all summer to advantage.

Germination will vary with the species and the condition of the seed when obtained. Some come up immediately. Others may wait until the following year. Most seed pots should not be abandoned before the second or third year.

After germination, the dreaded damping-off fungi should be watched for. These should not be present in the pot after a winter in which beneficial bacteria have had a chance to devour them. The spores are more likely to blow in with the wind. If ventilation can be avoided, this chance is greatly reduced. Pots should be moved away from points where condensation drips from the glass.

If seedlings begin to die in one part of a seed pot, hasten to prick off all others in the pot. Also prick off as soon as possible all seedlings which are crowded, for crowding invites disease. Plant them in thumb pots rather than in flats. If the fungi attack, each pot will require a separate infection to destroy the plant, but one spore of *Pythium debaryanum* can ruin a whole flat.

It is not well to hurry alpine plants into the rock garden. Most of them do better plunged in peat in the sowing frame for at least one season and into the rock garden the following spring.

A PATTERN OF DWARFS

H. LINCOLN FOSTER, NORFOLK, CONN.

WHERE a long curving point of the rock garden runs under the far reaching branches of an ancient Oak, the soil through an accumulation of years of oak leaves had reached that ideal texture and acidity which suggests a planting of the Heath family. The underlying soil is a well-drained, gravelly loam. The large outcropping ledge that rises up to make the cliff and rounded hill to the south promises a cool exposure. Adequate moisture following down from the higher ground along the ledge underground to the area near the tree should prevent drought. The branches of the tree are high enough to let the air circulate freely through the area; and the bole of the tree is to the west so that an ample play of shade reaches the whole section during the hotter parts of the day.

Four large Blueberry bushes had grown there for a number of years and had become gawky. These were dug out and the area spaded up with a bit of peat worked in for good measure.

With the natural slope of the ground and its cliff-backed setting, it was an ideal site for the extension of the rock garden. There are many typical alpine herbaceous plants which would find such a home congenial; but its soil and its relation to the rest of the rock garden intimated that it was an ideal place to congregate a small thicket of dwarf shrubby material and groundcovers, a gradation from the rock garden proper to the taller shrubs that mark the area off from the field beyond.

In another part of the grounds, beneath a clump of Douglas Fir at the foot of a steep north-facing slope, there was already a collection of small evergreen shrubs. Flowering was not abundant because of the dense shade, and an over-enthusiastic planting of material difficult to keep under control was swamping some of the smaller and choicer inhabitants. Small pockets of special soil in various spots in the rock garden were the homes, though not particularly happy homes, of the sort of plant this new site suggested.

From among the small shrubs in the rock garden and under the Douglas Fir and from a well-stocked heath in another section, some fully grown plants were moved in to give the area its general composition. The intervening spaces were adequate to offer planting room for numerous small pot-grown subjects which, as rooted cuttings or seedlings, had been waiting in the plunge bed for just such

a location. These were brought together with a few new purchases, which had previously been resisted for want of an ideal setting. In the fairly limited scope of this arc of ground about ten feet wide and twenty feet long, it is amazing what an array of woody shrubs and ground-covers has been accommodated. There is plenty of space for them to expand before it becomes a tangled thicket, though a few may become too gross for their allotted share and require restraint or even removal. After two years of growth, the area begins to take on the promised aspect of a densely clad mountain home, gravel dressed between the plants of varied texture and shape.

The ordinary run of Heathers, *Calluna* and *Erica*, is too tall and heavy for such a plot, but there are some irresistible dwarfs among them which are easily lost in the regular heath. Here amidst fellows of their own proportion, nothing



Photo by Walter Kolaga
Bruckenthalia spiculifolia

could be neater than the fine light green mound of *Calluna vulgaris nana compacta*, like an erect moss, with short spikes of lavender chaffy flowers. *Foxii nana* is very similar but is distinguished by its almost turf-like compactness. Almost as low, but with a flat branching habit, is the variety Mrs. R. H. Gray which carries its light lavender spikes at the tips of very deep green, splayed branches. For sheer loveliness of blossom, however, nothing can equal J. H. Hamilton with its ample, solidly double flowers of soft pink displayed from August until October on the dense, somewhat tortuous plant of about six inches.

Erica vagans may need restraint by clipping, but the late season of its copious blooming gives it entree. At the early end of the flowering season, frequently before the snow is quite gone, *Erica carnea* Springwood White exerts its sprawling charm, absolutely prodigal with its frost-white blossoms and chocolate anthers. For summer bloom, the Heather-like *Bruckenthalia spiculifolia* tops its good green foliage, which is like a tiny Spruce, with a closely packed, rounded spike of

lovely pink. Yet another relative presents a different picture with its typical white bells in dense umbel-like clusters above soft grey foliage; *Erica tetralix alba mollis*, literally in bloom from June to frost.

The more erect of these Heathers amid the low carpet of their neighbors take on something of the character of wind-dwarfed evergreen trees, with the added beauty of blossoms. Two real evergreen trees which do remain dwarf, have been included. *Cryptomeria japonica nana*, quite unlike the tall loose typical form, is a dense tree with short stiff needles of dark green, the whole mound never growing over two feet. This with *Chamaecyparis nana compacta*, a rounded flat-topped hummock about a foot high by as much across, gives stability and proportion to the planting. A few large stones and the natural undulation of the ground, of course, aid in giving variety, but the careful placing of just a few dwarf trees or shrubs of more stature is essential. One *Berberis verruculosa*, that beautiful Holly-like evergreen Barberry, is on trial for size, and an *Ilex crenata helleri* has been carefully located where it will not smother a weaker neighbor.

Along the eastern edge of the plot, where a stone path winds up the gentle slope, are some other stronger growing shrubs. *Pachistima canbyi* has neatness of habit and excellent evergreen foliage, but its spread by underground stolons has to be watched. *Leiophyllum buxifolium*, the Sand Myrtle, is a sight of great beauty in the spring, as the numerous heads of small white blossoms open from red-tinged buds. Its variety *prostratum* is a real gem. It is dense and twiggy, a compact bushlet of less than a foot, with tiny leaves of leathery texture changing to rich tones of wine and morocco in the fall.

Where a large, flat-topped rock offers a resting place, the intricate branching of the wandering *Arctostaphylos uva-ursi* weaves a lovely carpet, matted and rolling, with foliage which colors well in autumn. The pink bells of its spring flowering are followed by a gorgeous spattering of red berries, making this a year-round performer where sufficient room is found for its rapid enlargement.

Among the real pigmies of the lot are *Empetrum nigrum*, whose tiny leaves are so curled as to be more like needles, and *Vaccinium vitis-idaea minor*. The latter is a stoloniferous carpet, a couple of inches high, with glossy leaves and characteristic ericaceous waxen bells and long lasting, brilliant scarlet fruit, like miniature apples. The typical taller form has the same beauty with an erect habit up to about six inches.

One of the choicest of the shrubby gems is *Arcterica nana*, from the coldest reaches of northeastern Asia. By some botanists classed with *Pieris*, it displays its affinity by producing early in the spring short racemes of waxen white bells at the tips of its twiggy branches. The whole plant is not over six inches high, but has that same grace and beauty which makes *Pieris japonica* so choice among the taller evergreen shrubs.

Another favorite whose native home is oriental is *Cassiope lycopodioides*. Deceptively like a tight ground-hugging hassock of Ground-Pine, a thing of charm at all seasons, this little plant proclaims its family by hanging out along the trailing stems its elfin lanterns. There is an irresistible loveliness about these tiny blossoms hung along the stems on comparatively long wiry pedicels, which miraculously appear from between the scale-like leaves.

Here also in colonies among the thicket are three different Andromedas. Our own eastern native of the acid bogs, *A. glaucophylla*, called the Bog Rosemary, does indeed look something like that herb in density and shape of leaf; but over the green of the foliage is a smokey blue bloom as though each separate leaf were bathed in sunlit fog. The other species, *A. polifolia*, and its varieties, *montana* and *grandiflora compacta*, do not have this color cast. They have their

own peculiar charm of foliage in the soft pinks and reds of the new leaves which develop before the blossoms have finished their early spring display. The small bushes begin to bloom in May as dark pink, deeply indented buds stand erect on short white pedicels at the tips of the branches. The pedicels elongate until they are about three quarters of an inch, from three to six of them leaning out from a common center. The buds bend sharply downward as they begin to swell, tightly closed and crenulated at the tip, swollen above into five-angled Chinese lanterns of alabaster white ever so lightly suffused with pink. Each five-pointed star at the base is the deep pink calyx.

Every member of this Lilliputian thicket deserves a private portrait, for here also are the brilliant dwarf Laurel, *Kalmia polifolia*, and its even smaller variety *montana*. Here is a small pocket of *Loiseleuria procumbens*, that difficult and tiniest Azalea, a mere evergreen mat sprinkled in early spring with white or rose blossoms cut to size. And the Labrador Tea, *Ledum groenlandicum*, and the very similar oriental species, *L. nipponicum*, which keep neatly in bounds when growing out of their normal boggy home, display excellent heads of white blossoms like enlarged Sand Myrtle. An interesting feature of these two is the heavy brown felt on the under side of the coriaceous leaves, whose upper surface take on the look of well-worn leather in late fall.

These are but some of the distinctive shrubs in this miniature landscape; and they have for companions fine groundcovers in the Twinflower, *Shortia*, *Coptis*, *Dalibarda*, *Dryas* and Trailing-*Arbutus*. This is also the trial ground for miniature Rhododendrons. They have been given too short a trial to be spoken of with assurance, but some of them show promise where the site seems favorable and the snows of winter linger long. The Lapponicum Group is represented by *lapponicum* itself and other small ones such as *drumonium*, *fastigiatum*, *lysolepis* and *telmateium*. Of great promise are *keleticum* and *radicans*, both very low, close growing Rhododendrons. A dwarf form of *R. racemosum* has proved a real gem.

Each of the little shrubs here in this special corner of the rock garden has its own particular kind of appeal. There is something very apt and compelling about the neatness and proportion of them. Together, they make a composition of size, texture and color utterly charming. Grown thus in a special corner, they take on a beauty which would be quite swamped if they were scattered at random in pockets of the rock garden proper, or were used as underplanting beneath the larger shrubs. Many of them, however, do have a definite usefulness and a different sort of beauty when so employed. But for enjoyment of their special charms, plant these dwarf shrubs in a garden of their own.

THE VANCOUVERIAS

HAROLD EPSTEIN, LARCHMONT, NEW YORK

WHILE THE genus *Epimedium* is not represented in North America, its place is taken here by the closely related *Vancouveria*. The latter genus is comprised of three species native to the Pacific Coast from northern Washington to middle California and extending not more than one hundred and thirty miles inland.

It was named in honor of Captain George Vancouver (1758-98), an English seaman who explored the west coast of North America (1792), from Lower California to Alaska, seeking an eastern passage to the Great Lakes. The type species is *V. hexandra* and was first collected by Menzies, who was surgeon and naturalist aboard Captain Vancouver's ship "Discovery." In May, 1792, Puget Sound was explored and the site of the city Olympia visited; there Menzies went ashore and probably collected the first specimen of *Vancouveria*.

David Douglas collected the next specimen, probably near the city of Vancouver, Washington, in May, 1825; this was used by Hooker for his plate and description, under the name of *Epimedium hexandrum*. The new genus *Vancouveria* was created by Charles Morren and Joseph Decaisne in the first monograph of the group published by them in 1834.

Vancouveria hexandra has the broadest range of the three species, being distributed along the Pacific Coast from northern Washington through Oregon, to Mendocino County in middle California. It is generally a woodland plant, frequenting shaded coniferous forests, although it has been observed growing under varying conditions. The foliage is thin in texture, bright green above and blue-green beneath, varying considerably in size and shape. It is the only deciduous species of the genus, its foliage perishing in autumn. The plant in flower may be from a few inches up to sixteen inches in height, depending upon growth conditions. The flowering stem is normally leafless, rising well above the foliage, the small white flowers (only about one-fourth to one-half an inch long), becoming yellowish on drying. The reflexing sepals and petals give the flowers a shuttlecock appearance and account for the vernacular name, "Inside-out flower."

In referring to the genus, Farrer inimitably describes *V. hexandra* as "a most beautiful *Epimedium*, with the ample leafletted leafage of the race, soft bright green in color and much more graceful, wide, airy and light in habit than any of the others. The flowers, which are small and creamy, come up in summer on stems of ten inches or a foot, in the most delicate and dainty loose showers, so that each little star seems to float pendulous on the air by itself." (The English Rock Garden, Vol. 2, P 419).

V. hexandra is an easily cultivated plant and grows best in shade in an open woody soil. It is, incidentally, one of the few long-lived perennials from the western coastal region that does not have to be coddled in the eastern states. It flowers from late May to early July and is certainly the easiest of the three *Vancouveria* species. It may be used as a practical groundcover in shade, among shrubs, under trees and even in rock pockets or crevices. It is also recommended for planting in combination with many small bulbs requiring shade, the wiry roots of the *Vancouveria* not being vigorous enough to interfere with such bulbs.

Vancouveria planipetala has been consistently referred to as *V. parviflora* in most plant lists; but the species name *planipetala* has precedence, having been published in 1887 by Silvio Calloni, whereas *parviflora* was not published until 1890, by E. L. Greene. Its range is from the Rogue River in southern Oregon down to the Santa Lucia Mountains in middle California and so overlaps part of the range of *V. hexandra*.

This plant was first collected by David Douglas in 1833 in California and was confused with *V. hexandra* by many botanists until William T. Stearn, just one hundred years later, demonstrated the distinctness of *V. planipetala*. This species can easily be recognized by its leathery, glossy, dark evergreen leaflets, which are three lobed, smooth above and dull blue-green beneath, with short sparse hairs. The flowering stem is leafless and rises above the foliage. The flowers are white or lavender tinged and about one-eighth inch long, about half the size of *V. hexandra*.

This *Vancouveria* is sometimes known as Redwood Ivy or Mexican Ivy. Farrar lists it under *V. hexandra* and refers to it as "a form or subspecies, which differs in having the leafage rather more condensed and leathery, especially beautifully gofferred round the leaflets, and turning to shining red and russet on the upper surface, while the underside is of a contrasting glaucous-blue. To add to these attractions, this form is evergreen instead of dying down in winter like the typical *Vancouveria*." (The English Rock Garden, Vol. 2, P. 419).

Inasmuch as the true *V. planipetala* has not been easy to obtain from nurseries, (*V. hexandra* being usually supplied instead), its adaptability to garden use in the east is still uncertain. In fact, preliminary experience indicates that it may not be winter-hardy in the New York area, for most of the evergreen foliage did not survive the 1947-48 winter in this garden. Has anyone else had any prolonged experience with the plant hereabouts?

The last of the genus, *Vancouveria chrysantha*, has the most limited range, being confined to a small area on the western California-Oregon border. It thus occurs within the overlapping area of the two other species and combines their characters, the major variation being its yellow flowers. The theory has been expressed that *V. chrysantha* may have resulted from the hybridization of the two other species.

Although the records as to this species are not clear, evidence indicates that it was discovered by E. Wosnesinsky, a Russian collector, about 1840. It was named *V. chrysantha* in 1885 by E. L. Greene.

The foliage of *V. chrysantha* is approximately that of *V. planipetala*, while its yellow flowers are equal to or larger than those of *V. hexandra*. It is described by Gabrielson (Western American Alpines, Page 254) as "a plant of the open, rocky hillsides of southern Oregon and northern California. There it grows about the base of the Manzanita and California Lilac. Its leaves are thick, leathery and almost evergreen, while the soft yellow flowers are larger and more conspicuous than *V. hexandra*."

While the description of this species may indicate that it is the most decorative of the genus, its adaptability to eastern conditions is still questionable. A few years of experience with it in this New York suburb has resulted in cultivating it only in pots and frames. Attempts at establishing it in the open ground have resulted in failure, losses occurring in both winter and summer. Further efforts will be made to establish it before a definite conclusion can be drawn. Has anyone, particularly in the east, had any success with it?

It is unfortunate that so many of our choicest west coast natives are so difficult to tame in the east. By contrast, so many plants from eastern Asia and Europe are established with ease and so offer more encouragement to gardeners.

In summary, experience has shown the adaptability to average eastern garden culture of all the available Epimediums and only one of its related genus, *Vancouveria hexandra*. These generally deserve more attention from the gardener seeking permanent and decorative herbaceous plants.

"HOW TO MAKE A ROCK GARDEN"

DORETTA KLABER, NEW YORK

MR. HEIMLICH'S article under the above heading in the January-February issue of the *Bulletin* interested me - partly because I found myself in agreement with much that he had to say, partly because I disagreed with some of his assertions. I'm sure that if each one of us enthusiasts were to write of his or her experiences, there would be as many versions of what a rock garden should be as there are people.

In line with my theory of making gardening as painless as possible, I offer some of my experiences.

I made my first real rock garden the hard way. It was in Highland Park, Illinois. That part of the country has less stone in it than any where I have ever lived, and our lot was as level as most of the rest of Illinois. In building our

house, we had a great deal of subsoil clay excavated from the large cellar. Having just come from the lovely hills of Westchester County, New York, I felt I must have a hill; so after leaving space around the house for a perennial garden, work garden, etc., we had the clay piled up into what made a good-sized "hill" - with a low spot where sour cherry trees were growing.

It took several years of soy beans, cow peas, etc., turned under, until the soil was good enough to grow plants. Then we dug a path from steps leading up from the perennial garden through the "hill" to the play yard at the rear of the property, throwing the soil excavated from the path up above it, thus making the "hill" still higher. Part of the "hill" was very gradually made into a light woodland, by planting switches of crabapples, cherries and other flowering trees and native shrubs.

One section was left open to the sun and here on the slopes of the path and the more level high ground, I built my rock garden, using quantities of weathered limestone, making stratified "cliffs" and burying so much of the stone that Jens Jensen once asked me whether I was making a quarry! The soil was carefully mixed according to prescription, with gravel, sand, peat, etc. Everything grew beautifully - most of the plants having been raised from seed or collected in the woods. Though they had no evergreens in the background, they looked natural as the rarer Polemoniums, Pinks, Penstemons, etc., blended into the woodland Phlox and other native wild flowers. So much for my limestone rock garden.

There were a number of intervening years when rented homes in Washington, D. C., did not fulfill my longing for another rock garden. Finally, we bought our present property in Pennsylvania. Now I'm coming to my "painless" gardening. We bought the place because the soil looked good and to one side of the house was an open rocky hillside with woods as a background.

This stony hillside - when the shoulder-high weeds that partly hid it were pulled up - turned out to be of volcanic origin. Huge boulders, some rounded, some flat - few with any fissures or stratification, though there is a general natural cleavage of the stone that suggests design - were mixed with stones and more stones of every size from gravel up. Some of the not-too-large stones had to be excavated to make room for plants. These planting areas were then almost leveled, leaving enough slope for drainage, and retained by low walls made of the excavated stone.

The soil mixture is, roughly, one part loam or woods soil or compost, one part bluestone chips, and one part sand with a little peatmoss thrown in. In this neutral to slightly acid soil, almost everything grows and grows well. There are, undoubtedly, some plants that want or insist on lime as there are some that must have a strictly acid soil. I add agricultural lime for the former and more peat or woodland soil for the latter.

My conclusions are: 1. The stone you have or can get is the stone to use. Stratified limestone calls for ledges, but other native stone not only will look natural and right, but will grow the plants. 2. Good drainage - I guess we all agree on that - is essential as is plenty of gravel or chips to keep the collars of the plants dry but allow the moisture to penetrate. Most plants do better in this lean mixture, though some need more nourishment. 3. Many of the plants we grow, instead of "abhorring" acid soil, really crave it, while others will tolerate almost anything. As Mr. Heimlich himself pointed out, plants grown from seed will adjust themselves in most cases to their surroundings. 4. Plants are like husbands. Give them a comfortable home, decent food, love and a modicum of petting, and they'll put up with almost anything and repay you a thousandfold!

EVENTS and NEWS

PILGRIMAGE TO SEA BREEZE FARM: Members of the American Rock Garden Society are looking forward eagerly to the pilgrimage to be made to Sea Breeze Farm, located on the Lynnhaven River, Princess Ann County, Virginia, on April 23. Formerly the "Glebe" of Lynnhaven Parish and the site of the first court in 1637, the Misses Hill have made it a wonderland of plant material during their residence these past thirty years.

The gardens have a profusion of continuous bloom and color. There are many rare old-fashioned Roses as well as new varieties, Tree-Peonies, choice Camellias, Azaleas and Rhododendrons, while bulbs, perennials and annuals "fairly flaunt their beauty and fragrance everywhere". Native trees, such as Hollies, Cedars, Live Oaks, Tulip-trees, Dogwoods and Magnolias surround Sea Breeze Farm, and Black Walnuts and Pecans line the driveways.

Situated on a hillside, on the western side of the property, and sloping to an oyster cove, is the rock garden. This has been planted with native shrubs and half-hardy exotic shrubs, including *Nandina*, *Cleyera (Eurya)*, *Mahonia bealei* and *Thea sinensis*, and such rock garden subjects as Gentians, dwarf Iris, Shortias, Trilliums, *Cypripediums* and Saxifrages.

Nestled among the trees down hill on the eastern side, with the broad Lynnhaven in front, is a log cabin built from logs taken from woods on the Farm. It is here that the members of the Society will be guests of the Misses Hill at a buffet replete with Lynnhaven oysters and Virginia ham.

We hope that as many members as possible will avail themselves of the privilege of visiting Sea Breeze Farm. Your local travel or railroad agent will inform you of the best train service to Norfolk. There, at the Norfolk and Western Railway Station, a bus will be waiting the arrival of the 10:55 A. M. (Standard Time) train to convey the party to Sea Breeze Farm.

If traveling by automobile, your local gas station will furnish maps of the best roads to Norfolk or Virginia Beach. From the former city, follow Route 58 (Virginia Beach Boulevard) direct, turning left at Little Neck Road or Route 643; then straight to the farm which is about four miles from the Boulevard. From Virginia Beach, take Virginia Beach Boulevard, turning right into Little Neck Road and then direct to Sea Breeze Farm.

Please notify the Secretary, Mrs. Dorothy Ebel Hansell, before April 10th if you plan to make the pilgrimage on April 23rd, and by what means you will travel.

"NEW JERSEY DAY", Saturday, May 21st will also include the annual business meeting of the Society. Briefly, the programs call for: visit to garden of Dr. J. W. Sherrer, 8 Gregory Place, West Orange. - members may arrive as early as ten o'clock; leave there sharply 12 Noon for garden of Mr. Leonard J. Buck, Far Hills, box lunch (members bring your own) at 1 P. M., business meeting at 2 P. M., view of gardens following. Make your reservations with Mrs. Alex S. Reid, 260 Boulevard, Mountain Lakes, N. J.

LETTERS from MEMBERS

TO THE EDITOR: How can one have "a" favorite rock garden plant? In early spring, my favorites are Primulas, later *Dianthus alpinus* and *neglectus*, later still Campanulas and in the fall Gentians . . . and I can hardly bear to leave out Iris, Columbines, *Antennaria rosea*, *Linum*, Forget-me-nots, Violas! How can Mr. Osmun say all Violets, when so many of them are (lovely) weeds? Doretta Klaber, New York, N. Y.

TO THE EDITOR: I am making out this check for a three-year membership in your Society. My acre is all rock, so I am going to have to rock garden or haul in dirt! We are on the rock spine that makes the "brow" to Lookout Mountain. The land falls away in every direction.

Just to start right, I stood under our four-foot overhang with a lanky mountain boy, pointing out the stumps, etc., I want him to remove. The rain was pouring. He says he is going to start as soon as the rain stops. I shall faint if either thing happens!

With the temperature at 60° (February 15), everything is bursting into bloom. *Tulipa kaufmanniana*, Narcissus February Gold, *Jonquilla simplex*, huge purple Crocus, wild white Violets - the results of 350 holes I dug December 18, 1947. Marian Orr Lewis, Mentone, Alabama.

TO THE EDITOR: I wonder if it would be practical for the Bulletin to run a "Seeds Wanted List" - that is, for anyone wanting a particular variety to write early in the season and have the list ready for publication early enough for members to save seeds as they ripen.

For instance, I am eager to get fresh seed of *Helleborus* of all varieties and of different hardy Cyclamen. There is little of the Cyclamen listed (mostly by one or two western growers in only one variety) and *Helleborus* has begun to age for planting by the time commercial lists are out. Also, I wish there was a source for seeds of Trailing-Arbutus.

If members knew other members were interested in certain seeds, they might make a special effort to gather and deliver it while fresh. Our members feel they can depend upon the seeds distributed by the Society. I for one have had much better germination from the seeds from the Seed Exchange than from lots I have bought from seedsmen, probably because they are so fresh.

I quite agree with Mr. P. J. Van Melle, who said in his talk before the North Atlantic Group at the February meeting, "I hate to tell people about a lot of choice things because they immediately ask where to get them, and I have to tell them I do not know. Many of these choice plants are now only in private gardens and some interested persons should seek them out and propagate them." Perhaps, members of the American Rock Garden Society through its Seed Exchange can get some of the choice and rare subjects into wider cultivation. Ida A. (Mrs. H. D.) Thomas, Paterson, N. J.

SEED EXCHANGE LIST

Supplementing the list in the January-February issue, Mrs. L. D. Granger, Seed Exchange Director, Warren, Mass., announces the following seed is available to members upon request, accompanied by stamped, self-addressed envelopes.

From Mr. Will C. Curtis, South Sudbury, Mass.

Allium senescens glaucum
Gentiana andrewsii
G. andrewsii alba
Hosta minor alba
Iris graminea
Leiophyllum buxifolium
Liatis scariosa nana

Lobelia cardinalis
Opuntia compressa
O. greenii
O. rafinesquei
O. tortispina
Rhodora canadensis albiflorum

From Mr. Walter A. Kolaga, Bergenfield, N. J.

Anemone pulsatilla rubra
Iberis sempervirens

Penstemon hirsutus
Primula japonica

From Dr. C. R. Worth, Groton, N. Y.

<i>Achillea clavennae</i>	<i>Penstemon clutei</i>
<i>Astilbe chinensis pumila</i>	<i>P. comarrhenus</i>
<i>Digitalis orientalis</i>	<i>P. congestus</i>
<i>Leiophyllum buxifolium</i>	<i>P. floridus</i>
<i>Leucothoe catesbaei</i>	<i>P. jamesii</i>
<i>Lilium michiganense</i>	<i>P. leiophyllum</i>
<i>L. willmottiae</i>	<i>P. palmeri</i>
<i>Oenothera flava</i>	<i>P. rubicundus</i>
<i>Paeonia woodwardiana</i>	<i>P. sepalulus</i>
<i>Penstemon auriberbis</i>	<i>P. whippleanus</i>
<i>P. bridgesii</i>	

From Mrs. A. Jaeger, Milwaukee, Wisc.

Iris fontanesii

From Mr. Elmer C. Baldwin, Syracuse, N. Y.

Primula hybrida candelbra *P. polyantha grandiflora*

From Mr. Carl Starker, Jennings Lodge, Ore.

<i>Anemone pulsatilla</i>	<i>I. innominata</i> mixed shades
<i>Dierama pulcherrima</i>	<i>Thalictrum aquilegifolium</i>
<i>Erythronium johnsonii</i>	<i>T. dipterocarpum</i>
<i>Iris innominata</i>	

From Mr. James Mitchell, Barre, Vt.

<i>Aethionema cordifolium</i>	<i>D. deltoides alba</i>
<i>Allium cernuum</i>	<i>Gentiana purdomii</i>
<i>Alyssum serplifolium</i>	<i>Hypericum olympicum</i>
<i>Anemone globosa</i>	<i>Hyssopus albus</i>
<i>A. magellanica</i>	<i>H. ruber</i>
<i>A. sylvestris</i>	<i>Inula ensifolia</i>
<i>Armeria maritima</i> var. <i>alpina</i>	<i>Iris ensata</i>
<i>A. caespitosa</i> (<i>juniperifolia</i>)	<i>Oenothera missouriensis</i>
<i>Aster meritus</i>	<i>Papaver rupifragum</i>
<i>Campanula alliariefolia</i>	<i>Potentilla tridentata</i>
<i>C. carpatica</i> (blue)	<i>Scabiosa graminifolia</i>
<i>C. carpatica pallida</i>	<i>Senecio tyroliensis</i>
<i>C. latifolia alba</i>	<i>Solidago cutleri</i>
<i>C. rotundifolia</i>	<i>Symphyanthra hofmannii</i>
<i>Dianthus arenarius</i>	

From Mrs. Jean Ireland, Sebastopol, Calif.

<i>Astroemeria</i> (yellow, pink, salmon)	
<i>Campanula laurii</i> (<i>C. ramosissima</i>)	<i>Convolvulus mauretanicus</i>

From Mrs. A. P. Renton, North Bend, Wash.

<i>Douglasia montana</i>	<i>P. venustus</i>
<i>Penstemon cyaneus</i> (bright blue)	<i>Primula japonica</i>

From Mr. Charles G. Crawford, Toledo, O.

Verbascum broussia

ERRATA: The cut of H. Correvon's wall garden was reversed (up-side-down) and the word Society omitted from the heading on page 16, and *Hyacinthus azureus* incorrectly spelled on page 18 of the January-February issue. Also, add the name of Dr. Helen C. Scorgie, Vol. 6:46 under *Authors* and "Violets in a New England Garden", Vol. 6:46 under *Subjects* to the *Index* for 1947 and 1948. Both the printers and the editor regrets these errors and omissions.

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