

BULLETIN

of the

AMERICAN ROCK GARDEN SOCIETY

Vol. 12

APRIL, 1954

No. 2

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GENTIANS

DORETTA KLABER, QUAKERTOWN, PA.

AH . . . GENTIANS! There is something of the religious enthusiast in every devotee of gentians. I'm not sure whether it's because of their heavenly blue color which lifts our hearts with its jewel-like quality, their comparative rareness in cultivation in this country, or the lovely form of their trumpets or bells or vases . . . probably all three. Of course, as in all large families, some are unattractive and weedy — you have to choose them knowingly. They have a reputation for being difficult, and some are, some places, but there is a large group that seems to respond to quite ordinary care. This is the group headed by *Gentiana septemfida* and includes many hybrids such as *G. hascombensis* or forms such as

G. acaulis type



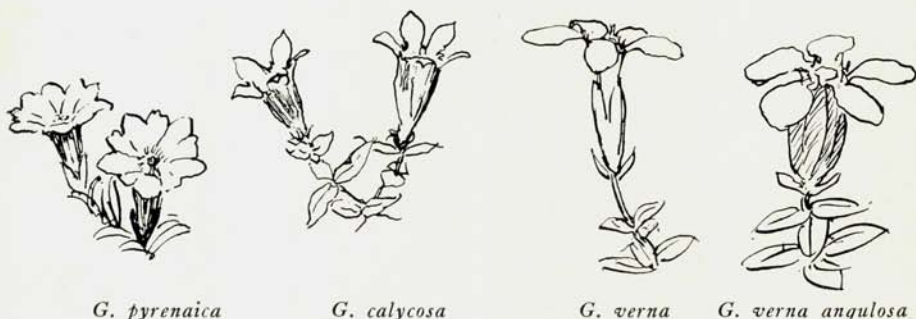
G. Lagodechiana



G. angustifolia



G. Lagodechiana and *G. Freyniana*, or close relatives like *G. Bisettiae*. These will grow either in sun or part shade, need plenty of water but good drainage. Here they grow happily in the rock garden mixture of compost, peat moss, grit and stone chips, with a whiff of very old rotted manure, all forming a loose easily drained soil with some nourishment. An extra coat of stone chips is topdressed around them to keep the ground cool, minimize heaving, and discourage slugs. They bloom in July and August, a great thing in their favor, and the color of their flowers is a deep cornflower blue. *Any* flowers would be welcome then, but to have such choice ones seems like offering a feast to one who only asked for a crust.

*G. pyrenaica**G. calycosa**G. verna**G. verna angulosa*

All of these gentians almost disappear in winter, a few withered leaves and a touch of green is all you can see. In spring they send out leafy shoots of smooth glossy green foliage, from a few inches to a foot in length, reclining when long, then rising at the end to bloom. Each stem ends in either one upturned trumpet of deep blue as in *Lagodechiana* and *Bisettiae*, or in many, as in *septemfida* and *hascombensis*. There are hybrids and intermediate forms which may show both characteristics. These gentians can be increased from cuttings taken in the spring, come readily from their fine seeds, and usually bloom the following year like the average perennial. They are a "must" for the summer rock garden.

Another group that is not too difficult includes *G. gracilipes*. *G. decumbens* belongs here, and there are a number of others. These gentians make a central rosette of large (4 to 6-inch) glossy rather narrow leaves. From this clump of leaves, firm, almost leafless stems spray out for ten or twelve inches, ending in bunches of narrow blue trumpets. These all look best in a raised position where the stems can spread out over a rock or hang over a wall. The quantities of their trumpets, as deep a blue as the *septemfida* group, make them showy even though

*G. hexaphylla**G. Veitchiorum**G. ornata**G. sino-ornata*

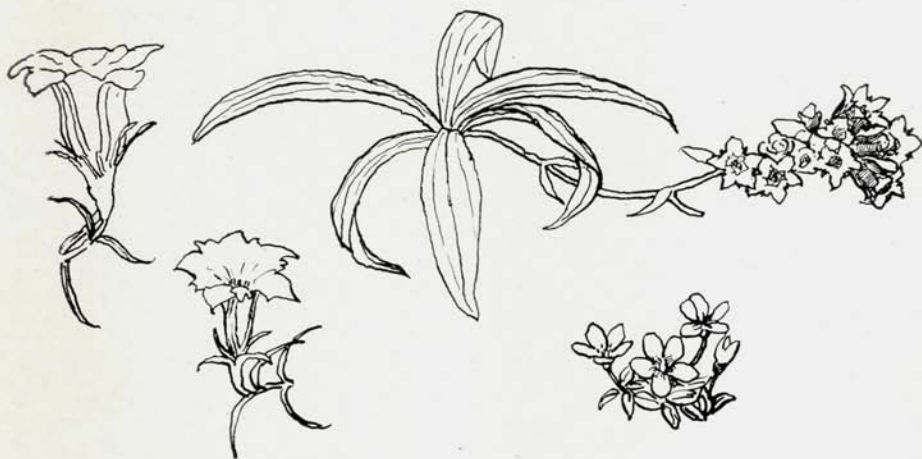
*G. Farreri*

Not Farreri

G. Kurroo

the individual flowers are smaller. They can be divided with care after blooming, which seems to prolong their life; some people finding them short-lived.

The most gorgeous beauties in the race belong to still another group. They are the Himalayans and their hybrids, summer to late fall in time of bloom: *Farreri*, *hexaphylla*, *ornata*, *sino-ornata*, *Veitchii*. There are many named hybrids, as *hexa-Farreri*, *Farorna*, etc. They are all high alpiners in origin, with the low growth and close habit of the mountain flowers. Their trumpets vary in color from the robin's-egg blue of *Farreri* to the deep velvety purple of *Veitchiorum*. The leaves of the famous *Farreri* were a great disappointment to me — such straggly grassy things — detracting from the unusual flowers of breathtaking blue, but then I've never had a flourishing colony of them which can cover many feet packed with its amazing trumpets staring up at you.

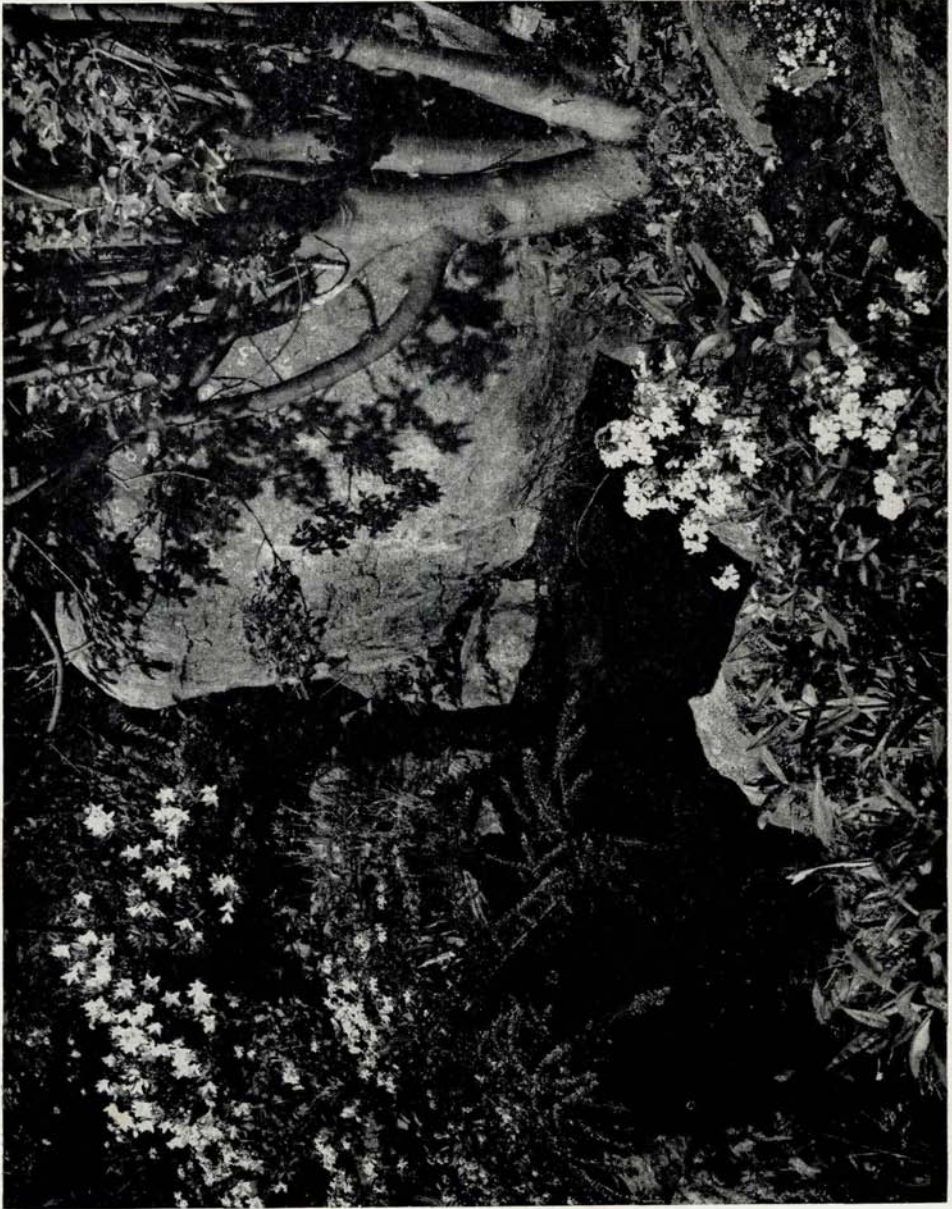
*G. X Farorna*

Inverleith

G. decumbens
G. saxosa

Several years ago I described "Gentiana *Farreri*" as I thought, in the Bulletin. I have learned that the flower I pictured then is nowhere near *Farreri*. It is probably a hybrid close to *scabra saxatilis*, which is Japanese.

All of this group can, after a few years, be lifted and gently pulled apart, and so increased — *sino-ornata* being the outstanding example which, where happy, increases very rapidly. They all come prolifically from their dustlike seeds,



but do not always bloom the second year like the septemfida group, rather seeming to take their time. Leafmold, peat and sand and chips, wet but quickly draining soil, semi-shade, seem to fill their needs, though some, as *sino-ornata*, seem to resent any lime in the soil. Any amount of trouble to make them happy is more than repaid when you see them bloom.

Now the group that not only I but many others find chancy and difficult. These are the spring blooming kinds: *G. verna* and its close relative *G. v. angulosa*; *G. acaulis*, and to a lesser degree its relatives, *angustifolia*, *alpina*, *excisa*, *latifolia*, *vulgaris*. These will come up from seed but from there on take their time. *G. acaulis* was so slow that at first I kept moving the seedlings around, to see if I could find what they wanted—but what they really wanted was to be left alone. They make the tightest of inch-wide rosettes with precise stiff glossy leaves in a Greek cross pattern, and they add some rosettes each year, but no bloom. They are independent creatures and either will or won't, and most people get the "won't" end. The others will put forth an occasional great blue trumpet close upon the mat—at least here—they can hide their foliage with flowers where perfectly happy.

The vernas make very small sprouts, they can hardly be called rosettes, the *angulosa* form somewhat larger than the other, but the leaves even of that are no more than half an inch long, and they also take their time about showing their salver-shaped sky-blue blossoms in clouds just above the leaves, leaves, by the way, which are evergreen and sturdy looking all winter. Many consider the vernas the loveliest of all. They demand richer soil than the others, a little well rotted manure mixed with the soil encouraging them, and in spring a good smothering of the gritty stony soil. G. H. Berry of England grows these and many of the others in pots and has great success with them, as he describes in his book "Gentians in the Garden"—a misleading title, since his are not grown in a garden. I hope to show that they can be grown in our gardens.

Characteristic of most gentians are the plicae or folds between the petals of the flowers. Each has its own form. In some they are so broad that they give the flower almost the effect of a morning glory, in others they are short slivers, in still others fringy, in some a mere nick between the petals. The Himalayans have another characteristic which seems common to all of them. This is the striping on the outside of the flowers, which greatly enhances their beauty.

The world is rich in gentians, annuals, biennials and perennials; tiny things to great 6-foot plants; woodland species such as *Andrewsi*, our "closed" or "bottle" gentian; the biennial fringed gentian (*G. crinita*) of our wet meadows; lovely western forms like *G. calycina*; eastern species such as *G. Porphyrio* of the New Jersey pine barrens; *G. saxosa* and other beautiful white ones from New Zealand (a bit tender but worth protecting for its dark glossy little leaves and brilliant white flowers) and there are endless others and hundreds of hybrids.

David Wilkie has written a very complete book on Gentians, and there is a large section devoted to them in Farrer's *The English Rock Garden*. If you once get started with them, you will want to know and grow as many as you can!

FLOWERS THAT BLOOM AMONG THE ROCKS

WALTER L. HARTER

Reprinted by permission from Profitable Hobbies, May, 1953

"CLOUD HILL NURSERY" the sign at the bottom of the hill says, and "Cloud Hill Nursery" its exact twin proudly proclaims at the top of the hill. Between these two signs are a few acres of pure magic and joy to all who love beauty and sweet odors, and the sight of living, growing plants and flowers from far corners of the world.

Cloud Hill Nursery, R. D. 1, Quakertown, Pennsylvania, is a rock garden to end all rock gardens. It is more, too. It is an example of what can be done with something seemingly worthless, when that apparently useless thing is seen and then dreamed of by people with vision and imagination.

"And like all things of beauty and charm—yes, and profit, too," says Mrs. Doretta Klaber, the magician who has turned these acres into the beauty spot it is now, "it didn't, like Topsy 'just grow.' it had to be planned, waited for, worked for—and even prayed for."

We were standing in the doorway of the living room, looking up the rock-strewn slope to where a lovely spring sent a rivulet of clear water down a man-made trench among thousands of hardy perennials growing in planned confusion among the boulders.

"You should have seen this place the way it was the first time we saw it," Mrs. Klaber said with a smile and a rueful shake of her head. "It was the most abandoned looking place you ever saw. What made it worse, too," she added, laughing, "was that Mr. Klaber is an architect and consultant in city planning."

We moved to a bench on the screen-enclosed porch, and with a pitcher of iced tea on a table between us, and with the panorama of the rock garden spread in front of us, Mrs. Klaber began to tell me how this miracle had come to pass.

"For twenty-five years I have been interested in flowers and plants," Mrs. Klaber said. "In Chicago, in Washington, D. C., and in New York—wherever Mr. Klaber's profession called him, I went along and planned gardens for individuals and for other architects. The last place we lived was in New York, where Mr. Klaber taught architecture at Columbia University. After living and working there for a few years, we suddenly realized one important fact. The fact was that slowly, so slowly we hadn't recognized it until then, our situation in life had changed. We were free! Our children were raised, educated, and busy with lives of their own. The necessity for earning a great deal of money was gone. We had, at last, reached the point where we had only ourselves to look after.

"We decided to find a small place in the country, some place where Mr. Klaber would be close to large cities for architectural and planning consultancy. I knew I could busy myself with a garden almost anywhere.

"In 1944 we started looking at small country places. We chose this section of Pennsylvania because of its nearness to Philadelphia and New York—for Mr. Klaber's work—and because of its natural beauty. In a few months we had been shown, and had examined, dozens of places. Some were nice, but none of them caused that breathless leap to the heart and mind we knew we would experience when we found the ideal place. Then, one day, our by now rather reluctant weary agent drove us to this spot. Perhaps he did it deliberately—not, of course, expecting us to buy it—but to show us how very terrible a place could be. And then, he might have thought, we'd appreciate the prettier places he had shown us.

"This place was a complete mess, when we first saw it. It was shoulder-high in weeds, and among the weeds could be seen rocks, rocks and more rocks. Farm animals of all kinds were in evidence everywhere; there was rubbish, empty cans, bales of wire, and broken glass all over the place.

"The farm house was tiny, and with few conveniences. Two rooms downstairs and two upstairs.

"But among all this confusion and mess there seemed to be a sunniness and subtle charm that, although hidden layers deep, showed some indications of being there. It might have been the apple blossoms on the few old trees that were in such dire need of care. It might have been the spring of cool clear water at the

top of the slope, or the shadows cast by the funny old barn. Whatever it was—it was there. And, crazy as I knew it to be, I wanted to live here.

"I turned to look at Mr. Klaber. I saw that his practiced eye was examining every inch of the place—and I had a sinking feeling. With his experience this place must have seemed even more terrible to him than, at first glance, it had to me. He caught my eye.

"What do you think of it?" he asked, poker-faced as usual.

"I took a deep breath. I might as well tell the truth, I thought.

"I love it," I said. "It's ideal for a rock garden nursery."

"For a moment he looked at me, and then he glanced once more around the littered place.

"Then he smiled. 'I like it too,' he said. 'It's got something.'

"Well," she went on, "we bought it. That first year we came up for only a few weeks in the summer. Every time we drove up here I'd bring along some plants from my garden at home, and we did what little we could in those weeks to try to clean up the place. The next year we began to work seriously on it. Cleaning up the outside, clearing the hillside of weeds, gathering the hundreds of articles that were strewn around, and — what is most important—starting my alpine from seed.

"That third year Mr. Klaber agreed to begin making the inside of the house livable for city folk. We had to have inside plumbing and a heating plant. Then, to make it completely comfortable, we added a large living room in the back, with this screened porch attached, and here we are."

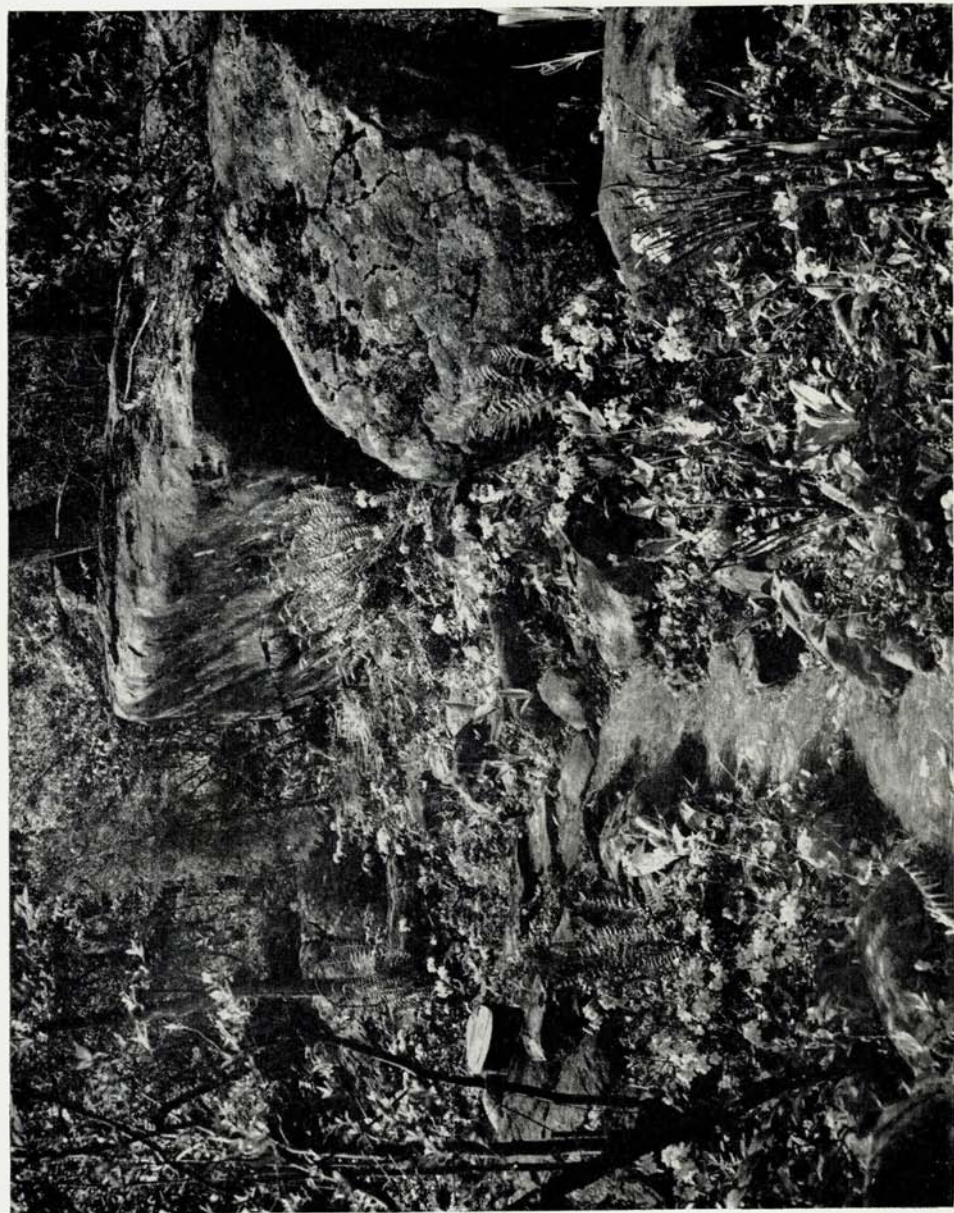
"But the rock garden, Mrs. Klaber?" I asked at last. "How much work was it? What did you have to do to get it like it is now?"

She laughed. "You might not believe this—because I've just been telling you how much I fell in love with the place when I first saw it—but there was a time, it was the third year when we had actually moved in, when I stood where we're sitting now, and looked up the slope and was so frightened by the amount of work I saw had to be done, that I almost despaired." She laughed again, and said, "That's when Mr. Carmody appeared."

"You know," she went on quietly, "I think that whenever a person makes a decision to go somewhere, or to do something, or to change something — no matter how rosy the prospects look in that first magic glow of beginning, there comes a time when, for just a little while, you become frightened about what you have started or are thinking of starting.

"Well, that third year, in the springtime, when I stood here and looked at all that work, I had that terrible feeling. And at that same instant I noticed coming down the hill a 'knight of the road.' He was a middle-aged man, tall and lanky, and when he stopped to ask for something to eat I saw that he was clean and had a gentle appearance. While he sat on the steps eating, he offered to help me that day for the food I gave him, and I accepted the offer. He was a wonderful worker. He pulled weeds; he helped to plant; in fact he seemed to be everywhere at once. At the end of that day he suggested that if he could sleep in the barn he would be glad to help me the next day. That was the beginning.

"He stayed day after day. We suggested that he stay with us, and we agreed on a weekly wage. In the next three weeks the change in that rocky slope was almost unbelievable. We terraced the hillside, using some of the smaller stones we dug out to make the walls — and all the time we weeded. We planted and transplanted. Then at the end of those three weeks Mr. Carmody appeared at the door and told us he had come to say goodbye. We had hoped he would stay, but even this beautiful spot couldn't restrain his love of wandering



for more than three weeks, so regretfully we said goodbye. It did seem rather miraculous that he should appear at the very time we needed him most.

"Of course when he wasn't busy with his own work, Mr. Klaber helped me in the garden. We were fortunate that there was a natural spring at the top of the slope, and Mr. Klaber has laid underground pipes from it so that I can connect a hose almost anywhere it is needed."

We got up then and strolled out into the garden.

"This is a hardy garden," Mrs. Klaber explained. "No plants are ever pampered. They must be the type to live through our winters or I won't have them. I try to use common sense when planting them, of course. I mean I give those plants that need it the choice places of warmth and protection that the garden naturally provides. For example, I try to plant lavender so that it faces south and is protected from the north wind by a huge stone or the side of the house. Also, certain types of evergreen barberry are given as much *natural* protection as possible. In the spring I push back into the ground those seedlings that have heaved out with freezing and thawing. I cover no part of my garden with sheets of glass or layers of straw or evergreens. Understand, if anyone prefers to use coverings on their garden, there is no reason why he shouldn't. But I don't, and this is why. I realize it is difficult for plants, even hardy ones, to bear up under freezing rain, ice, snow, and thawing, but you would be surprised how most of them become acclimated to such treatment. And, don't forget, I'm raising plants for sale. If my plants can stand these seasons completely in the open and without covering, I can sell them with the confidence that they will grow for others.

"I have another reason, too. Although primarily I raise plants for sale, we do get a great deal of personal enjoyment from our garden. Our living room window faces the garden, and during the long winter months, we want something pleasant to look at, and not an expanse of layers of straw or other material."

Grown from seed, and being completely unpampered from birth, Mrs. Klaber's plants develop resistance to an amazing degree. Of course, when the winter passes they may look a little bedraggled and disheveled, but with the coming of spring they begin to send out new shoots and perk up! She has learned from experience that some so-called hardy plants simply "can't take it" through a completely unprotected winter. *Erinus alpinus* usually dies in an open spot, but if given a protected position it will live through. And some of the selfsown seedlings of alpine forget-me-nots blacken and die. One thing to remember in planting a rock garden is that your experience may not coincide with that of another. You might have beautiful plants of a type that your neighbor several miles away finds it impossible to grow. Over the years you will, however, discover those plants that thrive best for you in your own garden.

"For example," Mrs. Klaber says, "one spring I planted seeds of an Alaskan *Corydalis*. They grew fast that summer and each plant became a mound of beautiful lacy foliage. They lived through the winter in what seemed to be excellent shape, and the following spring they came up and bloomed beautifully—and then died. In my garden they were biennial instead of perennial. Soon, however, selfsown seedlings started to come up all over that section of the garden where the first plants had died.

"You've mentioned several times about growing your hardy perennials from seed," I said. "But how do you do it? When do you do it? And why from seed?"

We found a bench in the shade of a peach tree. Mrs. Klaber has planted several fruit bearing trees in her garden. They give shade to certain shade-loving plants, and also add variety of height to what otherwise might be an expanse of rocks and flowers.

"Let me put it this way," she said. "My garden is made up of all types of rock plants — alpine, bog, waterside and woodland. They are plants not only from the United States, but from all parts of the world. I grow most of them from seed because the resulting seedlings are hardier than cuttings, and also because it is much cheaper than buying plants."

During the winter months Mrs. Klaber pores over catalogues, selecting and rejecting, and then finally ordering from seed houses in various parts of the world; mostly however, from Scotland, England, our own Midwest, the West, and from British Columbia. When the seeds arrive she puts them in ordinary glass preserving jars, securely closed, and then places them in the refrigerator. Putting them in the cold is simply a ruse to fool the seeds. They come from plants that are accustomed to lying under coverings of ice and snow and it is necessary that they be kept in the same environment until they are needed.

In late winter—your time for planting will depend, of course, on your own locality—she takes her jars of seeds out to a small shed at the back of her garden. Outside of this potting-shed, in a warm corner of the garden that faces southeast, she has her group of coldframes. These frames are home-made, and as simple as can be. Most of them are higher in the back than in the front (for additional drainage and also so that the plants in the back can be reached more easily), with sloping sides.

And here is one important thing—they are made so that the lids do not fit tightly. This is done deliberately, because then she doesn't have to "air" them; they are always well ventilated.

There are almost as many methods of seed planting as there are people who plant seed. Everyone seems to have his own method, and even the best and most tried method will vary in different localities. One sure thing is that seeds want to grow, and given a reasonable chance and reasonable treatment they will grow.

The coldframes have been opened to the weather all winter, and now the beds must be readied for planting. They are carefully raked with a hand weeder, with a constant watch for any sprouts that may be below ground, and pulling out all weeds that have accumulated over the winter.

I asked Mrs. Klaber to explain how she built a coldframe.

"I put the sides of my coldframes about two inches into the ground," she told me. "Then I dig out that two inches of soil so that the interior of the frame is below the surface of the surrounding ground. Then I spread into those two inches a layer of cinders or stones — this is for drainage. Then I fill the remainder of the interior of the coldframes to within about two inches of the top with a mixture consisting of compost, sand, peat moss, well rotted manure, and small stone chips. This mixture will vary with every gardener. What you try to make is a good loose mixture that will not cake, that will allow air and moisture to percolate easily, that will never have standing water, and that will have some nourishment. In the spring when I examine my frames I don't change the soil in them, but I do add some fresh mixture to bring it to the proper height and then I level it off."

Mrs. Klaber then takes her sifter — a home made one, which is simply a wooden box with the bottom knocked out and $\frac{1}{4}$ -inch mesh nailed over the opening — and shakes a layer of fine mixture about $\frac{1}{2}$ -inch deep over the surface of the soil in the frame. She smooths this out with a piece of lath that fits into the width of the frame. Then she presses the edge of the lath into the soil to mark rows about three inches apart. Now, with the jars of seeds—and with labels on which she has printed all necessary data pertaining to each different kind of seed—she begins to plant.

The label is placed at the back of the row. It is usually a wooden one, marked with ink, and stuck into the ground. The packet is opened, held close to the row, and shaken gently. The idea is to spread the seeds evenly and far enough apart so that they won't come up too crowded. This last is very important, and the smaller the seed the more care should be taken so that the resulting plants have room. Some seeds are so very tiny that it may take a year or more before the resulting plants are large enough to transplant, so they must have elbow space in which to develop. The seeds are of all shapes and sizes; some are so small they are like dust, some are like grains of sand, while others are as large as pebbles. But each kind has a distinctive individuality of its own.

As soon as the row of seeds is spread, Mrs. Klaber covers them with a layer of fine sand. She then gently presses the row down with her fingers so that the seeds will come in close contact with the soil. When the whole frame is finished she waters it carefully and gently with a fine spray. Then she covers the beds with a few sheets of newspaper. Later, when each row sprouts and it needs light and air, it is easy to tear the paper. Now she puts on covers of glass cloth (ordinary glass sometimes breaks), and the surrounding ground is dusted with slugshot and ant powder. The slugshot will guard against slugs and snails and all those other little creatures that consider seeds a delicacy, while the ant powder will keep those little pests from actually running away with the seeds.

"About uncovering the seeds," Mrs. Klaber explained. "I don't always keep the newspapers on them until they sprout. If there is the least sign of moss forming I take the cover off."

From this time on Mrs. Klaber watches her beds carefully. It is still winter, and when she sees signs of heaving, she gently presses the soil back into place. The soil is kept damp, *but not wet*, and she always hopes for a late snow. Whenever that lovely white stuff does come sifting down, she bundles up and hurries out to uncover all the frames. There is nothing like a good cover of ice and snow to make hardy alpinists feel at home.

As spring passes into summer the seedlings begin to respond and grow. As the very hot days approach, Mrs. Klaber has slat covers ready to rush to the rescue. These covers are made of ordinary wood lath, spaced their own width apart, and attached to a frame. As soon as the sun becomes too warm the glass-cloth covers are removed from the coldframes and the slat covers take their place. Mrs. Klaber claims this type of cover is wonderful. As the sun moves across the sky each section of the coldframe gets light and shade. Later on, when the coldframes are emptied, these same slat covers will be used on the nursery beds to protect newly transplanted seedlings.

There seem to be just as many opinions about when to transplant seedlings from coldframes into nursery beds as there are methods of growing plants from seed. Only experience will tell you what to do in your own garden. There are some seedlings that simply resent too early disturbance; others can be transplanted at almost any stage. If they have been planted thinly in the coldframe it is fine to leave them there longer than if they are crowded and seem to cry for more space.

Mrs. Klaber's nursery beds are in a space about twelve by twenty-five feet. All the stones are removed and the ground leveled and then divided by boards six inches wide stood on edge. These boards are held in place by stakes driven into the ground. She tries to keep the beds about four feet wide with a path between them about eighteen inches wide. In this way she can work from either side without too much strain. Then she fills these beds to within a few inches of the top of the boards with her mixture of compost, peat moss, sand, old manure, and stone chips. The idea of raising the beds above the ground is to provide good

drainage (one of the most important things in gardening). And by leaving a few inches of space at the top of the bed, the seedlings will have a chance to grow and still be covered, when needed, by the slat covers.

When Mrs. Klaber decides that the seedlings in her coldframes are large enough to transplant, she moves them very carefully into a container that has just a little water in the bottom. There are three rules she follows at this time: (1) Be very careful that the delicate rootlets aren't damaged. (2) Do not let them dry out. (3) Replant them as soon as possible. In order to be certain that these rules are followed she usually moves only one row at a time. She also leaves the label in the coldframe (making a new one for the nursery beds), just in case some late arrivals show up. The little seedlings are planted in the beds from two to four inches apart. This, of course, is determined by the type of plant and its probable growth.

It is at this time that the utmost care in cultivation and weeding is necessary. These plants are accustomed to melting snows constantly seeping among them with the excellent drainage of their native slopes and stony soil; therefore, it is very important that they be watered carefully. The ground should be moist at all times, but standing water should be definitely avoided.

"It is this stage of planting," Mrs. Klaber says, "that I sometimes find to be the most critical. I expect, as does every gardener, that many of the seeds will not germinate in the coldframes. I don't feel too badly about that. But what does seem to be a pity is that sometimes those that do germinate and seem to be sturdy little plants will, for no apparent reason, sicken and die when transplanted into the nursery beds. It is in this 'nursery' stage that the challenge and thrill really comes. I consider half the work done when the seedlings are in the beds—the first stage is the germination of the seeds and the last stage is the planting in the large garden—but right here, in the middle stage, is where the battle is won or lost. This may sound complicated and difficult, but it isn't really so. For every plant that dies, there are ten more to take its place. And as you get more and more experience you discover those that are easy to handle and a pleasure to grow. However, if you are like I am, you'll always find some time for the 'problem plants,' for these present a challenge and an exquisite thrill when finally brought to sturdy, beautiful 'planthood.'"

Mrs. Klaber carefully watches the growing seedlings in the nursery beds until she thinks they are large enough to take their places in her main garden. Then, usually after a rain when the ground is still moist, she begins to move them. She plants them firmly, waters them, and places some loose dry soil over the wet ground, and if the sun is very hot she shades them for a few days.

Mrs. Klaber uses her nursery beds in another way, too. One might even call them her "hospital." When some of the plants in the large garden seem to be weakening, or if she receives a gift of plants, they are put immediately into the nursery beds. Her reason for this is perfectly reasonable. In a large garden there are so many plants that sometimes it's impossible to give individual attention to each and every one. But by keeping the occasional "invalids" and new plants in the nursery beds, and if, like a doctor, you stop there every morning to examine and help them, you can't avoid saving a great many plants that might otherwise die. When these sick plants are strong again they once more take their place in the large garden, and the weaker plants are moved to the beds for attention.

Although almost all of Mrs. Klaber's plants are grown from seed, she does use other methods to further propagate those strong plants she has already grown. One of the methods she uses is to make cuttings. In this way she can obtain exact duplicates of the plants, which is never the case with seeds. No

matter how conscientious the grower, plants from seed will vary, due to cross-fertilization. This will, of course, make things more interesting, but is less reliable if definite types of plants are wanted.

The cuttings are taken from new growth, and are made about three inches long, cut just below a joint. The lower leaves are removed and the cuttings are inserted an inch or two into a bed of ordinary sand, which is then pressed tightly against them. They are watered and watched carefully until indications of new growth show they have rooted. When this happens they are removed from the sand bed and put into the nursery, where they stay until they have developed a strong enough root system to be planted in the main garden.

Another method Mrs. Klaber uses is to make a layering. She does this without moving the parent plant from the large garden. Layering is made by selecting a branch and then making a cut about half way through it. The branch is then bent over until that part of it where the cut has been made can be covered with soil. The soil is tamped firmly down over it and a stone is put on it to hold it in place. After a few months the stone is lifted and it is usually found that the branch has taken root where the incision was made. The branch is then cut completely through at a point between the new root and the parent plant, and that section of the plant with the new root is planted in the garden.

Still another method is called division. Here the plants that grow in clumps are pulled apart, each making a new plant. You will find by experimentation which plants will react favorably to this method, and which plants are better left alone, or propagated by cuttings or by layering.

"And above all," says Mrs. Klaber, "don't be afraid of your plants. If you decide some are in the wrong place in your garden, or that the colors clash, or you want to move them for any other reason, simply move them. Be careful, of course, to do it gently, and be certain to dig up the whole root system. Try to disturb the soil as little as possible—then move them quickly. Just as you did with seedlings, plant firmly, water them, shade them when necessary, and the job is done."

She tries not to move them in the summer during a long, dry spell, because then the plants are having a hard time simply bearing up under drought and heat, and they need all their strength just to keep alive. But in the spring or in the fall, when the plants are strong and at the height of their beauty, the weather is usually favorable to move them without danger of damaging them. So don't be afraid of your plants. Treat them gently but firmly.

Although a great deal of Mrs. Klaber's time is taken up with coldframes and nursery beds, the garden itself needs attention, too. In all the year there are two seasons when it is most necessary to work in it carefully. Of these two seasons the more important is spring. As early as possible at this time the entire garden should have a complete going over. Weeds are pulled—all weeds—every blade of them. And as each part of the garden is weeded it is cultivated. Mrs. Klaber takes a small wheelbarrow filled with her mixture and, using a shovel and a sweeping motion, spreads the soil over the entire garden. It doesn't matter if the mixture half buries some of the plants. They wouldn't be treated any more gently in their natural surroundings when sliding gravel loosened by melting snow falls on them. Later she goes among them and shakes the loose soil down around their roots. While she weeds she also removes rotting leaves and dead shoots and any plants that have died.

"Of course," she says, "all summer I go over the garden for weeds, but that first spring cleaning-up gets most of them. Another bit of work that starts in the springtime and continues throughout the summer is the removal of dead flowers after they have bloomed (unless, of course, you want them to go to seed for later use). Also if flowers are cut off as each plant stops blooming,

many of them will thank you with an encore. And, too, with spreaders such as *Cerastium*, *Arabis*, and some of the pinks, I like to give the whole plant a haircut, snipping the foliage back a good third or more. They look shorn and forlorn at first but they soon bounce back, greener and more beautiful.

Then in the fall, before there is a chance of the garden becoming frozen, it is given another cleaning. Once again weeds are removed and a top dressing of the mixture is spread over everything. Special attention is given at this time to young seedlings and to wet spots in the garden. The seedlings and the damp spots are given an extra coat of stone chips, because wet earth will heave the most in the freezing and thawing to come, and the young seedlings with their tender roots do not have the strength of older plants to hold deeply to the soil. Leaves that fall to the ground at this time are allowed to stay there, unless they are forming mats around the plants. All coldframes are put away, and all is ready for winter.

We came back from our tour of the garden and once more sat on the steps in the sunshine. "What about prices?" I asked. "How do you charge for the various plants you sell?"

"First of all," she said, "I do only a cash and carry business. I don't sell by mail, like many nurseries. We don't do a large business, but it's growing every year. I have people who come for plants from a radius of about a hundred miles. They know what I sell them is good. I'm proud of my plants. Of course all nurseries usually have about the same prices for things, but some growers — and I think I'm one of this kind — have some plants that are not of the usual kind. I mean plants that take time and care to grow — the same time and care that would have produced hundreds of the more common plants. Anyway, the prices range from 35 cents each to a high of \$2 each. And often it just isn't possible actually to know what a certain plant has cost you in labor, worry, and waiting. When you take into consideration that some plants take nearly three years to grow from seed — how can I charge what they are really worth? Sometimes I actually hate to part with them, because I've become so attached to them.

"I do very little advertising. My customers tell one another, and that's the thing I want. Most of the people stop because they see our signs, and a great deal of my enjoyment comes from showing them my garden. Mr. Klaber and I both like meeting people, and I suppose that's another reason why we like to grow plants and sell them. Of course I'm proud that experts and specialists come from a distance to see what I have done, but even if they didn't, this is the life we love. This little place is what we have wanted all our lives."

A final word about catalogues. Mrs. Klaber suggests that a letter written to the United States Department of Agriculture, Washington, D. C., will bring a list of nurseries that sell seeds of all the hardy plants. Also the Agriculture Department of most of the individual states will furnish lists. For lists of English and Scottish nurseries, address The Ministry of Agriculture, London, England.

GENTIANA PROCERA

HELEN C. SCORGIE, HARVARD, MASS.

Gentiana procera appears to be almost unknown to gardeners, but is not rare in its natural range. This is from western New York and southern Ontario through northern Illinois to North Dakota, northward to Alaska. Granted it is monocarpic and probably difficult to grow in cultivation, still these things are true also of its close relative *G. crinita*. Frequent references are found to the latter, and our seed exchange usually includes it. One cannot help but wonder how often these seeds of "*G. crinita*" in the past have indeed been those of its lime-loving cousin. I suspect this to have been the case, and that part of the difficulty experienced in raising "crinita" seedlings to maturity in a granitic terrain was because the seed was misnamed.

Gentiana procera is a beautiful flower, and it is sufficiently different from *G. crinita* to make it well worth growing. For those gardening in limestone, it should be easier and therefore preferable as a garden subject. My first meeting with it on a hot and cloudless day remains an unforgettable picture after many years. A sudden opening in the road at a grade crossing swept the sky down nearer the earth, and in the swale below me, a sheet of gentians was like a deep pool reflecting in darker color the bending sky.

Somewhat paler than its eastern cousin, *Gentiana procera* is an intense, rather deep sky-blue. The fringe, instead of being on top of the lobes, is along their sides, and the flower is slightly smaller, though still of good size. In spite of its name (*procera* means tall), it seems to me slightly lower than *crinita* as I have found them, although Fernald gives maximum and minimum heights for the latter that I have never seen approached here. The most clearly defined point of identification for the gardener is the narrowness of the linear-lanceolate leaves of *G. procera*, those of *G. crinita* being much broader, ovate to ovate-lanceolate.

The requirements for cultivation would appear to be open sunshine, constant moisture, and a calcareous soil. Where these conditions are not present or cannot be reproduced, it would seem useless to try to grow this northerner. It is to be hoped that some day someone will collect and send in seeds under the correct name.

ALPINE PINKS FIT ROCK GARDEN NEEDS

CLARE W. REGAN, BUTTE, MONTANA

DO YOU THINK OF DIANTHUS AS WILDFLOWERS; as free untrammelled denizens of cliffs and dells, mountain scree and stony pastures? I, for one, find it hard to twist my imagination round to the point where I can see them as anything but cultivated flowers, so long have we known them as naturalized citizens of our own gardens and rock gardens. The prodigality with which the genus is scattered over some parts of the world finds no counterpart on the North American continent and we were shamefully slighted when nature began the development of the genus. I can see her scattering her seed here and there and muttering to herself, "None for North America. I've done enough for them in giving them the exclusive on Phlox." And, indeed, the small, prickly cushion types make fine substitutes for the prickly dwarf pinks but are much harder to procure and very definitely harder to grow than the happy citizens of the Mediterranean shores.

To come back to our lack of pinks; there is indeed *D. repens*, said to have been a traveler, like our southwestern Indians, over the land bridge that once connected Asia and Alaska, but this species cannot be called strictly our own, for we share it with Kamschatka over the waters, and so it must be classed as an Asiatic emigrant seeking a new home, which it found in our most northern territory.

Many plant families have established a nucleus in a certain part of the world, where they have developed their loveliest and their best, and from that point have diverged into other far-flung areas. Thus the genus *Dianthus* has concentrated much of its floral wealth in the Balkan Peninsula. From there it has scattered to the north and south, to Asia, and using the islands of the Mediterranean as stepping stones, invaded even the coast of North Africa, and eventually reached Spain, France and England.

The word "pink" is not the correct term to use for the small mountain species but "dwarf *Dianthus*" seems stuffy and a bit overpowering for these gay little plants, and top-heavy for something we regard with so much affection and appreciation. So they are called dwarf pinks, in a free and easy manner, or alpine pinks, which is wrong for some of them, as they are not "alpine" at all.

My own timid approach to the cultivation of this interesting and beautiful family came by way of a ten-cent investment in a packet of *D. deltoides* (maiden pink) seed. When I saw those first quaint, freckled-faced flowers (not having met up with anything before but clove pinks and sweet Williams) I immediately and enthusiastically became a slave to the genus, and set out at once to secure more and better specimens of the family. I was fortunate, at the time, to be in communication with a kind and distinguished gardener in Europe who sent me, from his contacts with collectors in the Balkans and Greece, many rare and very choice seeds not at that time in commerce; and so came to me the earliest bloomer of all, *D. glacialis*; tiny blunt leaves of green arranged as tight domes, at blooming time covered with short-stemmed pale mauve-pink flowers in most abundant fashion. I have had this plant, or its children, for twenty years as the seed is fertile and has perpetuated itself in its true form for all those years. The wee *D. Freyni* is said to be a variation of it with blue-gray tuffets of foliage and white or pale pink, almost stemless flowers. The delicate *D. microlepis* flowers soon after. Its mats are really more like "golf-balls" of silver gray, pricked over with tiny pale rose "pinks." Everyone who sees it is completely enraptured and feels at once the sin of covetousness which besets so many otherwise worthy rock gardeners. In like manner is *D. microlepis rumelicus* represented. I found it a slightly warmer rose and peering into its wee heart, I could see a faint green zone and crimson lines threading through the pink of the petals. Later I received a packet labeled "Musallah" and I gathered it came from the 11,000-foot mountain of that name in Bulgaria, that means to the peasants of that country, "Nearest to God." It is the species now called *D. Musalae*. These are all very similar, being trim, prim and concise and all liking a sunny scree with lime and very good drainage.

The mountains of Bulgaria would have seemed to have done enough for us in producing the above treasures, but we are still under deeper obligations to them as the birthplace of the incomparable *D. simulans*. It grows near the summit of the lofty mountain, Ali Botusch, on the Graeco-Bulgarian border—and there only in all of the world. For years it was seen only by the sheep and goats that pastured there, and by the shepherds who tended them; but in 1933 it was discovered by a professor of the Royal Bulgarian Academy of Sciences and ever since it has hung on precariously in a few gardens, as it is difficult to propagate by cuttings and is stingy in seeding. It is of all the alpine pinks the most exquisite, setting its stemless flowers down on the tight domes of silvered green leaves. These are not the pale rose of the *D. microlepis* group that have a glint of

salmon in their coloring that is positively enchanting, combined as it is, with the wax-like texture of the flower. This little *Dianthus* is found in scree-like conditions of limestone rock and must have considerable crushed rock in the soil and on the surface. I find that some small stones placed under the trunklike stem gives great comfort to the plant as it hates exceedingly to have its tufts lying prostrate on the damp ground. The plant known under the tentative name of *D. Peristeri*, from the mountain where it was discovered, has at last come to anchor as *D. myrtinervis*. This is a dainty affair far removed from the bristling, belligerent aspect of so many of the dwarf pinks. It grows as a soft trailing mat of thyme-like leaves and produces many flowers of soft rose, each single on its own short stem. This is the smallest of all the dwarfs, as I have grown them, being about one third of an inch in diameter.

Most rock gardeners know the royal magnificence of *D. alpinus* with lovely cartwheels of luscious pink, or the more glowing crimson-red form known as *rubicundus*, both of which manage to accent the charm of their flowers by the glossy mat of foliage beneath them. The plants are likely to be impermanent if division is not resorted to frequently. After blooming a mixture of fine old mortar rubble and compost should be worked into the mat. *D. callizonus*, the lovely queen with a beauty-zone, of darker speckled pink, is even more temperamental and whiffs off into the unknown without any provocation, it seems. The foliage of this near kin to *D. alpinus*, is lighter in color and flimsier in texture, also longer in the leaf. It takes the same culture as its cousin with even more attention to drainage, with rock chips on the surface, and like it does not relish a situation that is very hot. Contrary to what has often been said, that *Dianthus* like a hot dry, sunny position, I find that while they demand full sun it should be in a rather cool spot, and they require as much water in summer as most rock plants; with good soil, not sand, with rock chips for drainage and some compost. Lime is also liked by almost all of them.

In those golden days "before the war" when seeds and plants were easy to get I had in my rock garden such rarities as *DD. gelidus*, *brevicaulis* and *nardiformis*. The first is said to be a form of *D. glacialis*, but was entirely different, leaning more towards *D. alpinus*, both in polished green leaves and large pink satin-textured flowers. A lovely species but impermanent.

Asia Minor is the home of *D. brevicaulis*. It has indeed, short stems which hold, above the fine grass-like leaves, medium-sized flowers rather deep lavender-pink with a buff reverse (like *D. neglectus*) and a rusty-red calyx (like *D. haematocalyx*). The third of this trio, *D. nardiformis*, I killed with misdirected kindness before it ever bloomed, but I have never forgotten the sharp fine needles of silver-grey that made up its foliage. I now have seed of all three and my daily plea to Providence is that it may germinate and be true to name.

Names of *Dianthus* are in a state of chaos, in some sections, and none more so than in the *D. strictus* group. One of them, *D. integer*, while not one of the most beautiful yet has a quaintly appealing charm, that lies in the round, white, entire-edged flowers which have, of all things, a chocolate brown calyx. Now I am supposed to have it again but the flowers while white, are much smaller and have a commonplace green calyx. I think this is *D. minutifolia*, while the above form is sometimes classed as *D. strictus* var. *brachyanthus*. Then again the last is sometimes given as rose-colored and if so, I believe I have it, a small-flowered pink, a tremendous bloomer that is beautifully fitted for a crevice, with innumerable straight stems spraying out in all directions.

The Cheddar Pink (*D. caesius*) is well-known, a lovely long-lived and floriferous plant that is a mass of bloom for many weeks. I have none now but the fat, blowsy double form which I do not like and the hybrid called Spencer Bickham, a low-growing gray mat covered with large pink flowers at blooming

season. *D. sylvestris* is mis-named. Travelers tell us it does not inhabit woods but likes the hot dry hills and roadside banks from which it waves cheery pink blooms on arching stems, in greeting to passers-by. Its correct name is "*inodorus*" and it was named by Linnaeus in 1753. It has a small and delightful replica in the person of *D. frigidus (acaulis)* with rather wiry narrow leavaes and flowers almost as large as its relative, though much shorter stemmed. A species also happily well-known is *D. neglectus*, varying much in color from cherry-rose to light red, but always with the buff reverse. I once had a delightful hybrid of this which still causes me a yearning sorrow when I think of it—such a superb color and form that it was a super-pink, indeed. That is the worst thing about hybrids; when they leave you it is so dreadfully final and your chances of ever getting that identical plant again is very remote. For which reason it is always wise to take cuttings or divisions, if possible, of anything especially select or elegant; and most wise of the pinks which often die in a few years, or even a year from overflowing or from natural "short-livedness."

The fringed pinks are many, of which *D. superbus* is a type but too large and ragged for the small rock garden. However there are some smaller in stature that are less floppy, as *DD. arenarius* and *squarrosus* and not only give delightfully misty and lacy effects but a heavenly scent. Many of the fringy *Dianthus* dwell behind the Iron Curtain, being natives of Russia and Siberia, and the type extends even into Japan with *D. monticola*.

My last, but well-loved, rock garden *Dianthus (D. haematocalyx)* does not bloom until late summer and into September, when it is indeed an extra gift-offering from a genus noted for its spring and early summer blooming. It makes bright spots of color in the most depressing months of the rock garden year, when there are only a few fall gentians about to lessen the gloom. Fierce looking cushions of dull steel grey, with broader leaves than most of the alpine pinks possess, are surrounded by chaplets of vivid red flowers paling to a lighter zone. It has the buff reverse of *DD. brevicaulis* and *neglectus* and shares with the former the red calyx, which is such a distinguishing feature of these two species. *D. haematocalyx* is indeed a great beauty and adds to pulchritude and attractiveness a heavenly disposition, without temperament or any bad habits. Any sunny position, good drainage and soil suits it well. It seems to be one of the long-lived species, to which we can safely entrust the adornment of our mimic hills and slopes. It is another for which we are indebted to the Grecian Peninsula, being native to a high mountain in Thessaly.

Happily for us seed of these rare species — and some plants — are now beginning to flow into commercial channels once again and these and many others suitable for the rock garden can be raised from seeds, at least. Many others are in my own rock garden, but space is running out—and adjectives also—so the rest must wait for another time.

DIANTHUS AND CAMPANULAS

Alice Hills Baylor, Johnson, Vermont

AFTER THE GLORIOUS SPRING DISPLAY in the rock garden is spent the lull that might come may be avoided by the use of lavish numbers of both the *Dianthus* and *Campanula* families. These are noble tribes for they ask so little in return for such a wealth of bloom. Much has been written about various members of these two families which are so easily propagated from seed, division and cuttings. As a rule the *Dianthus* only ask for a place in the sun while the *Campanulas* need partial shade. Unless planted in the wall or moraine they need

a generous top-dressing of stone chips. Garden notes for 1953 include many attractive color combinations for the summer weeks which I should like to pass along.

The "pure in heart" rock gardener needs these two families, not only to wreathe his garden and wall with white, pink and rose *Dianthus* flowers and blue stars and bells of the *Campanulas*, but as a heart balm. They help to soothe and heal the disappointment of not succeeding with more difficult genera! (Such as not having one's *Gentiana acaulis* bloom.)

Dianthus Roysii came into bloom this past season on the twelfth day of May, when it burst its brightness against a curtain of *Veronica* var. Blue Shimmer. D. Little Joes soon followed with large crimson flowers making a stunning contrast to its silvery foliage and enhanced a near-by *Phlox ovata*. On the last day of May, Rose Cushion opened its rosy petals on stiff stems above its compact mound of blue-gray foliage. It is perhaps fortunate this member of the *Dianthus* family blooms early, as the flowers seem small when compared to the large blossoms of *D. alpinus*, when it made its entrance on the sixth of June.

The dark green foliage of the "Princess of the *Dianthus* Tribe," as I like to call *D. alpinus*, is literally blocked-out as the buds open to display the large, bright pink flowers. One plant, not as large as the palm of one's hand, held twenty-three blossoms up to the admiring gaze of all garden visitors. *D. alpinus* is the one member of this family that enjoys shade during the heat of the day. It also should be planted where it is protected from wind.

The plants of *D. arvernensis* are neat mounds of light green delicate foliage. The pale pink and white fringed flowers are not held as stiffly on the long stems but rather wish to cascade. Therefore the site is on a slope beside stone steps so that the display of bloom may be more noticeably admired. *D. arvernensis* has a long period of bloom which extends from the first week in June until well into July. If the faded flowers are removed, a second flowering in late summer, while not as profuse, is most welcome.

On the twenty-first day of June the grass-like foliage of *D. neglectus* was obliterated by the buff-backed, cherry-colored flowers. This beauty continued to bloom during the month of July.

D. noeanus is a true rock garden gem. The tight mound of delicate foliage is stunning in itself. It was the last of the *Dianthus* tribe to come into bloom for not until the last week in July did the white blossoms open. The flowers resemble a bit of Val lace gathered to make a rosette, for the petals are deeply fringed. The bloom extended well into August.

The first week in July brought the *Campanulas* into bloom. *C. garganica* edges the stone steps that lead down into the sunken Primrose garden. It seemed, when they opened, that blue, white-eyed stars had been sprinkled in careless abandon in the crevices and along the edges of the steps. So it might seem to the observer but not to the owner. The summer before one hundred tiny *C. garganica* plants had been painstakingly transplanted from flat to crevices in hopes of just such a display.

Experimentation may be the exception rather than the rule, for I went against the accepted ecology for *Campanulas*. With so many seedlings at my disposal, I planted ten *C. garganica* in full sun below the *D. neglectus*. However the roots were sandwiched between two pieces of granite to imitate a wall pocket. The color combination of the cherry-colored *Dianthus* and the clear blue stars of *C. garganica* was breath-taking! The flowers were not the only pleasing combination, for the deeply cut foliage of the *Campanula* complemented the grass-like foliage of the *Dianthus*.

C. Rainerii perpernter is a husky plant which grows to a height of six inches. Its wealth of bloom in deep blue bells continued on into September. A very nice

yellow and blue combination for midsummer was *C. Rainerii perpenter* in bloom beneath the feathery foliage and yellow flowers of *Cytisus nigricans*.

During July and August the pale blue bells of *C. rotundifolia* hung from the wall on thread-like stems. These plants were collected on our Smuggler's Notch plant hunt on Mt. Mansfield, Vt. in July, 1952.

The second week in July brought *C. carpatica*, *C. Portenschlagiana*, *C. cochlearifolia* and the periwinkle-blue bells of *C. turbinata* in fast succession. One plant of *C. Portenschlagiana* had been placed in a crevice of the low wall which forms the ledge for the planting of *Primula alpicola* var. Luna. It grew into a large plant and was covered with deep blue bells at the same time the lemon-colored primrose was in bloom. It was such a beautiful combination that cuttings of the Campanula were tucked in all along the wall in hopes of a greater display for the next blooming season. Cuttings from Campanulas strike easily when layered between rocks in a mixture of some moisture holding medium such as peat moss, mica or leaf mold.

C. turbinata continued to be covered with blossoms all during the month of August and a most appreciated second display joined the fall *Primula* bloom. It was particularly nice below *P. japonica* var Miller's Crimson when it sported its corsage-like center-plant bloom.

C. cochlearifolia (pusilla) is the daintiest of the Campanulas in my garden. The nodding, lavender bells were in profusion on the tiny-leaved mats. This Campanula is reported to be a wanderer but I have not found it to be as rampant a grower as *C. Portenschlagiana*. The white form of *C. cochlearifolia* has larger flowers. The yellow and lavender combination in the wall was created by *C. cochlearifolia* blooming below the trailing stems of *Lotus corniculatus* strung with yellow flowers.

The plants of *C. carpatica*, both blue and white forms, bloomed continuously all July and August as new buds replaced faded flowers.

A gift of three seedling Campanulas came to my garden in June, *C. Sartori*, *C. bellidifolia* and *C. pruneriana*. In September *C. pruneriana* sent up a two-inch slender flower stem on which hung a pale blue bell.

The above blooming dates are for northern Vermont which of course are later than those of more southern gardens. The various color combinations and succession of bloom one may obtain by the use of these two noble families will carry interest in the rock garden well into the summer and autumn months.

MIDSUMMER FLOWERS OF THE MONTANA ROCKIES

OLGA W. JOHNSON, LIBBY, MONTANA

I THINK I SAW TOO MANY FLOWERS last summer in the Montana Rockies! Here now in desert Arizona in January, it all seems like a wild green dream and impossible to rope and hog-tie for an article! Where to get a hold on it to begin? Perhaps it will be most exciting to proceed upward from the lower mountain elevations to the heady peaks.

3000 to 5000 feet

The open foothills in midsummer, on both the east and west slopes of the continental divide range — these perhaps were most extravagant of all with their displays. I was not prepared for so much color rather late in July of quite a dry season. By their environment — sun, drought and deep drainage — these



Mountain meadows from Cooke City Highway

In the photograph it looks like all rock,
but the flowers are there in abundance.

plants all seem rock garden possibilities, though many of them are not for the small garden, certainly not for the alpine garden.

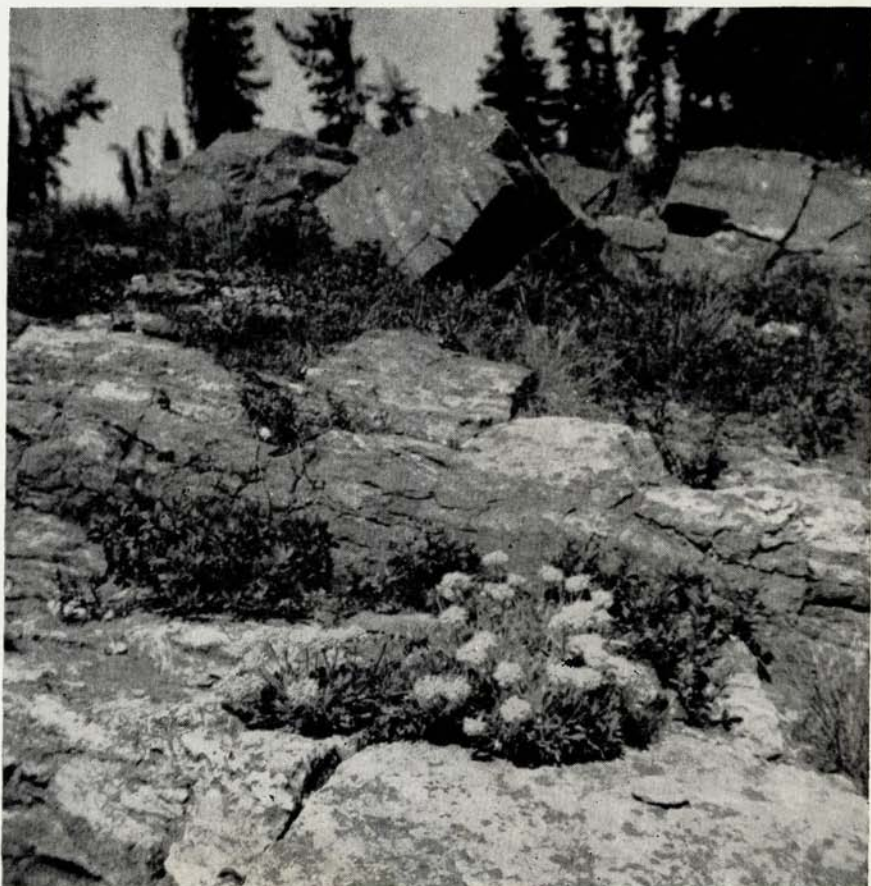
A majority of the plants flourishing at three to four thousand feet on the western slopes are found at four to five thousand feet on the high plateaus below the steep fall of the east side of the continental divide. The rich magenta-rose of the tall Fireweed, *Chamaenerion* or *Epilobium angustifolium*; the blue of Lupines (The Flora of Glacier Park by Paul C. Standley gives *tenellus* and *flexulosus*); Asters, chiefly what I take to be Coulter and Nelson's *greyeri*; *Erigeron macranthus*, and the sun-colored Goldenrods—as I remember it these were most common, leaving us breathless time after time with their very quantity, sweeping from near by to far away. Yet almost as showy were *Eriogonum flavum* and *sub-alpinum*; *Geranium viscosissimum*, and *Richardsonii*, the latter a white kind scarcely garden-worthy; Potentillas tall and dwarfer; Castillejas; Gaillardias and other yellow daisies, identity unknown, and — believe it or not of this delicate and supposedly modest one — *Campanula rotundifolia*, making large floriferous clumps, especially in gravelly banks, over a wide range of altitudes.

Of these the Lupines and Eriogonums are difficult to move and establish, the Castillejas impossible, the others comparatively easy in my experience.

With painful self-restraint I'll leave unmentioned here all the plants by woody waterfalls, or growing in deep shade and deep damp humus. We'll alight instead on high plains and on mountain slopes and peaks, north and south, east and west.

5000 to 6000 feet

Around Livingston, not so far north of Yellowstone Park, we first collected from open sheep and cattle range at five to six thousand feet. A great deal of the bloom here was already past; I shall go back some year in May and early June. Collections last July included *Phlox caespitosa* (I did not feel sure until later that this was the same as our native creeping Phlox in northwest Montana), and another Phlox which Prof. W. E. Booth of Montana State College could not identify from the foliage alone; *Oenothera caespitosa*, the Gumto or Cowboy Lily, with roots that needed a pick-axe to excavate properly — but the broken-rooted plants we took mostly survived and grew; *Townsendia Parryi*, lavender dwarf daisy (*Townsendia* is separated from *Aster* and *Erigeron* by the character: "Pappus a mere crown, or of a few scales or bristles only"), biennial in habit but self-sows satisfactorily; *Haplopappus armerioides* (Booth identification), which, from having once raised it, I knew to be a most desirable little yellow



Happy Eriogonum plants on Whitefish Range

daisy, with tufted narrow foliage; *Douglasia montana* (not sure of this; specimens were dead-looking, presumably dormant), and various Antennarias, Potentillas, Parsleys, Phacelias, Erigerons, Lithospermums and legumes. Some kinds of legumes were in bloom and intriguing but in most cases I did not even make any attempt to collect them since their deep tap-roots, out of all proportion to the smugly neat plant and bloom-head, usually defy successful transplanting. Hoped-for but missed were such things as the still dwarfier *Townsendia exscarpa*; the more desirable dwarf Lithospermums and the related *Oreocarya*, white-flowered and fragrant; *Phlox longifolia*, and the lily *Leucocrinum montanum*, all of which I have seen in bloom either at near-by Bozeman or at Billings.

In spring there would also be seen here many summer-dormant types such as those described in a previous article on the Kootenai Flats rock plants.

At a comparable elevation further north, on the eastern slopes leading into Glacier Park, we saw many of the things already listed, plus a different and taller creeping Phlox (specimens taken grew well but identity is yet unknown); *Liatris punctata* and a blue Gilia, both as yet only budded in late July, and so good prospects for late rock garden color — but almost impossible to dig there because of large roots and cement-like soil (gravel plus gumbo); and higher up *Penstemon nitidus*, along with several fine unidentified Erigerons and a supposed Actinella, all of which moved well into the garden beds. This is but a sampling of the legumes, Compositae and many others awaiting collection in this bright, wind-swept region — and consequent garden trial.

7000 to 8000 feet

Skipping back to the Livingston range country, higher up on the sunny gravel breaks of a 7000-foot ridge a number of additional kinds were seen, unknown, many tufted or rosetted, few in bloom — and little time to collect them. *Clematis Douglasi* was among the many interesting plants of the grassier slopes facing North; most of these plants were not of so much interest to the rock gardener, though there was an unknown white Allium of some attractiveness.

North in Glacier Park the country at this altitude is utterly different: rocky, well-watered and more truly alpine in character. The unusually deep snows on Logan Pass (7000 feet) were even yet not entirely melted on the last days of July. In places the *Erythronium grandiflorum*, *Anemone* (or *Pulsatilla*) *occidentalis* and *Trollius albiflorus* were still in bloom at the edges of snowbanks, while on hotter slopes near by, the fruits were already developing. Others beginning to bloom were the small Bistort, *Polygonum viviparum*, *Aquilegia flavescens*, and that choicest of the shrubby Penstemons, *P. ellipticus*, with lavender flowers as large as on any of the bushier and more leggy kinds. Deep blue *Gentiana calycosa*, rare outside the Park, had not yet opened. Cinquefoils and Indian Paintbrushes and the red Mimulus were only seen lower down, but would be abundant in the high places later. The Castillejas have an unbelievable range of color here in August—from brassy lemon or Chrome-tan through strawberry pinks to vermilions, blood-reds and wines.

On an August trip to a ridge at seven thousand feet in the Whitefish Range west of Glacier Park, plants found in abundance that are not mentioned elsewhere in this article were *Saxifraga austro-montana (bronchialis)*, clinging sometimes to the vertical or underhung sides of 800-foot cliffs, always on a north or east exposure, often in company with an unknown *Arnica* which is satisfyingly dwarf in the bleaker locations. A little lower down, in mountain meadows underlaid with broken rock, were miles of *Zygadenus elegans*, *Allium sibericum*, *Valeriana sitchensis*, *Delphinium (Nuttalianum) Veratrum viride* and *Potentilla fruticosa*, together with other plants mentioned elsewhere. These mountain meadow plants

require in the garden the same conditions as other acid-loving alpine, plus more coolness (some shade in hot areas) and more water *early in the season*; a water-retaining soil element is indicated. The mountain meadows often grade imperceptibly into acid bogs, and the true bog lovers such as *Viola blanda* and *Kalmia microphylla*, collected on this trip, do require special conditions with constant moisture. It was fascinating to note how the versatile *Potentilla glaucophylla* wandered blithely from the driest rockslides down into the very bog.

Showiest color displays in Yellowstone Park were on the Dunraven Pass highway at around eight thousand feet, where people make special trips at that season just to see the flowers. Here *Mimulus Lewisii* grew larger-flowered, larger-clumped and in larger quantities than I had ever before seen it. Here again were the Lupines, and others of those mentioned as the taller foothills plants, plus "sunflowers" new to me, and *Aquilegia flavescens*, *Senecio triangularis*, *Heracleum lanatum* and I think *Cicuta occidentalis*; *Mertensia (ciliata)*, *Lappula diffusa* and in the wetter places *Saxifraga arguta* and *Parnassia fimbriata*. It is to be noted that most of these occur at lower elevations further north.

8000 to 9000 feet

Most of the high alpine collecting was done on the Beartooth or Cooke City highway just off the northeast corner of Yellowstone Park. This highway climbs to about 11,000 feet before switchbacking down to Redlodge, sixty miles southwest of Billings. I'm not permitting myself space for ravings about any scenery—but this is worth the miles to come, from any state in the Union.

Among the commonest plants in bloom as we ascended were once again the Potentillas and Eriogonums. *Aquilegia flavescens* grows in shade or sun—a border-type plant to eighteen inches in deep humus, or a compact alpine in an exposed rock crevice, no more than four inches tall. (There is said to be an unprepossessing form of *A. canadensis* offered under this name in the East, but the accepted *flavescens* of the Rockies is a lemon-yellow gem with short-spurred blooms of good size.)

It is impossible to more than hint at the richness of the rock flora on this route at eight to ten thousand feet. We noted such varied plant personalities as Arnicas, Dodocatheons, *Erigeron salsuginosus*, Castillejas, Claytonias, *Penstemon confertus* and *P. virens*, *Delphinium cucullatum* and *Nelsoni*, *Dryas octopetala*, *Anaphalis margaritacea*, a precious dwarf deep purple *Aster (alpigenus* according to Booth or sometimes named *Oreostemma Naydeni*), *Sedum Douglasi* (or *stenopetalum*), and *Pedicularis groenlandica*. The identification of the *Pedicularis* was also by Booth, and there seems no other given in the keys of this color class; yet growing on rock benches it was a true dwarf, and the inflorescence compact and rich-colored; unfortunately none of the transplanted specimens seemed alive last fall; perhaps they are as difficult as the related Castillejas.)

10,000 to 11,000 feet

Up on the wide reaches of the summit a collector has to hang onto his senses as he kneels on hard sod extending for miles among the rocks, each square foot of it a tightly-packed treasure house of perhaps half a dozen different species. Most prodigal everywhere as to bloom at the time were several Potentillas, probably *P. nivea*, *glaucophylla* and *pinnatisecta*; *Polygonum viviparum* and *Trifolium nanum* (very tiny). In places glorious color was provided by *Polemonium viscosum* (or *viscosissimum*); *Mertensia Tweedyi*—a sensation; and *Lupinus minimus* and *Myosotis alpinus* in both blue and pink. White-flowered clumps which I longed at once to transfer to my garden included *Erigeron Rydbergii* (Booth) and what I took to be *Smelowskia americana* (a cress relative).

Silene acaulis was abundant but past the blooming stage and there were two other cushion plants that may prove to be phloxes. *Oxyria digyna* swung its rosy winged fruits from three-inch stems.

Among the true miniatures, often no more than an inch high, bloom and all, were *Saxifraga chrysantha*, *Campanula uniflora*, *Lewisia pygmaea*, *Sedum rosea* and *S. stenophyllum* (Booth identifications) and *Pedicularis Parryi*. The latter is described as having flowers of a "dirty yellow," but to one who is always glad to find soft yellow for blending, the pale-chrome of the compact flower-heads was even charming; however, the specimens taken were no happier in the garden than those of *P. groenlandica*. Among rosetted wee ones were *Draba incerta* and *D. oligosperma*. One tiny dwarf willow is probably *Salix Dodgeana*.

Gentiana Romanzoffi (consistently so-called in the West) was taken in bud. This is a curious Gentian, with off-white or pale yellowish corolla veined with blue. An Eastern correspondent identified it as *Newberryi*. The showy *G. elegans*, official flower of Yellowstone, is an annual.

It is worth noting that these high alpine mostly grew in rock mixed with dense sod of peaty soil testing slightly acid. Thus the drainage which we harp on as the chief requirement for alpine is supplemented by a moisture-retaining medium which in most of our gardens is even more necessary than on the shower-swept peaks.

The high alpine, taken in hunks of their native sod (but later separated), survived the long hot trip home better than many of the larger plants from lower elevations. Unfortunately when I arrived home I was unable to wait for peat or Sphagnum before finishing the beds where the new plants were to be placed. The soil used was a mixture of gravel, sand, ordinary garden soil and a generous allotment of compost. No special acidifying agent was used. Continual watering was the program for the next six weeks. The true survival quotient cannot be reported until next summer.

RIGHT IN MY OWN BACK YARD

FRANCES KINNE ROBERSON, SEATTLE, WASH.

YEARS AGO ONE OF THE MEMBERS of our American Rock Garden Society Unit proposed a more unique type of competition than is linked with the customary flower or garden show. A uniform size container was established which would permit a fair number of plants to be grown in a natural association in preparation for the actual showing in late spring. Free rein was given to each member to select the association of plants which appealed to him but, and here lay the difference, the contest was designed to be a study in Ecology and the specimens planted were to represent a natural association. A written description of the plants and the reason for their choice was to accompany each entry.

In order to understand better the meaning of the word Ecology as applied to a specific locality, some of us prowled the native woodland across the street from our home. We were amazed at the number of plants in an area about a block square. They were not new or unusual but their closeness and the sum total of their usefulness in the garden made an impression on me. The following description outlines our findings then and as they still exist.

An obscure path leads from our street through some scrubby Willows and second growth Alder to a long deep ravine at the top of which remain standing some typical trees of the Humid Transition Floral Zone in which the Puget Sound Basin belongs. The tallest of these trees are Western Red Cedar (*Thuja plicata*), Western Hemlock (*Tsuga heterophylla*), and Douglas Fir (*Pseudot-*

suga taxifolia.) Characteristically there are no true firs or pines in this group although the gravelly hillside an eighth mile distant had a good stand of Western White Pine twenty-five years ago.

A few decrepit old Broadleaf Maples (*Acer macrophyllum*) hold tenaciously to life just north of the conifers. Licoriceroot Fern (*Polypodium vulgare*) and moss flourish on the bent trunks and horizontal branches of the maples. The outer fringe of the wooded area boasts a few Dogwood (*Cornus Nuttallii*) and an occasional Madrone (*Arbutus Menziesii*) among the thickets of Willow (*Salix Scouleriana*) and Alder (*Alnus oregana*).

The Dogwood is most conspicuous at flowering season when the creamy bracts which surround the flowers stand out in powerful contrast to the dark greens of the conifers. The Madrone always claims attention, first with the bark no matter whether it is smooth and whole and pale orange, or ragged and peeling and dark red. The shiny green leaves are attractive at all seasons, while the heavy panicles of creamy flowers terminate the branches in summer and are followed in autumn by interesting red berries.

The medium and low plants at the outer margin of the woods have foliage of utmost beauty. The Salal (*Gaultheria Shallon*) creeps close about the base of the trees while Oregon Grape (*Mahonia nervosa*) predominates in the foreground. Each spring the crosiers of the omnipresent Bracken or Brake Fern (*Pteridium aquilinum*) manage to interrupt these evergreen-leaved plant colonies. Early summer finds the huge green leaves of the Bracken seemingly trying to obscure the rest of the plants from view. The drying fronds, in late summer, and fall, leave a cluttered state as they close the season's run. The elements do their best during the winter to clear away the debris.



Photo by K. S. Brown

Background L to R—Oregon Grape, Red Huckleberry, Mitrewort
 Foreground L to R—Wild Ginger, Tolmiea, Tellima

Here and there in the leafmold are colonies of Wild Ginger (*Asarum caudatum*) with the dull green heart-shaped leaves hiding the mahogany colored flowers so that one must really search to find them. Twinflower (*Linnaea borealis*) trails over fallen logs and Pink Honeysuckle (*Lonicera hispidula*) climbs among the low trees. Mats of the Evergreen Yellow Violet (*Viola sempervirens*) are no longer common but some do exist.

Trilliums push up through some of these plants although they are more plentiful on the slopes where the low vegetation is sparse. Some neighborhood children who roamed these woods when we first knew them, called the Trilliums "Easter Lilies." I am sure there would be more of them now if fewer had been picked then.

Minor clefts in the ravine banks have been worn away by springs or seepage. These converge into one groove where a stronger spring flows almost all year round into a rivulet which in turn feeds a larger creek some two hundred yards away. All this moisture, along with leafmold, encourages such things as: Piggyback plant (*Tolmiea Menziesii*) with an incipient young plant appearing in each leaf axil; Fringecup (*Tellima grandiflora*) with its tall flower spikes standing firm above the hairy leaves; other Saxifragaceae such as Bishop's Cap (*Mitella*) and Foamflower (*Tiarella*) with their intricate but inconspicuous flowers; Devilsclub (*Echinopanax horridum*) lordling it over the low-growing plants and looking slightly incongruous in this little world of shade and soft colors by reason of its bright red berries and forbidding spines on leaves and stems; an occasional old bush of Red Huckleberry (*Vaccinium parviflorum*) and many more young ones growing out of decaying logs and stumps; and, a few weak stemmed Red Elders (*Sambucus callicarpa*) limited to an open area where they continue to replace their decaying shoots with new ones.

The closed end of the ravine curves like an amphitheater. Huge Sword Ferns (*Polystichum munitum*) have arranged themselves in groups on these slopes. Young Sword Ferns are plentiful, too, especially in the shelter of old logs. The dainty Oak Fern (*Dryopteris Linnaeana*) and lacy Maidenhair (*Adiantum pedatum*) which were plentiful on the banks of the larger creek in early years, either never wandered up this draw or else have been pilfered. A few deciduous ferns have established themselves but not in large numbers.

These are by no means all of the plants to be seen in and around this ravine. They are some of the characteristic ones in a typical association. We feel fortunate that chance has preserved near us so much of nature as the white man found it when he came to this part of the Northwest a hundred years ago.

BOOK REVIEW

Der Steingarten und seine Welt, by WILHELM SCHACHT (Eugen Ulmer, Stuttgart, 1953).

For those who read German, here is a 200-page book full of instruction and enthusiasm, written by a builder of famous rock gardens. Rock gardening in Germany is apparently in about the same stage of development as in America, but held back by the disaster of war, while the chief thing that holds us back is the desire to go for a spin in the car. Herr Schacht looks for his inspiration where we find it, in the British Isles, but has also much of his own, bred by many years of gardening in central Europe.

With the eye of a plantsman and of an artist too, he carries us through every stage of planning, construction, planting and care, not only of the rock garden proper, but also of the formal garden with dry-wall terraces, the bog garden, the pool, the trough garden and the alpine house.

The illustrations, nearly a hundred of them, some in color, are of the highest quality, and as they occupy at least a third of the space of the entire book, with their universal language, while another considerable fraction is in that other universal tongue, scientific plant names, even the reader whose German is not of the best can peruse with keen enjoyment.

Anyone who has difficulty obtaining the book should contact Harold Epstein, 5 Forest Court, Larchmont, N. Y.



Photo by K. S. Brown

Bonzai found by Mr. and Mrs. A. M. Sutton
Height above ground — 6" Spread — 8 to 10"

A NATURAL "BONSAI"

FRANCES KINNE ROBERSON, SEATTLE, WASH.

A SITKA SPRUCE USUALLY towers well above us so that we look up to it. Even small trees present an upright appearance. For this reason the irregular tufted specimen in the picture is all the more surprising. A friend noticed it as we plowed through some cut-over land on the west side of Snoqualmie Pass in Washington State. The seed had evidently come to rest in the bark of one of the fir giants of the forest and had germinated in the soil and leaf mold which also lodged there. The roots had grown in the decaying bark of the stump after the tree was cut and had never actually reached soil level although they were more than two feet in length when we removed the plant.

The top may have been pruned by the browsing of deer, at least something had caused it to form a tuft of branches with no central leader. The weight of the top and perhaps some external causes had partially loosened the roots so that they had begun to develop a protective layer approaching bark in toughness and thickness.

No digging was necessary to secure the plant; the mat of roots literally peeled off of the stump which was a good big one five or six feet in diameter. It did our hearts good to rescue this unusual seedling before it fell a prey to the clearing necessary for a new road. This unnatural development of a natural tree was given to me and I have attempted to establish it in a low Japanese bowl which provides the drainage so essential to good growing conditions. The roots were accommodated in their entirety without any pruning. That phase of its culture may come later. Soil and roots were alternated in layers so that there was no crowding. The soil used was lean but with some peat moss for moisture retention.

At first we kept our "bonsai" in the greenhouse. But the Japanese experts lay great stress on the need for outdoor living for these dwarf trees so we have moved ours out-of-doors, but will attempt to protect it from extraordinary wind or drip as they suggest.

SAXIFRAGA SARMENTOSA, HARDY GROUND COVER

MRS. H. P. MAGERS, MOUNTAIN HOME, ARKANSAS

HAVE WE UNDERESTIMATED the cold resistance of some of our loveliest plant material? It would seem so, from the reactions of this one supposed-to-be house plant. Visitors to the garden often express surprise at finding the little stream bank covered with the soft gray drapery of the *Saxifraga sarmentosa*, (mother of thousands, or strawberry geranium), saying they thought it a house plant.

From one small plant set ten or more years ago there have come hundreds of the lovely woolly mats clustering atop the bank and down to the water, then backing up to frame the beds behind them. Even covering hummocks of moss or mossy rocks in the shallow water. During their life there we have had several quite severe winters, with a number of days below zero, one night even down to seventeen below, but the strawberry geranium showed no ill effects. Near the spring the water never freezes, but farther down, it does sometimes freeze entirely over, and there, too, the same dense mats of soft furry leaves stay as fresh and unharmed as ever.

This commonest of the Saxifragas is a beautiful plant, with its almost round, scalloped soft grey, heavily veined leaves with pink reverse. The leaf stems are quite short, three or four inches at most, usually shorter, making a compact little flat rosette from which radiate the thread-like pink runners on the ends of which form the delicate new plants, hence the strawberry part of the name. These duck down and root any place, even nestle in the heart of other plants among which they may intrude. The runners will curl back and settle close to the mother when there is even a tiny space so that very soon one plant has acquired a close colony about it.

However, *Saxifraga sarmentosa* is not in any sense a garden-hog. It does grow wonderfully in chosen spots but does not like just any location. So that by discriminate placing and a judicious application of the hoe on occasion and a more frequent pulling of a plant showing too much of the wanderlust spirit, it is easily kept within bounds.

The flowers are never a welcome addition in our garden. The tall stems of small, insignificant white flowers are snipped off as they appear, which is the last of them. Then the plant continues about its business of draping its lovely gray velvet along the space allotted to it. This would be a beautiful sight falling down the face of an old rock where there was moist backing for its roots.

WISH LIST FOR 1955

Last year's Wish Lists brought in a number of items which probably would not have appeared in the Seed List if members had not asked for them. Other members may be able to guess what you want, but will surely meet your wishes more accurately if you tell them. There will be another Wish List in our next issue. The following are seeds hoped for. Can you supply any of them?

Asperula suberosa	Rhododendron citriniflorum
Betula nana	Rhododendron Forrestii
Calceolaria Darwinii	Rhododendron imperator
Campanula cenisia	Rhododendron Ludlowii
Dicentra peregrina var. pusilla	Rhododendron megeratum
Dicentra uniflora	Rhododendron myrtilloides
Erigeron aureus	Rhododendron prunum
Jeffersonia dubia	Rhododendron pumilum
Linaria aequitriloba	Rhododendron repens
Micromeria chamissonis	Rhododendron Sargentianum
Myosotis Rehsteineri	Rhododendron uniflorum
Myosotis rupicola	Rhododendron Valentinianum
Pinus aristata	Rydbergia grandiflora
Primula Edgeworthii	Saxifraga lilacina
Primula scapigera	Viola cornuta minor
Rhododendron charitopes	Viola hederacea
Rhododendron chrysodoron	Wahlenbergia (Edraintus) serpyllifolia major

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AMERICAN ROCK GARDEN SOCIETY

BOX 151

POMPTON LAKES, N. J.

THE ALPINE GARDEN SOCIETY

This Society, founded in 1930, has well over a hundred members in North America. As distance prevents their taking part in the Society's other activities, it is obvious that they have found the *Quarterly Bulletin* to be good value for their subscriptions.

Further particulars regarding the Alpine Garden Society may be obtained from the Secretary, C. B. Saunders, Husseys, Green Street Green, Farnborough, Kent or, better, from Mr. C. R. Worth, Groton, New York, who is one of the Society's Assistant Hon. Secretaries (foreign).

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