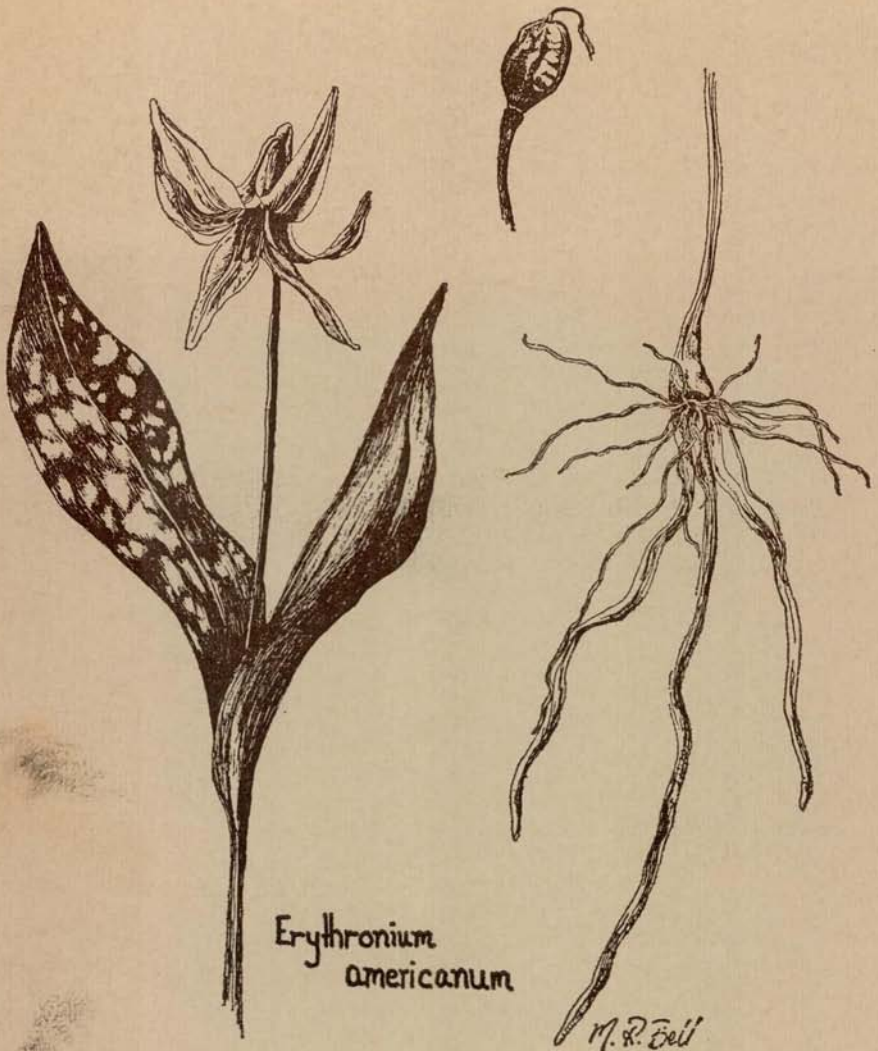


Bulletin of the American Rock Garden Society

Vol. 36 Fall 1978 No. 4

The Bulletin

Editor Emeritus
DR. EDGAR T. WHERRY, Philadelphia, Pa.

Editor
LAURA LOUISE FOSTER, Falls Village, Conn. 06031

Assistant Editor
VIKI FERRENIEA, Twin Brooks, RFD #1, Mason, Greenville, N.H. 03048

Contributing Editors:

Roy Davidson
H. Lincoln Foster
Bernard Harkness
Anita Kistler
Owen Pearce
H. N. Porter

Layout Designer: BUFFY PARKER

Business Manager
ANITA KISTLER, 1421 Ship Rd., West Chester, Pa. 19380

Contents Vol. 36 No. 4 Fall, 1978

Published quarterly by the AMERICAN ROCK GARDEN SOCIETY, incorporated under the laws of the State of New Jersey. You are invited to join. Annual dues (*Bulletin included*) are: Ordinary Membership, $7.00; Family Membership (two per family), $8.00; Overseas Membership, $5.00 each; Patron's Membership, $25.00; Life Membership, $150.00. Optional 1st cl. delivery, U.S. and Canada, $3.00 additional annually. Optional air delivery overseas, $6.00 additional annually. Membership inquiries and dues should be sent to the Secretary, Box 183, Hales Corners, Wi. 53130. The office of publication is located at 5966 Kurtz Rd., Hales Corners, Wi. 53130. Address editorial matters pertaining to the *Bulletin* to the Editor, Laura Louise Foster, Falls Village, Conn. 06031. Address advertising matters to the Business Manager at 1421 Ship Rd., West Chester, Pa. 19380. Second class postage paid in Hales Corners, Wi. and additional offices.

Vol. 36 Fall 1978 No. 4

Bulletin of the American Rock Garden Society

ERYTHRONIUMS OF THE FAR WEST

W. H. A. PREECE

Drawings by Rosemary Burnham, Burnaby, B. C.

The genus *Erythronium*, or Dog's-tooth Violets, is represented in Europe, Asia and eastern North America, but the real cradle of the race appears to lie between the Rocky Mountains and the Pacific Ocean; this region has given us several times as many species as are to be found in all the rest of the world. Vancouver Island alone can boast of five distinct species.

The normal, and in most species the only, means of increase is by seed, which is a slow process. Under natural conditions it seems to require about seven years for a seed to produce a flowering bulb; under cultivation this period can probably be reduced to five years, perhaps even to four, but I very much doubt if it can be done in less since all that the first season's growth produces is a narrow leaf like a blade of grass, which has not even the strength or energy to throw the seed-case off its tip, and a bulb but little larger than the proverbial bee's knee!

Under present circumstances the large majority, if not all, the bulbs sold are, I believe, collected material; some of them may have been grown for a year or two in nurseries before being retailed, but that does not alter the fact. Wildflower conservation, particularly in the United States, is receiving ever-increasing attention and drastic steps have already been taken to ensure the protection of many rare plants threatened with extinction; consequently it is by no means improbable that the collection for sale or export of a number of the rarer Dog's-tooth Violets will be banned in the not far distant future. It is, therefore, definitely advisable for

gardeners in general and nurserymen in particular to get busy and start raising their own stocks from seed; some, no doubt, are already doing this.

Most species of erythronium set seed quite freely in cultivation and, if the ground around them is left undisturbed, volunteer seedlings frequently appear in fair quantity. Needless to say, perhaps, far better results are obtained if the seed is harvested as soon as it is ripe; it may be sown immediately or held over until early autumn. In my opinion, the best plan is to sow the seed thinly in drills in specially prepared beds in the open ground where the bulbs may remain undisturbed until they reach maturity. The seed beds should be very well drained and the normal compost used in raising lilies from seed will be found eminently suitable. While it is not essential, I am strongly of the belief that it is desirable to have these beds in light shade.

There seems to be very little information available on the subject of erythronium hybrids: it is known that some of the species will intermarry when grown in close proximity in cultivation and it is also on record that some of them will do likewise where their ranges overlap in the wild, but hybridization in the natural state seems to be the exception rather than the rule. In the case of *E. oreganum* and *E. revolutum* var. *smithii* on Vancouver Island hybridization appears to be distinctly spasmodic; their ranges run side by side over considerable distances and overlap quite frequently, but intermarriage appears to occur only in a few very restricted localities.

In one spot near the Cowichan River *E. howellii* meets the two above-mentioned species, and from there my son brought me some very interesting specimens. By the time they came into my hands the blossoms were too withered for me to come to a difinite conclusion, but I strongly suspect that some of them number all three species among their ancestors.

I cannot recall ever having seen an erythronium hybrid that was not well worth growing, and very many of them have been outstandingly lovely; but, while one feels that great possibilities should lie here, their future as garden plants is hard to predict. Assuming that the hybrids set seed — and I must confess that I have no reliable data on this point — selecting and fixing a strain would require far more than the span of a lifetime, owing to the tortoise-like pace adopted by the seedlings in attaining flowering size.

It seems to me that, instead of confining our hybridizing activities to species of the western erythroniums, we might more likely obtain satisfactory results by using *E. dens-canis* of Europe, for example, or *E. americanum* of eastern North America, as one parent and a westerner as the other; it is surely not unreasonable to hope that at least a fair percentage of the resulting progeny would inherit the offset-producing capacity of the non-western parent. All this, of course, is entirely suppositious and, so far as I am aware, it is not even known if such crosses can be made; still it seems to me that it would be well worth someone's while to try.

The western erythroniums have recently been divided into two sections: the Concolorae, which have entirely green, unmottled leaves and are mostly of alpine distribution; and the Pardalinae, which have handsomely mottled foliage and are usually found in light woodland. With one or two exceptions the species of Concolorae do not appear to be exactly amenable to cultivation, but those of the Pardalinae are perfectly

happy and long-lived in the garden if accorded the treatment and conditions normally provided for lilies.

You will be relieved, perhaps, to hear that I have no intention of taking the western erythroniums in alphabetical order and discussing and describing them one by one; it always seems to me a wearying business to have to wade through an article which reads like a page out of a trade catalog or an annotated check-list, and I would simply loathe having to write such a thing! There are a few species, nevertheless, which I do propose to discuss briefly.

As I have already indicated, most of the species of the Concolorae have proved distinctly intractable; exceptions are *E. tuolumnense* and the *robustum* form of *E. grandiflorum*, both of which have been happily established in sunny pockets of my rock garden on Vancouver Island for quite a number of years, but so far I can claim very little success with any other species of the section, though there are several I have still to try.

Several times I have planted bulbs of the lovely white Avalanche Lily, *E. montanum*, and on each occasion I ought to have read the burial service over them. My luck with *E. parviflorum* has been very little better; usually they have come up, and some have even condescended to bloom in the following spring, but after that they have invariably disappeared from the scene.

I think it altogether likely that I have hitherto given these species quite the wrong treatment — sunny scree. On Mount Arrowsmith, Vancouver Island, *E. parviflorum* appears to be confined to steep, stony, northern slopes at high altitudes, so into a steeply sloping scree facing full north are going the bulbs my son collected for me on that mountain.

Unlike the bulbs of the Pardalinae section, which appear to yearn for the Antipodes or some other spot on the other side of the earth, those of the Concolorae are usually to be found

E. revolutum

quite close to the surface. This may be due to their having a shorter season for ripening, or on the other hand it may be simply because they very frequently grow in situations where they can get no deeper without burrowing into bedrock. Whatever the reason may be, the grizzly bears take full advantage of the fact, digging up and devouring

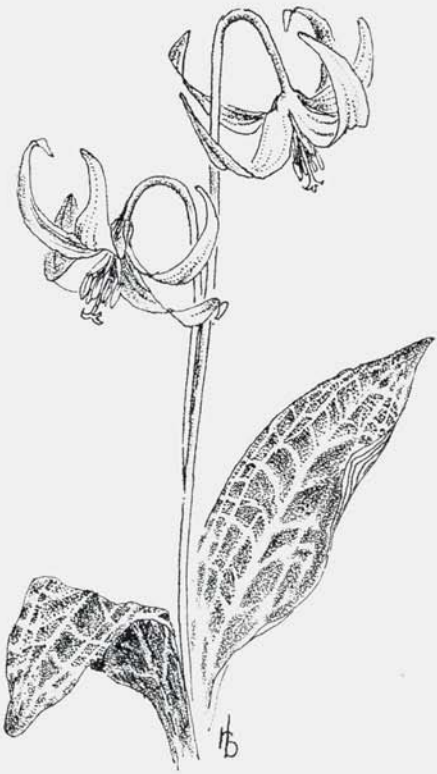
large quantities of the bulbs of which it appears that they are particularly fond.

The Pardalinae group, though naturally denizens of light woodland, I have found to be perfectly happy in full sun; indeed, they are probably best grown there, particularly in regions which have cooler and moister summers than those to which they are accustomed on the shores of the Pacific. Eastern gardeners, of course, had better be cautious about giving them such sunbath treatment. They appreciate a well drained soil rich in humus with plenty of moisture available during the growing season; absolute aridity during the summer does not appear to be necessary to ripen the bulbs.

I have the various Pardalinae species planted in groups and colonies, hither and yon, throughout my rock gardens where they are subjected to regular artificial watering all through the summer months; this has been going on for years and they show no signs of disapproval. By-the-way, bulbs of the western erythroniums intensely dislike exposure to the air and should never be kept out of the ground a single minute longer than is absolutely necessary.

With the exception, so far as I know, of only one species, the flowers are carried singly or in scapes of two to several, each mature bulb producing a pair of leaves and one flowering stem; the exception is *E. multiscapoideum*, still more familiar to most of us as *E. hartwegii*, which appears to send up a number of blossoms on individual stems of about equal height, though close examination shows that they are actually carried in an umbel of which the main stem only just about reaches ground-level. This is a very lovely species with creamy blossoms suffused with yellow on the inside and stained with orange-pink outside.

I think that the white-flowered *E. oreganum*, formerly known both as *E. giganteum* and *E. watsonii*, is my favorite species and it is possibly the most stalwart and sumptuous of the tribe; it is also very long-lived. I know



E. oreganum

of a group, planted close to forty years ago in a garden near here, which shows not the slightest sign of deterioration; in fact, it becomes more and more magnificent as the years roll by. Established bulbs, if the flowers are not cut, will usually produce three or four and just occasionally five recurving blossoms three inches wide, beautifully marked around the eye with a circle of gold and brown.

Among the numerous forms and varieties of *E. revolutum* we find blossoms in many exquisite shades of pink; *smithii, johnsonii,* 'Pink Beauty' and 'Rose Beauty' are all perfectly lovely. None of these are quite as robust as *E. oreganum* and under natural conditions very rarely produce more than two flowers to a bulb. Actual count made in the wild showed that *E. r. smithii* averaged only three bulbs in a thousand with three blossoms and none with more than three. In its natural habitat this form is found growing in sandy silt on the banks of streams and rivers where it is often completely submerged throughout the winter months.

Of the cream-flowered species I like *E. californicum* best; its blossoms are flatter than those of most of the other species, since the segments are only slightly revolute. In my experience this holds the record for flower production. One in my garden actually displayed fifteen blossoms.

Prior to this specimen of *E. californicum* putting on this astounding display last spring, *E. hendersonii* is perhaps the most consistently free-flowering and, at the same time, one of the loveliest and most satisfactory of the tribe. It is quite unique in its coloring, the strongly recurving blossoms being a delicate, cool pinkish lilac with a deep blackish purple eye. It comes from Oregon where it has a wide altitudinal range, from the depths of the Rogue River Valley to the high alpine meadows of the Cascade Mountains.

True yellow selfs do not seem to occur among the species of the Pardalinae, though I have a hybrid of unknown parentage with as brilliant a yellow blossom as any of the Concolorae and the usual heavily mottled foliage of the woodlanders. *E. helenae* (syn. *E. californicum* var. *bicolor*) comes closest to true yellow, with blossoms half yellow and half white, the white being the outer half of each segment. This is a very lovely species, but even if it were the dowdiest member of the clan it would still be well worth growing for its strong delicious fragrance.

From the statements of various authorities it is evident that the western erythroniums have proved perfectly hardy in regions afflicted with extreme sub-zero temperatures and that no great difficulty need be anticipated in growing successfully the various species of the Pardalinae section of the genus in the northern or eastern states.

Of the Concolorae, *E. tuolumnense* seems to me to be the species most likely to prove a success in eastern gardens. In some gardens it seems less floriferous than other westerners, but with yet other growers it has proved the most generous of all species in blossom production. I do not pretend to know the reason for this, but my guess is that there are more than one strain in cultivation and that bulbs collected in some localities are more amenable to cultivation than those collected in others.

Reprinted with permission from Real Gardening, *Jan. 1940.*

A number of lovely and not difficult erythronium hybrids and selections have been made available to gardeners since Mr. Preece's article was written. Among these are 'White Beauty', 'Pink Beauty', 'Pagoda' and 'Kondo'. — Ed.

ERYTHRONIUM MONTANUM
Vancouver Island Form

ROBERT WOODWARD
West Vancouver, B. C., Canada

For those addicted to the genus Erythronium and desirous of growing it, *Erythronium montanum* has always been a lodestar. The epithets which come to mind are: pristine, aristocratic, stately, wilden, untameable. The last is surprising when one considers the drifts in the thousands on certain peaks in the Cascade and Olympic ranges. But *E. montanum* is never so ubiquitous as *E. grandiflorum;* and until quite recently it was always thought of as a plant of the high meadows whereas *E. grandiflorum* can descend to quite mundane elevations, as for instance in the Wenatchee mountains.

For those who do not know *E. montanum* let me give you a brief description. The foliage is shining and unmottled, more cordate than in other species; the flowers are white with a yellowish-orange base. There are definite auricles (also in *E. grandiflorum)* and a boss of golden yellow anthers. The shape of the flower is unusal: the perianth segments are recurved and face outward but, as it were, on a shepherd's crook of a stalk, making the plants flutter and nod in the high breezes. In nature *E. montanum* propagates by means of succeeding tubers.

Not so in the garden. Although its oft-companion *E. grandiflorum* is a readily adaptable garden plant we had never succeeded with *E. montanum.* We had even tried on several occasions from seed with dismal results although the seed is not difficult to germinate. What was the problem? a mycorrihizal association? one of those plants which refuse to descend? (although if this were true why was *E. grandiflorum* so easy?) just plain cussedness?

In any case we arrived at no conclusions and abandoned the idea of swaths of *E. montanum* in our wild garden. Until along came the 'Vancouver Island' form. What follows about this particular plant comes mostly from those two superb Vancouver Island growers, Ed Lohbrunner and Vern Ahier. They introduced us to this version, which is definitely a growable one if not exactly an exuberant one.

Erythronium montanum grows on Vancouver Island, at apparently a much lower elevation (about 3000 feet) than is usual for this plant. It grows in a logging area in the Port Renfrew region in a patch approximately two acres in extent. The area is a logged forest and therefore is not densely shady. The companion plants of Erythronium are such usual subalpine things as *Rhododendron albiflorum,* menziesia, *Cornus canadensis,* etc. But no *E. grandiflorum.* (Aside: why when these two erythroniums do grow in the same region are they so rigidly territorial. Also why no hybrids?) The soil is woodsy duff, with a deal of rotted wood. Rotted wood, in our experience, is often an efficacious medium for difficult-to-grow subalpine plants. I have never seen this area but the description does not sound too unlike the conditions we might find on our local mountains. One significant factor, however, reported by Mr. Ahier, is that the plant grows only in a thirty-foot wide band and has been covered four feet deep by bulldozers.

Several growers in this area have experimented with this plant. The Ahiers have grown it for several years and it is a regular performer with up to ten flowers on the stalk. This number is not usually observed on the Olympic form of *E. montanum*. The Lohbrunners have also grown the plant and notice now that it is beginning to multiply by offsets. Susan Watson in Brunswick Beach has a nicely established clump and in our old garden we had flowered the plant (after the first-year mimps . . . so common to almost all erythroniums), but since the bulbs were moved to University of Columbia Botanical Garden they have done nothing but sulk. As they have in Mrs. Thelma Chapman's garden in Vancouver *(City not Island — Ed.)* where each year they rise from the ground, proceed apace, and then suddenly stop, as if to say 'O-to-hell-with-it', and promptly die down. Squinny leaves, no flowers, and yet each year they come up.

I can't derive any conclusions from all this. But at least in some gardens *E. montanum* is now thriving and beautiful. I know few, if any, gardens where plants from other stations have even begun to thrive. I should think if one were to acquire *E. montanum* from the Vancouver Island source (or seed thereof) it should be grown in a deep foresty, rotting-woodsy duff, and planted deep. Perhaps the classic peat-bed would be the answer. *E. montanum* is one of those rare beauties one should shake the stars in order to tame. Perhaps stardust is exactly what it needs.

THE EASTERN ERYTHRONIUMS

H. LINCOLN FOSTER
Falls Village, Conn.

It is generally known that in the evolution of plant structures bulbs were developed according to doctrine as underground storage organs for plants that were subject to prolonged periods of drought. In fact (or is this just a conceit) most bulbous or cormous plants inhabit areas of the world where there are definite dry seasons. One thinks, for instance, of the flora of the Mediterranean world where following the fall and winter rains with an early spring flush of growth, the vegetation generally recedes below ground into food storage plant segments that are bulbous or rhizomatous. This scheme makes proper sense, and is fortified by the added stress of sheep and goat grazing.

But how do we explain that in eastern U.S.A. the plants that have evolved bulbous or rhizomatous structures generally are not plants of rapidly drained and droughty sites, but almost exclusively inhabit moist sites along stream banks or even in swampy ground. One thinks of *Lilium canadense* and *Lilium superbum* and then there is our eastern Trout Lily, *Erythronium americanum*, also known as Fawn Lily or Dog Tooth Violet.

By whichever name, this last is a curious plant. It is not uncommon in moist woods and along stream banks over a very wide geographical area, from New Brunswick west to Minnesota

and south to Florida and Oklahoma. Where it grows it usually produces extensive carpets of mottled lance-form leaves with here and there clusters of yellow lily-like flowers nodding and solitary.

It is not entirely clear why in a large dense colony of this bulbous plant of the Lily Family, even where the colony is known to have existed for a number of years, there are so many one-leaved non-flowering plants. These do not appear to be merely immature seedlings that will eventually blossom; otherwise established colonies would in time, as the bulbs matured, produce more and more flowers each year. But this is not observed to occur.

Nor does the explanation seem to be in the splitting up of the bulb after flowering as happens in some tulips.

It is known, however, that as the leaves are withering, one or more long white fleshy stolons grow from the base of the bulb, each producing upon its tip a new bulb. In deep, easily penetrated soils these new bulbs may be produced more deeply each year into less and less fertile layers of soil. It is certainly true that when one attempts to dig bulbs from the wild, one finds that most of the bulbs, where conditions permit, are as much as a foot beneath the surface.

Somewhat west of the range of *Erythronium americanum* is a white-flowered species *E. albidum*, with a dry-site variety *mesochoreum*. This variety in the wild has a much higher proportion of flowering to non-flowering plants in a colony than either the straight species or *E. americanum*. It may be significant that this variety, unlike either *E. albidum* or *E. americanum*, produces its new bulb at the base of the old one, not on a stolon.

In order to encourage more abundant development of bulbs of *E. albidum* or *E. americanum* capable of producing the two-leaved flowering plant various schemes have been devised with varying but never consistent success. One grower buried a short wooden plank about six inches beneath the surface and planted collected bulbs of the Fawn Lily just above the plank. This was to discourage new bulbs from going deeper and deeper. He reported some temporary increase in flowering. Planting above a large flat rock or tree roots also seems (at least temporarily) to increase flowering.

Another grower, knowing that the wild bulbs were always found deep and believing that the secret of flowering was lack of fertility at greater depth, dug a foot-deep trench and placed in the bottom some well-rotted manure. On the manure he put a layer of rich soil in which he planted bulbs of collected *E. americanum*. The second year there was a fair display of flowers, but thereafter the proportion of flowering to non-flowering plants diminished.

There may be room for more experiments to encourage this charming spring wilding to grace our gardens with more abundant flowers. But it may be possible that there has evolved in this species such a successful method of vegetative propagation of offspring that it cannot be readily diverted to the usual method of increase by flower and seed.

NOT ALL PLANTSMEN ARE MEN
Part I

NAN BALLARD
Issaquah, Washington
Drawings by Sally Dickman, Kirkland, Wash.

In 1853, a small group of influential San Francisco citizens met to discuss the possibility of founding the California Academy of Sciences. At this meeting, Albert Kellogg made a rather revolutionary proposal: "Be it resolved that we highly approve the aid of females in every department of natural history and that we earnestly invite their cooperation." Such a suggestion must have been prompted by knowledge of a good many talented and knowledgeable "females" already active in natural sciences even at that time. Early botanical literature abounds with the names of women recognized as plant collectors, as gardeners, and students.

Ceanothus cyaneus

Kate Sessions

Considered one of the finest of the great plantswomen of the west was Kate Sessions, born in 1857 on Nob Hill in San Francisco. Asked how she got her start in gardening, she replied "I was always started. I grew up in a garden." She was graduated from the University of California, Los Angeles, in 1885 and taught a few years before opening a nursery and florist shop in San Diego on city owned land. In lieu of rent, she furnished the city park department with plants and soon established a place for herself in horticultural circles of that city.

Miss Sessions specialized in rare and unusual exotic plants which she imported from all over the world, introducing to California gardens more than one hundred of the ornamentals now common to that area. Though not a specialist in native plants, she recognized the horticultural importance of some plants endemic to Southern California, plants such as the popular San Diego Lilac, *Ceanothus cyaneus*, and *Fremontia mexicana*. According to Lester Rowntree in *Flowering Shrubs of California*, *C. cyaneus* was found growing scattered over a few acres at about 1500 feet elevation on the highest hilltops in San Diego County. It was shown to Kate Sessions and she, in turn, brought it to the attention of Miss Alice Eastwood of the California Academy of Sciences who gave it its name. It was henceforth propagated and grown by Miss Sessions in her nursery where it could be easily seen and obtained. Miss Rowntree cites this as a perfect example of sensible procedure

with new found plant treasures — no hoarding or jealous bickering, but a simple and direct program of discovery, naming, propagation, and distribution, each step following closely upon the heels of the one before it.

Miss Sessions is generally credited with the successful re-establishment of *Fremontia mexicana*. In an old overgrown garden, she came across an outstanding specimen that had been introduced into cultivation many years before, propagated it from seed and, through her nursery, soon distributed it to private and public gardens; another early example of making native plants available through seed propagation rather than field collection by the masses.

Kate Session's influence was still felt in California horticultural circles at the time of the World's Fair in San Francisco in 1939 when she, along with Alice Eastwood, was the inspiration for the "Magic Carpet": a planting of African mesembryanthemum at the entrance to Treasure Island. According to Carol Greene Wilson in *Alice Eastwood's Wonderland*, Miss Eastwood sent Eric Walther of Golden Gate Park to San Diego with a letter of introduction to the then elderly Kate Sessions. All three of them were enamoured of rare and unusual exotics so it was small wonder that he was enthusiastic about the mesembryanthemum growing as a bright and unusual ground cover in her own garden, and, in addition, samples of each color variation growing in a separate pot. This extraordinary array of shades had been developed by Alvin Berger, the famous German botanist, and Miss Sessions had obtained them as cuttings from the Hornby Gardens on the Italian Riviera. From the cuttings which he received from Miss Sessions and took back to Golden Gate Park, Walther carried on his own experiments until, ten years later, he was able to provide the spectacular display welcoming visitors to the San Francisco Fair.

Fifty years after she first met Alice Eastwood, Kate Sessions said that their lifelong friendship had developed through flowers — "our children, which I am growing and you are naming."

Katharine Brandegee

One of the women receiving early recognition for her work at the California Academy of Sciences was Katharine Brandegee. She was born Mary Katharine Layne of pioneer parents in Tennessee in 1844. With them she crossed the plains behind an ox team and spent her childhood in the Sierra Nevada foothills. She married Hugh Curran who died when she was thirty. It was after this that she began the study of medicine, graduating in 1878 from the University of California. Her interest turned to botany as she became aware of the fine collection of plants at the Academy and she began to study under Dr. Behr. In 1883, she gave up her small practice to devote full time to the Academy as Curator of Botany. Three years later she married Townshend Stith Brandegee in San Diego and spent her honeymoon walking with him all the way back to San Francisco, botanizing all the way.

Mrs. Brandegee was instrumental in the founding of the California Botanical Club, the first of its kind in the state. She wrote frequently for numerous scientific publications of the day as well as for *ZOE*, a general journal of natural science that the Brandegees published for many years. According to John Thomas Howell (*Huntia*, 1969), her pithy and pointed comments against some of her contemporaries make interesting reading. She expressed herself with the stinging directness of the fron-

tier. This is evidenced in some of her diatribes against E. L. Greene, the first professor of Botany at Berkeley, with whom she disagreed frequently and vehemently.

Veronica J. Sexton ("Books and Botany, Leaflets of Western Botany," Vol. 7) says that Mrs. Brandegee was far advanced for her day in a knowledge and appreciation of botanical literature. During her tenure as Curator, the Academy became the proud owner of a truly great pre-Linnaean library conceded to be the finest in North America. Almost all of these books were lost in the great fire of 1906.

Philip A. Munz ("A Century of Achievement, Leaflets of Western Botany," Vol. 7) tells how Mrs. Brandegee summarized species that had been proposed by Kellogg, Behr, and Bolander, giving her opinion as to their identity. "Subsequent workers," he said, "may not always agree with her opinions, but the paper is valuable since she had before her the orignial material on which the species had been based." Her later "Studies in Portulacaceae" and "Studies in Ceanothus" are of great interest to students of those families.

Another of Mrs. Brandegee's claims to fame is her recognition of the unique qualities of Alice Eastwood and it was she who persuaded Miss Eastwood to join the staff of the California Academy of Sciences in 1892. When the Brandegees moved to San Diego in 1893, Alice Eastwood became Curator of Botany in her place and also followed her as editor of *ZOE*, which the Brandegees continued to publish for a number of years.

During the last fourteen years of her life, Katharine Brandegee worked in the University of California herbarium at Berkeley, refusing compensation; "content to feel she had contributed her quota toward a better knowledge of the flora of California."

Lupinus layneae was named by Alice Eastwood in her honor.

Alice Eastwood

Acknowledged queen of American plantswomen, Alice Eastwood was a self-taught botanist who rose in her chosen field to win the respect of scientists throughout the world. Born in Toronto, Canada, she moved to Denver in her early childhood. Here she completed her education and taught in high school. In Colorado, she was so widely acclaimed as a plant explorer and collector that in 1888 when Alfred Russel Wallace, friend and collaborator of Charles Darwin, visited the Rocky Mountains, it was Alice Eastwood who was asked to be his botanical guide to Gray's Peak. In 1891, she visited California, getting acquainted with plants and people important to the horticultural world. Word of her work with Colorado flora had preceded her and she was warmly welcomed.

It was on this trip that she first met

Eastwoodia elegans

Kate Sessions, beginning a close friendship which would last more than half a century. Carole Greene Wilson in *Alice Eastwood's Wonderland* credits the drawing of Alice Eastwood out of the cloisters of pure science to the practical field of horticulture to this relationship. Certainly Miss Eastwood's influence extended from individual gardeners, professional seed and nursery people, to research scientists.

She visited San Francisco, drawn by the intriguing reports of what was being done at the California Academy of Sciences and became acquainted with Katharine and Townshend Brandegee. She spent much of her visit pouring over the plant collections and working with the staff. The following year she was asked to return as joint curator of botany and soon thereafter, when the Brandegees left San Francisco, became Curator, a position she held for the next fifty years. She wrote extensively for *ZOE*, serving as editor. Later with John Thomas Howell, she published "Leaflets of Western Botany." Her contributions became an important part of the Proceedings of the Academy. Its "Occasional Paper No. 9, A Handbook of the Trees of California," 1905, became a collector's item since it was published just before the fire of 1906 and most of the stock was burned at the bindery. Of the small especially bound prepublication edition, which she was distributing to close friends, only a few had been mailed out.

In the twelve years prior to the earthquake, Miss Eastwood had so developed the herbarium collections at the Academy that they were known as the richest and most important in Western America. By chance, she had just selected the most important of the types and collected them in a special case for particular care and handling. These were the types that eventually became the core of the new herbarium. Then came April 18, 1906.

In a personal letter written to Dr. Britton (*Torreya)* dated April 28, 1906, Miss Eastwood told about the disaster. "No words," she said, "can give you an idea of the ruin and desolation of our city . . . I managed to save most of the types but had very little time, not more than half an hour. Having them in a case by themselves was their salvation. They, together with the records of the Academy, are at Fort Mason, where I took them for safety."

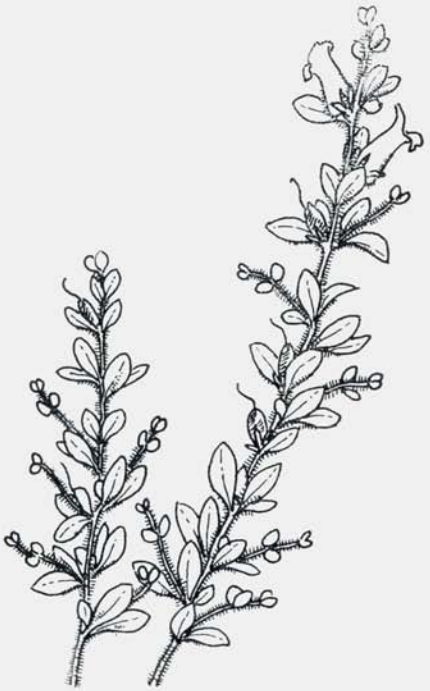
She tells of desperately trying to get into the building over the fallen masonry and finally reaching the almost demolished staircase with a friend she recruited from the street. "We had to climb up the staircase to the sixth floor mainly by the iron bannisters which seemed to be firm. I got out the bundles and Porter tied them up . . . I could not save a book. We lowered things down by string doubled to the floor of the museum six stories below and I was there to receive them . . . When we reached the street the building next door was on fire and the soldiers had come to keep people from crossing the street or getting into the buildings . . . The greatest loss to the city is the loss of all libraries and the scientific collections. Buildings can be replaced but these never can be . . . It is best not to think of what is lost but of what is saved and best of all to think of the kindness of those dear friends who give us help and sympathy. Everyone is deeply grateful for the help that is coming to us from everywhere." She saved 1497 types that day and moved them from place to place as the fire swept the city before taking them to Fort Mason.

Dr. Mortimer Adler said "Her heroism constitutes a bridge between

what was left after the 1906 fire and what is here today." From an even more meager beginning, Miss Eastwood established a new scientific library. Here, again, she influenced by her enthusiasm and example donations of many valuable volumes from public and private sources, culminating in what Veronica Sexton called "the crowning gift of all, Miss Eastwood's own library, given by her on the day she retired, to remain as a perpetual monument for the benefit of those who follow after her." ("Books and Botany, Leaflets of Western Botany," Vol. 7)

John Thomas Howell was at the University of California working with Willis Linn Jepson before he (Howell) became a member of the Academy staff. In 1954, in "I Remember I Think . . . Leaflets of Western Botany," Vol. 7-8, he compares Dr. Jepson and Miss Eastwood, each of whom he felt had a profound influence on western horticulture over approximately the same number of years. He describes how Dr. Jepson's reserve and Miss Eastwood's openness explain their different approaches to truth. "Fear of making a mistake was undoubtedly a causative factor in Jepson's reserve; freedom from fear was part of Alice Eastwood's strength. Their concepts of species were so far apart that the two could never have been close scientifically. He either reduced or ignored most of her specific proposals; she never discarded another botanist's proposal until she was persuaded it was not good, so hesitant was she of wronging the opinion of a fellow-worker. Miss Eastwood would maintain a species until it was proved false; Dr. Jepson would accept no species until it was proved good. Miss Eastwood could never have written a manual on California plants; Jepson could never have plumbed the taxonomic depth of California Arctostaphylos."

In "Horticulture and the California Academy of Sciences, leaflets of Western Botany," Centennial Issue, 1953, Victor Reiter, Jr., paid her this tribute: "It was not until Alice Eastwood became head of the Department of Botany that ornamental horticulture had its champion. We know from her



Antirrhinum ovatum

notes that Alice Eastwood was interested in cultivated exotics before the fire in 1906 but in 1915 in the Academy's new home in Golden Gate Park, she was able to make this interest a special feature in developing a new herbarium collection that is so important to California horticulture today. The major botanical role of a California institution should be the study of the native flora, but to those in horticulture,

the cultivated flora of gardens (which is for the most part exotic) is of primary importance. The native flora has certainly not been neglected at the Academy, but the addition of this broad interest in cultivated exotics has been a unique and valuable boon for the plant-conscious California gardener and it has welded the common interests of local horticulture and botany more intimately. "Miss Eastwood, a specialist in certain aspects of the California flora, was able to see beyond her immediate specialty and to initiate an important service to horticulture. Not only did she establish the herbarium of cultivated exotics, but she was able to accumulate a library which includes many books for their study."

Contributions from Alice Eastwood were sought by many publications other than those of the Academy: *Western American Scientist*, *Erythea*, *Bulletin of the Torrey Botanical Club*, *Botanical Gazette*, *Muhlenbergia*, contributions to the *Gray Herbarium*, and *National Horticultural Society Magazine*, to mention a few.

She named many plants and a few were named for her by others. *Antirrhinum ovatum*, which she described and named in 1902 was so rare that scientists searched for it for forty-six years before it was found again. In a letter written for the Academy celebration of her 80th birthday, Dr. Carl Wold said, "No better plant than Eastwoodia could have been selected to bear your name, since it so aptly expresses your exceptional botanical career, exploration, and study of plants in hard-to-get-at areas of the West."

In her 95th year shortly before her death, she was still receiving honors, awards, and recognition. She once said,"The older I grow, the more certain I am of mortality. I am convinced that body and soul are two different entities. My spirit grows stronger with the years, but my legs won't take me where I want to go.'"

In a tribute written shortly after her death in late 1953, Dr. Howell, her protege, fellow associate, close friend, and successor as curator, wrote, "Alice Eastwood was a memorable botanist, but probably more people remember her because in some way or other she revealed herself to them as a great person."

The cool nights of late summer and early fall bring into bloom the gentian blue flowers of the Chinese Leadwort, *Ceratostigma plumbaginoides*, a deciduous groundcover that will continue to brighten the garden until heavy frost with its blossoms and the bronze and red color of its fall foliage. *Ceratostigma* should be planted on a hot dry slope and protected in winter by gardeners in the north. It is slow to appear in spring so care should be taken not to dig or scratch it up while doing the first enthusiastic spring gardening. Leadwort tends to ramp where happy, but is fairly easily controlled by digging up the advancing edges and passing them over the fence to the neighbor or potting up the rooted bits for plant sales. Do not plant it among rocks, however, or among choice plants.

FROM A LONDON FLAT

ROY DAVIDSON
Seattle, Washington
Drawings by the author

This is an account of the author's seven month search for flora in England following his recovery from the illness which cut short his explorations of the flora of Turkey with John Watson.—Ed.

British gardens and nurseries support that not-so-old gardener's adage that "No matter where they originate, the best plants come from Britain." This is as true of rock plants as in any other branch of ornamental horticulture and seems to have come about — not through any random combinations of chance — but rather as the effect of the will and the taste of many plantsmen, both amateurs and professionals together, shaping the product over a succession of generations. Although they may draw heavily on imports, continental and other, British plantsmen are uniquely equipped for evaluating these and quick to reject second-best, and then just as quick to refine the rejects a step further so that they will measure up as first class plants.

I shall commence this seven month peregrination along some of the byways of present day British horticulture from a pot-garden in London's West End, all but in the shadow of Television City and hard-by two of its enormous sports stadiums, a very busy and very congested part of the great metropolis. When an American friend offered to share his Shepherds Bush flat, I was at first hesitant, that is until I found the building was the only flat-roofed one in the vicinity, with a vacant area about twenty by eighty, with both sunny and shaded areas, and water supply line. The summer and autumn, 1977, saw a steady flow of plants — first up and then down — at the end washed clean and packed up for export.

Even the natives had to agree it was an uncommonly cool summer, and if one was to speak of it the stock reply was: "You should have been here last year." But the drought that went along with the lovely summer days of the season before was particularly cruel to the nurseryman growing pot plants in open frames, and that of course included most who deal in rock garden material. Recovery was evident most everywhere, however; the current cool conditions promoted good growth on the roof and good flowering as well, so that a succession of interesting plants came and went; there was even a seed harvest.

One learns very early-on never to pass a market, a fruiter's stand or the most unseemly salesyard without checking it out. The local street market proved a continual source of wonderment at the variety of small plants that apparently thrive in window-box cultivation, and none other than variegated *Yucca filamentosa* came from very posh Kensington High Street.

Days from May to December brought a variety of opportunities that began with the Chelsea extravaganza, which was in 1977, of course, an occasion to salute the Queen's Silver Anniversary, in commemoration of which the industry was urging the planting of something enduring and silver. Had I been allowed my druthers it would have been *Pyrus salicifolia* 'Pendula',

the weeping silverleaf pear, but all of its sort are denied entry into this country. A little "silver" (actually woolly white) that I had continuously just read over in the lists quite caught my eye, and I shortly had rooted numerous cuttings to use as bulb cover or in other ways. It is the refined and non-rampant *Cerastium columnae*. "A dwarf and delectable form of that invader *C. tomentosum*," Beth Chatto says of it in her well-selected list.

Travels From the City

There were other plant displays, the plantings in public parks and devices such as RHS lectures where one could meet the similarly afflicted, and, of course, the country is famous for its uncountable numbers of fine nurseries. Except for going down to Battle, the first opportunity to taste the countryside of these isles came with an invitation to celebrate Fourth of July with some fellow Americans down in Wales. The route chosen took us rather deviously to the great Georgian city of Bath (my mother's family traces back to contemporaries of William Penn near Bath who settled in Pennsylvania) and to the ruin of the abbey at Glastonbury wherein is marked the last known resting place of the semi-mythological Arthur and his Guinivere, a beautifully kept shrine, and the only such I allowed myself. An historical pilgrimage this was not. Since it was past the best season for flowers, the ferns remain vividly in memory, particularly the north wall of our host's charming old stone cottage adorned with clumps of Hartstongue clear up to the eaves. Old limestone walls and bridges were rimed with a soft grey lichen, the mortared joints cross-stitched with wall-rue, and often spotted too with bright green *Asplenium trichomanes* and rusty ceterach. The ubiquitous bracken was never so memorable anywhere as when I returned to Wales in mid-autumn when the burnished beech hedgerows were glowing softly in the fine rain, the wet bracken almost a fierce red against emerald fields and pastures of all the hills.

When I speak of going down to Battle — and I did often — you must remember that in 1066 the Battle of Hastings was not fought at Hastings, but in a little vale between two high dune-like ridges of the oak-forested rise several miles to the north and inland at the hallowed place now known as Battle. It is near this charming village that John and Adrienne Watson and two little girls now live, about an hour and a half from Charing Cross station. There were blue-bell woodlands and primrose copses all along the rail route in spring, and in autumn the staunch red-fruited stalks of Cockoo-Pint or Lords and Ladies, *Arum maculatum*, absolutely loomed out of the bush. On one of these visits there was also a stop at Sissinghurst Castle, and another time at Christopher Lloyd's Great Dixter garden and clematis nursery; still another brought a delightful visit with Miss Strangman who now operates the old Washill nursery and was having quite a success with *Corydalis cashmeriana* much to my surprise and delight. On the glowing pink brick walls of Sissinghurst I found what was to become my favorite clematis, *C. viticella* 'Elegans Plena', like a mellow old wine brocade with silvery-mouldy inner glow to each of its multiplex blossoms of which it bore a burden. Mr. Lloyd had made a feature in one of the courtyards using the rich purple forma, an unusual one, of one of the native orchids, *Dactylorhiza fuchsii*, increased slowly from offset and division. It failed to seed for me, but some of the usual lilac from Wales bore the expected

millions of tiny seed.

Jim MacPhail and I did get to Wisley during the brief time we had before he left to be my replacement in Turkey. We had taken rooms to be near Kew gardens and herbarium where we shared research projects, both of plants he hoped to locate and some I had just seen. We thus did see the display in the Kew woodland garden of one of the strangest and prettiest of European wild flowers, the great sheet of Toothwort, *Lathraea clandestina*, and though it was said to be of even greater impact about the parking lot at Wisley we failed to find it; perhaps we were too late or it may have suffered in the expansion and building there. From earliest March and well into May spring-wet willow and popular woods are often richly purpled with the large, hooded flowers of this member of Orobanchaceae, all the more striking because there are no leaves. Though considered by some to be indigenous, my guidebook apparently regarded it as introduced from the Continent; it is well established also on roots of willow at Cambridge where I first fell. Some may wonder at anyone who would court a parasite, while others freely admit to such weird tastes; I do covet and do so admit. But *how* to establish it? When I got 'round to checking on seeds the birds and/or squirrels had quite ruined the lot.

How could I possibly sort out just one of twenty irises to tell you about? Or just a few of twenty-eight geraniums? Or which of more than fifty campanulas? Some years back the RHS conducted a Wisely Trial of bellflowers, and eagerly the nurserymen and breeders sent along their best for evaluation and subsequent awards. Most were of such sturdy stand-by species as *carpatica* and *persicifolia*, mostly easy, floriferous and mostly gross. There was even one with a reflexed corolla like a wind-blown umbrella, inside-out. The one I myself singled out was just an ordinary campanula-blue, medium-sized *carpatica* 'Loddon Blue',

Campanula x 'Lynchmere'

but with perfect form and poise plus an extra glisten to the enamel surface that is so irresistible. The late Rae Berry once gently chastised me, "What . . . you *don't* grow campanulas? . . . Why, you *heathen!*" and I am just now learning. Every summer garden can be and should be a bower of bellflower; furthermore it can be, I have learned, if the gardener scrupulously fends off slugs and snails; we had none on the roof. Of the bellflowers I watched unfold through the summer, none pleased me more among the little ones than a frail looking hybrid called 'Lynchmere'. Crook wrote of it (1951) that it was of recent advent, with an AM given in 1948; but of late years it has all but disappeared from the trade.

Since I was so keen on campanulas Robinson's of Crockenhill made me a gift of one from their precious stock, saved from the drought. Visualize a perfect Scots Harebell and then turn your telescopic view-finder end-for-end; you get the impression of an inscrutable miniature about five inches tall, the up-facing, eager-looking little violet-blue bells, out-rolled at each of five star-points and with long extended whitish pistils, as many as seven or eight of them up a still uncrowded thread-thin stem. It is nothing short of impossible that these thinnest of stalks support the campanulas.

A couple of iris finds are noteworthy in that they represent superior color forms in species whose usual colors are hum-drum. *I. foetidissima* is not grown nearly to the extent it might be, and probably because the name implies that it stinks. But "One man's poison . . . "; that same smell also has given it the old name Roast Beef Plant. It will form elegant clumps of polished evergreen-satin foliage and is one of the few to appreciate shade. Add to this the red seeds adhering to opened capsules for winter decor and you have three reasons for growing it. The usual flower color is dingy so that the soft lilac colored butterfly flowers of the one I found beside a Welsh farm cottage make a fourth reason. It is to be called 'Nant Gwilw' for the place of its origin, which rhymes (in Welsh) with "want-grill-you." At Savill Gardens the lovely pansy violet form of *I. setosa* I had admired before was shared, and I in turn will share, having given it the designation 'Savill' to honor the man who created this lovely woodland retreat. Airily branched, it gives as many as ten flowers on each of its stalks, a rich contrast to the pink and yellow candelabra primulas along the small streamcourse where I first saw it there in Windsor Great Park

Geraniums are of course another widespread and variable lot, even to the almost cactoid sort. But an alpine gem from the Himalaya, *G. stapfianum* 'Roseum' was particularly an intrigue for its deep rose flowers topping six-inch plants of lacey, cream-mottled leafage; it is spread about on a thin rhizome strung with tiny growth buds like strands of beads. Another fine small one of unusual coloring is *G. subcaulescens* 'Splendens', a warm salmon-orange with rounded grayish leaves.

A real thrill in any sort of plant hunting comes with finding that something long anticipated measures up to the delicious build-up and mouth-watering pictures. Such a one was finding *Heuchera* x 'Pretty Polly' along the perennial borders at Wisley, and I thereupon marked my mental order up from one to a half-dozen. From *H. sanguineum,* this is low and neat enough for any rock gardener's taste, with nicely showy coral pink bells of larger than average size — neat but not gaudy. Another sort of plantsman's pleasure is perhaps best of all, that of a cultural triumph. I managed finally to get my *Potentilla fruticosa* 'Red Ace' to color up to the tomato-red of Bloom's picture, which I knew was possible as I'd seen it shown thus. I even put a tomato into the pot to encourage (or shame) it, but I rather think it was the advice Allan Robinson passed along that did the trick, "These highly colored forms must be kept very wet to color well." So it stood in a tray of water in the south stairwell; there was precious little sun there (or on the roof) so it must have been the water. Of these shrubby potentillas, so indispensable for color in summer and early autumn, it seems there must be at least one new improved yellow

offered each season, and of late more of the colored sorts; one with an extra set of petals is going as 'Prostrate Copper', but of them all I think I most appreciate the soft fawn-pink of 'Daydawn' developed by Robinsons. 'Red Ace' may not be perfect, but it assuredly can be red; it forms a most attractive low-mounded, broad plant of finely textured rich green. Patented, the American rights have been sold to one of California's large wholesalers, so we shall likely soon be seeing a flood of it.

Dappled and Doubled

Where to begin to describe some of the dozens of exciting vari-colored foliage plants? Or the equally exciting variety of double-flowered things? A good many of the latter, like the lovely old garden auriculas, have endured for generations in dooryards, to be loved and shared, only perchance to be discovered and popularized. But of the variegated things, I myself have wondered at their fascination, and I found a total absorption in the collection Kew keeps for the scientific study of the phenomenon. It may be quite true that certain of them only succeed in looking very very ill indeed, but I found some of these same pallid ones, i.e. *Thymus vulgaris* 'Aureus', to be the perfect foil for the liver-black leaves of such things as the Black Dragon Beard ophiopogon or the new hybrid sedum 'Vera Jameson' that Joe Elliott is promoting (lovely warm rose flowers in September). There are also many colorful variegations of grasses and sedges, useful for texture as well as color in the landscape, none more striking than golden-green *Carex morrowii* 'Variegata-Aurea', also sold by the easier name 'Evergold'. The sedges have the advantage of being capable of standing undamaged against almost any amount of winter, barring an ice-storm of course.

But at Kew, the strangest of the variegated mysteries is represented by a barberry which had green leaves and not extraordinary yellow flowers. Like many another of its kind, it sported purple leaves on certain branches, on which one would likely suspect yellow flowers. But these were quite incapable of any flowering, until in turn they had sported pink or partially pink leaves on certain parts and when these flower, they produce pink rather than yellow blossoms.

The variegation I found most fascinating was through a catalog description "most exciting of Japanese shrubs," and with an AM I had to see. It is known by two names, *Cleyera fortunei* (preferred) or *Eurya latifolia* 'Variegata', and it belongs to Theaceae, which prepares one for the thickened, privet-like leaves, but the coloring has to be seen — a random mix of bright wine-red, silver-pink and creamy white with several threads of various greens thrown in, and the leaves a bit undulate-distorted (but only slightly) — sounding quite garish certainly, but not looking so. At shipping time, this was found snuggled up to a bundle of the fine red *Cornus alba* from Westonbirt, and the effect was so very startling and pleasing that I vowed to grow them thus, side by side. I fear though that it may not come off for me as I doubt the total hardiness of the Nipponese charmer, but — perhaps for someone.

To justify a love for double flowers one need only see such lovely natural silk tissue pompoms as those of Fair Maids of France, *Ranunculus aconitifolius* 'Plenus', or Double Ladies Smock, *Cardamine pratensis* 'Plena', as I first did in an old cottage garden, the latter with an unmistakable elegance

rather likened to that of the dowager gardener, or a less fattened florist's double scented stock. I am not quite convinced, however, that double *Doronicum* 'Spring Beauty' is not just an enormous, pompous impersonation of a dandelion. The old-fashioned double forms of some of the meadow geraniums have an undeniably better and more durable garden effect, and that old double wallflower promoted by and named for Harpur Crew, though a splendid, short, bright thing, has not liked my coolish garden from its introduction in 1974, and I wonder how it can possibly have survived British circumstances for all these years, the Rev. Henry Harpur Crew having died in 1883. It was cooler in August than in November in Shepherds Bush that season.

As for Westonbirt Arboretum, whence came the superior red-osier dogwood, I was unable to get there early enough, in both time of day and season, for the famous show of autumn color. This quite incomparable collection was commenced nearly one hundred fifty years ago, and now under the jurisdiction of the Forestry Commission, it does not enjoy such publicity as is given National Trust properties. Since it was never "royal" there are no monuments nor other unnatural features, only the contours of the land and the trees and shrubs arranged with incomparable foresight and taste. Soil and climate have allowed simultaneous success to both conifers and other materials, and a most artful balance has been achieved. Just one image in my memory, that of a great old pinky-gold maple against the high, round head of a black-green pine and sky at dusk, will always epitomize for me the extraordinary vision taken in the placement of each of hundreds and hundreds of such examples. The total impression is saved from museum monotony in that there are multiple specimens of nearly everything and these are most often used in colonial groupings. Certainly this is a collection of woody plants that every visitor must try to see; it would be very easy to spend several days wandering there at any time of year, and it is only an hour west of Heathrow.

Winners Circle

If small rhododendrons are your bag then those of Peter Cox, especially the yellow ones, will be familiar, but perhaps they were all eclipsed by a red one shown at Chelsea in May and given an AM without hesitation I should guess. But to say it is "red" is not telling all, for it is neither purplish nor blackish, orangey, rusty nor the slightest bit rosey — "red-red" is the only way to describe it, and it comes from the 'Bodnant Red' form of *Rh. cremastrum* x *Rh. calostrotum*, which ought to tell something of the plant and foliage. Surely it will be in the Winners Circle for a long time to come.

It is always warming of course to find an old friend in an unexpected place, as I did on the Chelsea awards bench nearby to Cox's rhododendron, down from Scotland for the event. Vancouver-born *Cornus* x "Eddie's White Wonder", the *florida-nuttallii* hybrid was sporting a brand new FCC. There also was another American, reintroduced from the southern hemisphere by Cheese & Watson, *Sisyrinchium macrocarpum*, wearing proudly an AM, with good blue-green and surprisingly broad and glaucous leafage and a succession of ample bright golden flowers, each segment brilliantly bronze-blazed. (This one came home with me!) Several stands were showing Californian *Brodiaea minor*, a former winner

now increased to good commercial numbers by the cleverness of the Dutch bulb industry, and appearing like leafless and almost stemless Blue Lilies of the Nile.

I can scarcely bring myself to belabor you with one of my personal crusades, the bergenias, but it has been one of the best advanced projects of the season. I'll only say that some grievous misjudgements by prominent taxonomists of the past has their names in a muddle, and there has developed a situation perhaps best called "untrustworthy" where names are concerned, which has of course affected their popularity. Wisley has also conducted Bergenia Trials, possibly in hopes of setting things to rights, and quite a number of awards were made. Hence I have been pleased not only to obtain some of these latter, but also to locate authentic material of some of the true species, particularly of interest to me in that they are the smaller sorts, and of them all, *B. ciliata* and its allies are the gems of their kind, with apple-blossom flowers, both in coloring and amplitude. Some of their fine new hybrids combine these good traits with a hardiness which they themselves do not possess, as Pugsley's cross named for Margery Fish.

"Come up to Kew in lilac time" — I did, then and frequently thereafter, but the first time will always remain a special occasion for not many reach there by boat. You board almost beneath Westminster Bridge, close by Big Ben's tower and only a couple of minutes from the hubbub of fountains and people and birds (and lions) of Trafalgar Square, and if the tide is full so is the Thames. Shortly you will have passed upstream beneath more than a dozen of the river's lovely old bridges, each with its own personality and history, to be deposited at Kew Dock, half a minute from the main gates of Kew (properly the Royal Botanical Garden at Kew). Kew is perhaps the nation's greatest bargain; it still costs but one pence to get in, and you may stay until nightfall. As it was quite convenient, the grounds became my favorite exercise yard, and I became a pain to the constabulary, who were convinced I was pinching something or other every time I scrounged about for a label.

I could reminisce on meeting many another plantsman; I confess to being quite a single-minded bore on occasion; imagine being in London for all that time and never once going to the theatre, or to a gallery or concert hall. I could tell though of the bitter night wind off the North Sea at Ipswich, or of one of the most marvelous days of mid-autumn, with pale, warm sun on pale, warm foliages and pale, warm buff stone Cotswold villages — and Joe Elliott's Broadwell nursery right in the middle. Or I could tell of continuing westward over the Severn and up into the Malvern Hills to Percy Picton's, and of almost failing to find the way back to Shepherds Bush again in dense cordons of fog that drifted about aimlessly through a brilliantly moonlit nightscape, so dense at times as to stop motorway traffic. And I could blather away at the trials of learning to drive anew and of eventually coming to accept the roundabout as something more than an obstacle on the course.

I could tell of half-formed plans that never came off due to nothing more than the lazy enjoyment of the immediate time and place. Or I might relate some of the evidence of change in the British nursery tradition. I would doubt though that there is much difference from at home, except probably of course that we had less of that tradition to begin with. The once famous old Floral

Mile at Twyford in the valley west of London is now scarely more than a shabby signboard. Waterer's doesn't look prosperous, while at the far end Carlile's Loddon Nursery is bravely maintaining one of the four of Carlile's Corners, the designation of the intersection where they once operated four nurseries. At the opposite end a modern salesyard seems to be doing a brisk business, and why not, one reflects on seeing the diversity and quality of their merchandise? It was here that I shelled out for some dwarf conifers on sight, and I'll be content some other year to try to puzzle out if they are rightly named and by whose book. Due to the mis-budgeting of time, I failed to reach the Welches and their conifers at the Pygmy Pinetum down at Devizes, but I did enjoy meeting them at a couple of the shows. One new conifer that did impress me as entirely distinct was a yew raised by Robinsons of Knockholt, *Taxus baccata* 'Rushmore' they have named it, with short, thick, black-green, glistening needles.

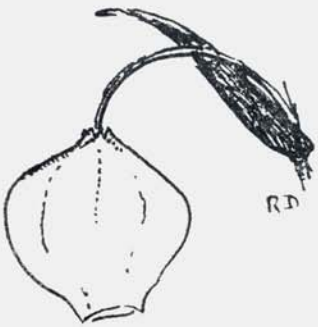
There are so many gardens open to the public that it would be possible to gad the time entirely away without ever doing everything you wanted to do. I found that going to the shows was a good orientation, and there are still many places I did not get to: the gardens at Wakehurst, Borde Hill and Nymans, all quite close to London and to each other, for example. Going to the shows provides an easy way to get acquainted with the sort of things a nursery grows as well as with some of its people, oftenest the owner. It was thus that I met Beth Chatto, a lady who is rather carrying on from the late Margery Fish in the Gertrude Jekyll tradition and in the decorative arts at the inspiration of Constance Spry, I should think. And I also came to look for the show displays put up by the Hutchinses of Hornchurch, specialists in New Zealand plants. And then you can hope that someone you have come to trust implicitly will ask, "You *have* been to Percy's . . . Oh, you must." It was thus I met Percy Picton and also Elizabeth Strangeman, both with specialist collections of only good, interesting plants.

One of the most promising improvements on a favorite plant already well established in the trade is the shortly compact *Daphne blagayana* 'Wells Form' with better flowers, less straggling growth and shorter, broader leaves. A very charming little amethyst cow-parsley of just a few inches is *Heracleum minimum* 'Roseum' with rich, crisp steel-cut foliage of good value and subterranean increase. Of the many and diverse qualities of plant's appeal, there is the funny-bone aspect. Probably no flower is so amusing as the impossible *Calceolaria darwinii* or the near-related *C. fothergillii,* just as diffcult. For one of those unfathomable reasons the hybrid between them, 'Walter Shrimpton' is far easier to manage and just as strange, another clown. It is totally impossible to remain in a gloom in the company of these funny-face South Americans, but you may need an alpine house for the two of you.

Autumn bulbs that should do well in moderate climates include some marvelously vigorous improvements from selective breeding. The older forms of schizostylis are put quite in the shade by those coming from the vigorous form called 'Major', and the lovely peach parfait 'Sunrise' has given in turn a "Sunrise Strain" of lovely pastels. This may be considered outsize in some rock gardens as will also be the crocosmia hybrids, of which I flipped over the orange-juice color of 'Solfataire' from Bloom's as seen at Sis-

singhurst, with the pale-bronze-tinted leaves adding just the right magic to the scene.

The oddest and most striking flower I saw all season was *Sandersonia aurantiaca,* first at Kew and then in Brian Mathew's collection. The plant is that of a small lily, to about twenty inches. From the uppermost leaf axils in lily-fashion a few flowers are produced on short pedicels. They are precisely like inflated silk Japanese lanterns, causing me to question their family ties, since all six of the floral segments are united to form this corolla and therefore, it would seem, must spring from the same whorl on the floral axis. The RHS dictionary refers it to Liliaceae all right, but the illustration must have been made from an herbarium sheet. The color is pure orange, the texture is of silk and there are six little spurs at the base, forming a tiny corona about the pedicel.



Sandersonia aurantiaca

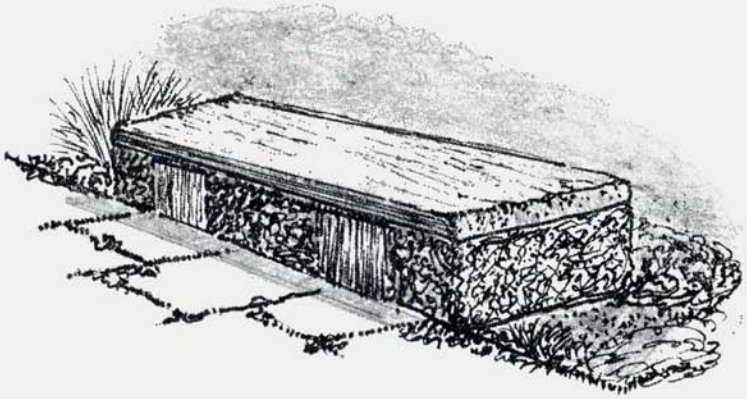
But I must tell of a totally fresh concept of a rock garden put up by a new exhibitor on that famous bank toward the river at Chelsea. It seemed so utterly simple that I felt people might be of the opinion he was only fooling. What, no towering cliffs . . . no great cascade . . . no vast pond? When I complimented him on its appeal, he beamed modestly, perhaps sort of half-believingly. The effect was uncannily of being on a sunny fell and high meadow, the few large stones rather languorously placed in such a manner as to suggest more than to reveal, and a thin trickle of a stream made its way down in a gentle manner proclaiming as it did so that it alone was responsible for the stones being exposed. It was such an utterly pleasing, believable composition that perhaps many who had been frightened off at the idea of rock garden construction might have taken heart in that, after all, it need not be monumental to be a rock garden. One could hope so. When this is well understood many more persons will find greater enjoyment and success, and the art of the cult will have been advanced immeasurably.

Well, I can't go on much longer without becoming quite homesick for Shepherds Bush. The last two weeks were spent bent over the kitchen sink fifteen to eighteen hours daily — it now being much too cold to work on the roof for long. Neighbors who could see in might have wondered at the hundred-weights of potatoes being peeled, or at the untold dozens of dozens of tea things washed up; I wonder what the next tenant will make of the half-ton of potting soil on the premises.

If one has a hankering for foreign plant shopping, I can heartily advocate the BBA approach; it will cost you a round-trip air ticket, but bringing back alive with you can ensure one hundred percent success; a few things sent ahead have not fared so well.

What the season amounts to is a thousand-and-one such tales, only a very few of which it is possible to share, but of the plants, most are in the hands of propagators and well on the way to sharing. Among them are some things quite new to the American scene,

while others . . . phlox, sisyrinchium, heuchera, yucca . . . were American to begin with, thus proving what I set out to tell. Hail Brittannia!



Garden Bench of Oak Planks and Clipped Box at Sissinghurst

PREPARING PLANTS FOR WINTER

As Practiced in Minnesota

BETTY ANN MECH
Minneapolis, Minn.

When someone here asks, "Is it necessary to cover your rock garden?" it is not easy to say yes or no. The answer depends on how much is at stake in your particular garden. In this climate a bank of sedums and sempervivums can be left to the vagaries of weather, but after the "collecting bug" bites it is advisable to study and carry out the best protection methods possible. Although not every winter is disastrous to plants this is always a time of stress. When the plants are covered one can be fairly sure that nearly all of them will be there the next spring in the same condition as they were when they were packed away and will not have to spend all summer making up for a bad winter.

The big three enemies of plants in winter, as explained in Peter Cox's book *Dwarf Rhododendrons*, are cold, sun and wind. Cold dessicates the leaves as well as causing physical damage to all plant parts. Some scientists believe that last winter's severe damage was caused by the prolonged cold which ruptured plant cells and allowed them to dry out.

Sun also dries the leaves causing winter burn when the ground is frozen and water cannot be replenished. Wind worsens both these conditions, besides breaking brittle cold branches. Ideally

a mulch serves to protect dormant plants from too much cold, sun and wind. The mulch should be light and airy, keeping plants cool, moist and partly shaded.

Snow is the perfect mulch and, indeed, where many rock garden plants originate snow is present all winter and only melts when spring *really* comes. Around Minneapolis, however, snow often comes only after some severe cold in the autumn and early winter has already done a lot of damage to unprotected plants. In the spring snow cover is usually gone by March 20 when we often experience unpredictable weather; either cold, dry winds from the Arctic, or hot, dry winds from the Southwest can plague us. So in this area, even though we have good snow cover in mid-winter, there are two times of the year that call for protection.

Although plants cannot move to escape dangerous weather they are not completely helpless. In fact they go through complex changes to prepare for winter. Most importantly, the leaves manufacture quantities of food during the growing season, storing it as carbohydrates in the roots. Pulsatillas and spring bulbs are classic examples of plants that store food. In fact they store so much in their thick roots and bulbs that they can be "firstest with the mostest," blooming outrageously while others are just cautiously beginning to grow.

But all perennial plants must store food in summer and fall. This is what makes drought so disastrous, for without enough water carbohydrates cannot be produced. (Now if all the plant physiologists will avert their eyes I'll attempt an explanation.)

Because of the action of chlorophyll in photosynthesis, ninety-five percent of all plant tissue, from that of the tiniest alpine to that of the hugest Redwood, comes from only three elements: carbon, hydrogen and oxygen. (The other five percent comes from elements in the soil.) Carbon comes from carbon dioxide in the air and there is usually plenty of that. Most oxygen also comes from air, including that in the soil as well as that above its surface. Water, however, is the main source for hydrogen and when water is lacking plants can't grow or store food. When plants go into their winter sleep "hungry," they are disadvantaged. Although they are dormant they are still respiring, at least at temperatures above 0°F., and depend on stores of carbohydrates to resist death. Not only that, a high concentration of carbohydrates in the sap actually lowers its freezing point, just as seawater freezes at a lower temperature than fresh water.

This is what good gardeners have always noticed anyway; the plants that make vigorous growth in summer are most likely to make it over the winter. Those in a weakened condition from drought, age — either too young or too old — or whose growing conditions have been less than ideal are apt to suffer the most damage. These are also the plants that respond best to winter covering. Of course too much water in the fall, especially on woody plants, can cause sappy growth that is susceptible to winter injury.

As the days get shorter and nights get cool plants prepare themselves in a variety of ways for winter. Cacti do this most spectacularly. Many people think their cactus are dying when in September even without a frost they begin to wilt and shrivel like prunes. By the time winter comes the plants are lying flat on the ground, well below snow line. In the spring they become turgid again and rise off the ground. Campanulas send up basal growth in

the fall and many plants form rosettes. The rosette form is a good shape in which to pass the winter because it sheds water, concentrates the leaves near the source of sustenance (a thickened taproot) and brings the plant below snow level. The outer leaves of a rosette can be lost but the center is protected.

Minnesota usually has very pleasant, sunny fall weather. Since many plants prefer cool weather for growing it is possible for some to double their size from September to November if they have good soil and adequate moisture. This is the time they put on their best root growth with no need to make quantities of top growth and flowers. The roots are a bank from which the plant draws energy in winter and early spring.

Growth gradually slows as frosts become more frequent, but plants in the rock garden keep growing long after the "growing season" is over and they start into growth early, considerably before true spring begins. A useful concept for rock gardeners is that of "season of vegetation." This is the time of year when the daytime temperatures are consistently above 43° to 45°F., which is the temperature soil must be to support growth. The "growing season" is that period of time between the last frost in the spring and the first frost in the fall — which is nice to know if you are growing tomatoes or zinnias — but the "season of vegetation" can be up to three months longer, and corresponds to the actual time during which rock garden plants are active.

Now that we know how the plants are doing their part, our task is to help them continue this yearly cycle without damage. If we cover them too early the soil stays warm and the plants do not receive the proper signals to slow down. Also, green plants will rot if they are covered and the weather turns warm. On the other hand if the fall has been warm and a sudden drop in temperature to below 20°F. is expected, it is better for plants to finish the hardening process under a mulch even though ideally, the ground should be frozen before covering. Gradual cooling is the concept to pursue. Plants can take a lot more cold in November than they can in September and it is a good idea to have mulching material on hand early in case of emergencies, but our usual date for covering is about November 20.

After trying several kinds of mulches I recommend three: Oak leaves are easily available here and stay satisfactorily light and fluffy over winter; last fall over a hundred bags of leaves were used. These were frequently gleaned in the dead of night from areas where oaks drop prodigeous quantities of leaves and suburbanites dutifully rake them up to enrich the landfills of the county. Everyone is usually happy to give them to me; their generosity is almost touching.

Another useful covering material is marsh hay. (Minnesota is not called the land of 10,000 lakes for nothing!) Here the name is used for a kind of thin reed with broad, grassy leaves. It cuts easily with a sickle and stays firm all winter. It can even be reused because it does not get soggy as straw does. It is also weed-free and for anyone that has picked wheat seedlings out of the beds after using a straw mulch this is a real point to consider. Pine needles and boughs are also excellent.

We cover our gardens about six to ten inches deep with leaves. Evergreen boughs by themselves or on top of leaves are excellent for windy spots. Small rhododendrons are covered with bags of leaves that have a vent hole torn near the top or by a bushel basket

filled with leaves. Recently I saw a most ingenious and successful covering for large rhododendrons. Fiberglass insulation bats with aluminum foil on the back were wrapped around the bushes which had been tied up. Then a large plastic bag was slipped over the top and securely tied. After the worst winter we ever had every one of the plants produced full bloom, and many were four foot high specimens of quite tender kinds.

Container gardens and other potted plants are sunk in sawdust or sand, preferably in a coldframe. Roots are much more susceptible to cold damage than are tops. Many common plants cannot take less than 22°F. on their roots. Surprisingly, a few inches of snow or mulch can protect them from very low temperatures. Therefore leaves are used to cover the potted plants as well as those in the garden.

A trick that works well for especially precious plants such as *Calluna vulgaris* 'Foxii Nana' and *Pices abies* 'Little Gem' is to completely cover them with sawdust. Then there is no chance of winter winds "blowing their cover" and in the spring they will emerge in perfect shape. The pine sawdust seems to inhibit mold also. Some poisoned wheat in tin cans will discourage mouse depredations.

The aim is to duplicate the sure snow cover of the mountains. If the snow cover comes and goes a layer of mulch will cut off sun and wind and keep the plants cold and/or frozen until they are re-covered by snow or spring arrives. A January thaw is just a dirty trick as far as plants are concerned.

About March 20 our winter snow is gone or going. We will have occasional snows in April or even May but they do neither harm nor good. Just as plants should prepare for winter gradually, so should they awaken a little at a time in spring. The first step is to fluff up the top layer of mulch where it has thawed. Because it has been covered with snow and is flattened and wet it has lost much of its insulating value. Leaves, other then those of oak, are particularly prone to becoming soggy and this is the kiss of death for alpines because soggy, packed leaves cut off air which encourages mold. Any plants sticking above the mulch get re-covered at this time.

If the mulch is removed too soon the tender leaves can get whipped by the cold dry winds of early spring and can even be frozen or sunburned. We have found that the ground should be thawing before the mulch is removed entirely. The principle is the same as gradually thawing a frozen turkey in a paper bag. You don't want the leaves left high and dry while the roots are still encased in ice; the whole area where the plant grows should warm gradually. The old leaves of Polyanthus Primulas are particularly tender after winter and need gentle care to save them. Others need the mulch removed very quickly or they will rot. Spring bulbs, androsaces, drabas, Kabschia Saxifragas and tiny wooly alpines are in this class. Cactus are better left uncovered. The pads will rot with any covering but snow.

After a few days it is possible to take off some of the mulch though it will get cold again. During the next warm spell more can be removed. When the plants appear turgid and lively-looking and the soil is thawing, it is time to remove it all. April 1 is the approximate date for clearing up all the coverings here. Someone from Pennsylvania said he keeps pine boughs over a tender broom until the buds begin to swell — even if it is May

1 before that happens! This might be the correct treatment for tender daphnes.

About the time growth begins I have seen a Scottish alpine nurseryman spraying all the plants with a weak fertilizer solution. Apparently in earliest spring most available nitrogen is tied up in the soil organisms, which as they die return it to the soil so the plants can use it. But for a short, critical period plants may need a bit of nitrogen to help recover from winter stresses. I have not tried this yet, perhaps because I was afraid too much might force unseasonable growth, but would like to experiment.

Covering and uncovering a rock garden takes more time than not covering but it seems a small inconvenience when it insures not only the survival but the robust good health of a wide variety of plants including many of the "impossibles." Other, less tangible benefits to this job are that it keeps you in touch with the outdoors a greater number of days of the year in addition to giving you the satisfaction of protecting your treasures. It is rather like closing a good book that you look forward to re-reading.

HEATHERS IN COLOUR
by Brian and Valerie Proudley. 1974, London, Blandford Color Series, represented in USA by Sterling Publishing Co., New York, N.Y.

Brian and Valerie Proudley have grown and sold heathers in England for many years. Several cultivars bear the Proudley name, *Calluna* 'Lyndon Proudley', for instance, of rock garden proportions, and the gold foliaged *Erica vagans* 'Valerie Proudley'. Their practical experience has been obtained in England, and this they make clear, but their interest is international. An exchange of letters with heather enthusiasts in the U.S.A. (not "consultants" but practical gardeners) took place when the book was in preparation. "In the United States" . . . they state correctly . . . "heathers thrive along the two seaboards, particularly in the northwestern States, extending to Northern California, and in the north-east from Maine to Virginia, although many do not stand the test of time due to the bitter winters and sizzling summers."

Heathers in Colour is a concise, pocket-sized guide, 7-1/4" x 4-3/4", of hardback, stitched, open-flat construction. The 192 pages are divided into three sections. Origin, nomenclature,

cultivation and propagation are covered in the first section. For American growers I would stress the importance of pruning the plants *every* spring, just as they show signs of starting to make new growth. Do not prune in autumn and winter. Peat is a useful soil improver but should not be used as a mulch.

The center section contains 141 color pictures of good quality, many of them close-ups of individual plants. With one exception (ARGS member D. Metheny's Seattle heather garden) the landscape pictures were taken in Europe, as the captions make clear. Such massed plantings are rarely achievable here save on Long Island, Cape Cod and in the Pacific Northwest.

The third section contains descriptive lists of heathers. Do not be misled by the figures for height and spread (e.g. *Calluna* 'Foxii Nana', 10 x 18), which are given in centimetres. Many of the cultivars listed are not obtainable here, many cannot be grown in most parts of the country, and a few good ones are missing . . . *Calluna* 'Alys Sutcliffe' for one.

Obviously a book of such large scope and small size must have its limitations. At the modest price of $5.95 it is, nevertheless, recommended as a "good buy". There is a great need for garden books of a regional nature, but the trend is the other way, with the economics of publishing seemingly calling for national (and, if possible, international) sales. Publishers guilty of foisting on tiro American gardeners English books with their origin carefully concealed should take a look at *Heathers of Colour* as an example of a book honestly, helpfully, and successfully written for an international market.

Comparative testing of sixty-five heather cultivars has been carried out on eastern Long Island by wholesale grower James E. Cross. The results are detailed in Vol. 9, No. 6 of The Avant Gardener. This would make a useful supplement to *Heathers in Colour* and can be obtained for fifty cents from Horticultural Data Processors, Box 489, New York, N.Y. 10028.

Pamela J. Harper

CARNIVOROUS PLANTS OF THE UNITED STATES AND CANADA

by Donald E. Schnell. John F. Blair, Winston-Salem, N.C.

Plants which invite guests to lunch only to eat them have long held a fascination for gardeners. Most of them remain in the realm of things read about in passing but seldom seen. Only rarely does a book come along that combines fine photos with easily digestable reading matter. Dr. Schnell, in his book on native American carnivorous plants, has skillfully managed in both fields. His book has 125 pages with one to six superb color illustrations on roughly half of them. Range maps and a few pen and ink schematics are also included.

This small but spectacularly illustrated book lures one into the fascinating field of carnivorous plants. The color photographs are so clear and crisp that one almost expects to be able to reach into them and touch the plants. It is quite outstanding in the quality of the reproductions.

The text manages to be at once interesting, detailed and accurate without falling too far into the morass of biological terminology which leaves far too many of us floundering or scurrying for cover. Discussed are forty-five species and numerous hybrids of *Dionaea, Sarracenia, Darlingtonia, Drosera, Pinguicula* and *Utricularia.*

In addition to plant descriptions there are detailed instructions on how to grow them in both the bog garden and as pot or terrarium specimens. Pests, diseases, and propagation are given full attention. Included at the end is a generous list of additional reading material, glossary, explanation of the meaning of names and a list of firms which sell carnivorous plants.

Interested readers may wish to subscribe to the "Carnivorous Plant Newsletter", a quarterly publication of interest to the gardener as well as to the botanist. Co-editors are J. A. Mazrimas, 329 Helen Way, Livermore, Calif. 94550 and D. E. Schnell, Rt. 4, Box 275, Statesville, N.C. 28677.

E.D.

WILDFLOWERS OF NORTH CAROLINA

by William S. Justice and C. Ritchie Bell. University of North Carolina Press, Chapel Hill, N.C.

WILDFLOWERS OF ALABAMA AND ADJOINING STATES

by Blanch E. Dean, Amy Mason and Joab L. Thomas. University of Alabama Press, University, Ala.

WILDFLOWERS OF LOUISIANA AND ADJOINING STATES

by C. A. Brown. Louisiana State University Press, Baton Rouge, La.

These three illiustrated floras would be a valuable addition to the library of anyone interested in the wildflowers of the Southeast.

Wildflowers of North Carolina also covers the states of Virginia, South Carolina, and areas of Georgia, Tennessee, Kentucky, West Virginia, Maryland and Delaware. It was published under the sponsorship of the Garden Club of North Carolina and the North Carolina Botanical Garden and contains 400 color photographs of very good quality. A number of trees and shrubs are included in addition to the herbaceous wildflowers. The text is rather minimal but for those buffs who wish to dive more deeply into anything mentioned, there is a code number which refers to the *Manual of the Vascular Flora of the Carolinas* by A. E. Radford, H. E. Ahles and C. Ritchie Bell, also published by the University of North Carolina Press. If a good photo is worth a thousand words, this book far exceeds what one would expect from its 205 pages. Among the plants illustrated are *Shortia galacifolia, Monotropa uniflora, Clethra acuminata, Viola villosa, Stewartia malacodendron, Cleistes divaricata* and *Trillium discolor.*

Wildflowers of Alabama and Adjoining States is a somewhat similar volume though there is not much overlapping in the species discussed. Generally the reproduction of the photos is not of the same quality as in the above volume but the text more than makes up for the deficit. Included in the discussion are comments on such seldom mentioned species as *Uvularia floridana, Erythronium umbilicatum,* and *Aletris aurea.* Photos include *Trillium decumbens, Trillium stamineum, Erythronium rostratum* and a number of others which I have not seen illustrated elsewhere. Between the North Carolina and the Alabama floras there are illustrated fourteen species of trilliums, many of which are seldom mentioned much less illustrated. This is but a small example of the merit of these books.

Somewhat similar to the above two books is the *Wildflowers of Louisiana and Adjoining States.*

Edith Dusek, Graham, Wash.

THE GENUS SEDUM ---- Its Life and Habits

PART 4: THE MEXICANS

RONALD EVANS
London, England

If the botanists are to be relied upon Mexico is even richer in sedums than Yunnan and W. China, those described by Froederstroem plus Kew Index additions to 1970 totalling over ninety species. However, since only about half are in cultivation and the rest have been described from herbarium specimens this count has to be treated with some reservation.

In Mexico the authenticated species reach their farthest limit south, apart from the few isolated African ones; conditions are obviously favorable. Mexico is essentially a sub-tropical plateau averaging about 6,500 feet with mountain ranges rising to 18,000 feet, an overall quite adequate annual precipitation ranging from 30 inches to 60 inches (sedums are not desert plants) and a limestone foundation heavily overlaid with volcanic material. Temperature ranges are difficult to generalise about; at such altitudes in these latitudes diurnal fluctuations tend to be much greater than annual ones. There can be night frosts all the year around on the mountain tops, and the world's hottest temperature (136°F.) is reached around Tampico, but on average it does not fall much below 50°F.

Though all fibrous rooted and perennial, the sedums of Mexico exhibit a fascinating diversity of habit, of growth and — as with the rest of the genus — are sometimes not easy to recognise as being succulent plants. They can be broadly classified into "tree sedums" (including those stout and openly shrubby in growth), the massive-leaved species, and the thin-leaved species.

The massive-leaved species are those more commonly in cultivation. They have an opulent look and their foliage is colorful. Few, however, can put up with the winters in "temperate" climates. They prefer the open air during summer, but in winter must seek refuge under glass. One of the most popular, *S. morganianum*, is, oddly enough, found so far only in cultivation in Mexico itself. This is the Burro or Donkey's Tail, with long pendulous stems imbricated with pale glaucous green leaves. It can be grown properly only in a hanging basket; pots produce poor specimens. A basket can produce an abundance of fat tails up to two feet long, which have a sort of comfortably well-fed look.

Another is *S. rubrotinctum*, an upright shrubby plant bearing towards the stem-tips large, almost ovoid leaves which readily fall and root. This has its own built-in soil humidity tester. In dry soil the leaves quickly turn bright scarlet. In moist soil they revert to a rich glossy green again. At the half-way stage the effect is most colorful. The plant also flowers fairly readily, which *S. morganianum* does not.

S. stahlii, a prostrate species, looks rather like the product of a "Malteser" factory. Its large, egg-shaped, opposite,

deep reddish-brown leaves seldom take on more than a dark greenish shade. This also has yellow flowers in mid-summer. *S. adolphi* and *S. nussbaumerianum*, bearing terminal rosettes of thick, fleshy, almost elliptical leaves on short stout stems, are closely related; but the latter is much the more ornamental. The leaves of *S. adolphi* are a dull green strongly flushed red, and it seems a shy flowerer. *S. nussbaumerianum* has banana yellow leaves, and a pan of this makes a striking contrast with pans of other glaucous — and rich-green leaved species. In fact, these massive-leaved species generally lend themselves well to foliage contrast effects. *S. nussbaumerianum* also has a radiant head of white flowers on long pink pedicels. It is a pity that the suffix *-erianum* was added to the 'nut-tree'; it results in a clumsy name for a rather elegant plant.

When *S. pachyphyllum* comes into flower it wears on its cluster of glaucous-green leaves a tiara of amber and rubies. Its leaves are thick, as the name implies, and clavate in shape. It is a stout and vigorous grower, normally forming a dense mass of ascending and much-branched stems; but if allowed to get "drawn up" it looks elongate and anaemic.

With the same clavate, light glaucous-green leaves as *S. pachyphyllum*, but of more erect and open growth is *S. allantoides*. This has a terminal and rather dainty inflorescence of greenish-white flowers. *S. treleasii* is another of this glaucous leaved group, very erect and stout in growth, less branched, and with oblong leaves. The inflorescence is lateral and yellow-flowered. In bloom the plant could resemble a candle, with the flame coming out of the side.

There is a plant called "*weinbergii*", which is rather on the edge of — and has thus suffered the indignity of being alternately thrust out of and then drawn into — the elect family of sedums. It is often seen in cultivation, is an attractive species, and has most of the attributes of a sedum; and so I align myself with those who welcome it in. Let it henceforth be known as *S. weinbergii*. It will adorn the genus. The flat rosettes of large, fleshy, broad-ovate greyish-green leaves, margined with white, are borne at the tips of stout but slender ascending stems, branched and open in growth. The inflorescence (which is what most of the fuss is about) is unusual in being a long bifurcating peduncle with flowers distantly spaced. The flowers themselves are white, pink-tipped, with conspicuous orange carpels.

Clausen, whilst prospecting in Central Mexico, came upon a sedum in the Tiscalatengo Gorge which he later called "*S. clavatum*". This has turned out to be a really fine plant in cultivation. It is prostrate, with very stout stems, and closely packed flattish rosettes of fleshy, narrowly-clavate leaves, pale green-glaucous in color. It seems very free-flowering; the inflorescence being lateral, compact, and with clear white flowers with purple anthers. I think I like this plant because it grows and flowers well, is little trouble to cultivate, and seems quite satisfied to be where it is, instead of pining for some Nirvana more like Mexico.

The true "tree-sedums", with single stout boles, stoutly branching above, such as *S. frutescens* and *S. oxypetalum*, are interesting, but not much seen in cultivation. There is one, however, much to be recommended if it can be gotten — *S. retusum*. It grows about six inches tall, is compact, somewhat conical in shape, with clusters of spathulate fresh-green leaves at the branch-tips, and in mid-summer is cov-

ered with pinkish-white flowers.

Akin to these are *S. griseum*, a bushy white-flowered species, and the *S. praealtum* group. The members of this group are shrubby, with long slender fleshy stems, sinuous, and tipped with elliptic to oblanceolate, flattish, but fleshy glossy green leaves. The flowers are yellow. They include *SS. praealtum, dendroideum* and *confusum*. *S. praealtum* is fairly hardy, and has long been in cultivation under various names, sometimes in gardens and often on window ledges, in cottages and houses in the United Kingdom. It can become quite a large plant, two feet or more across and eighteen inches high. *S. confusum* is the hardiest, with lower tangled growth, and difficult to distinguish from *S. dendroideum*, (which is tender.)

Another group of species much resembling one another comprises *S. palmeri, S. compressum* and *S. obcordatum*. They come from the eastern side of Mexico, and have long ascending bare stems in open growth, tipped with flat rosettes of flat green- or blue-glaucous leaves. The inflorescence of *S. obcordatum* is terminal, and of the others lateral, and all have yellow flowers. *S. palmeri* is often seen on the benches at English shows, as its open heads of yellow flowers are quite dainty; but I find it the most diffident grower of the three. *S. compressum* is very similar and as floriferous, but more vigorous and — surprisingly, since it comes from Tamaulipas at about 1,000 feet — at least half-hardy. The leaves of *S. palmeri* are spathulate and those of *S. compressum* oblong in shape, whilst those of *S. obcordatum* are retuse at the tips. I came across *S. obcordatum* in a neglected greenhouse at Crathes Castle in Aberdeenshire. If only the plant could have told me how it found its way there.

Another favourite, at least in the south of England, is *S. bellum;* but this again is a bit of a problem to grow well. When the fancy takes it, it can produce magnificent large heads of white flowers with purple anthers. Next year it may sulk and do its best to expire. It is in fact a semi-evergreen. New leaf-buds arise each year (one hopes) from the base of the withering flowering stems, and grow on to flower the next year. The stems are arching, and have flat obovate glaucous-green leaves.

There are a number of these semi-evergreen species, which grow in various parts of Mexico. Some are quite vigorous. *S. greggii* is a quaint little plant, easy to propagate, and — since it drops rooting leaves abundantly — it will spread around quite freely. The leaves are tightly packed, small, orbicular, and light green. The young growth ascends like a church steeple. Then the flag-poles go up, lengthen, fall over with their own weight, become procumbent, and finally produce at the end small flags of yellow flowers.. The flowers are nothing to speak of, but the rather lime-green foliage looks refreshing.

S. alamosanum is another semi-evergreen. The first year's growth appears as little basal tufts, in colour and appearance much like a young *S. hispanicum*. Next year these stems lengthen and become decumbent, the leaves are flushed purple, and a small terminal inflorescence of a few silvery-white flowers is produced. At the same time the new growth arises as a hub in the centre of the cartwheel of flowering stems. It is a small plant which increases slowly but steadily, and is not too difficult to grow. I should think it might form an interesting addition to an indoor trough.

If you dipped some pipe-cleaners into

green dye and twisted them into a little bush you might win a prize for a specimen of *S. cupressoides*. This has very small, imbricate, bright green leaves, grows quite compactly, and in mid-summer is covered with bright yellow flowers. I have also seen this used as a trough garden plant, but the little bush would need to be clipped back occasionally. I have also seen it growing on a rockery, but would not expect it to survive many years outdoors. It gets rather brownish in winter, but soon breaks out again in spring.

S. potosinum, from St. Luis Potosi, is an attractive foliage plant. The slender, pink, ascending stems are densely clothed with narrow pale-green leaves, themselves often tinged pink, giving an overall apple-blossom effect. The plant is compact and about four to five inches tall. The inflorescence, from the top of the stem, is in fact lateral, though appearing terminal, and has white, red-keeled flowers.

A species which often appears on the show-benches in the United Kingdom — and wins awards — is *S. humifusum*, a carpeter as minute as *Raoulia australis*. The tiny, tight, green rosettes of *S. humifusum* are so closely packed together that they sometimes climb on top of each other. In late spring the carpet becomes covered with solitary, sessile, bright yellow flowers nearly one-half inch across. The rosettes seem to sit on the ground almost rootless, and can easily break off. They can then be pushed into the soil wherever a gap appears (which is seldom), to spread out and fill up the space. When a small pan is full one can start a larger pan by transferring small clumps and waiting for them to grow together. Part of the show competition seems to be, how large a full pan can you eventually get.

These, of course, are just a selection of the "Mexicans" in cultivation, of which I myself have about fifty — some still unidentified. One of the "mysteries" is a plant received under the name "*comixum*" — a name I have so far been unable to trace in any available reference. This is a very distinctive plant, with stout upright stems about six inches (or more) high, tipped with very fleshy ovate leaves, flat on the face and convex on the back, and of a markedly purplish color. It has always attracted attention. If any reader has come across this plant I should be grateful for any further information. It is not *S. craigii*, which has elliptical fleshy leaves, semi-circular in section, and of a much less pronounced purplish tinge.

If the definition of an "alpine" is a low flowering plant which grows at high altitudes, then most of the "Mexicans" can be called "alpines". They can be found up to 11,000 feet, "and that's as high as many alpine plants can fly". At such altitudes the very fleshy and sappy leaved species must be exposed at least to severe frosts at night, as the dasyphyllums are in the Atlas Mountains. And yet they need to be overwintered under cover in more temperate climates. This, to me, seems odd. Various suggestions have been advanced for their survival in their natural habitats. At high altitudes there may be pockets of warm air pushed up by the cold air descending into the valleys. The volcanic soil may absorb enough heat by day to warm the ground level air sufficiently during the night. The sugars (derived from starches) in solution in the relatively large quantity of liquid contained in the leaves may depress the freezing point thereof sufficiently to prevent actual freezing. Against this is the point that I have kept such succulent leaves in the 'fridge for a fortnight or more

in darkness, that they have come out frozen solid, and at once thawed out without any apparent damage, internally or otherwise. It may be that it is the stems which perish in prolonged frost, rather than the leaves, (which in many species readily drop and root — nature's safeguard?) and that the stems flag from root failure. The fibrous roots of these species do not penetrate far below the surface. A short period of frost, though severe, may not reach below the surface of volcanic soil strongly heated up during the day, and so not disturb the root system, whereas a prolonged, though less severe, frost over a long period of little or no sunshine may well do this, especially with a soil not so heat-absorbing. No doubt this question has already been satisfactorily resolved some place that I have not yet stumbled upon.

In conclusion, when an article on sedums was first mooted I doubted whether the subject could be contained within two parts and in the event it has extended to four. The subject itself is wide — in fact this genus is one of the largest of all — and it is easy to get tediously absorbed even in a narrow one. But in so many accounts of plant-hunting expeditions one may read lists of plants carefully described and accurately named which conclude with "and some sort of sedum"; and I am sure the sedum is distressed by this nonchalent dismissal of its right to participate in the general scheme of things. So, being, as I suppose, inclined to root for the underdog, I have tried to take an interest in its affairs. In this the sedum has been singularly uncooperative, and the more I attempt to acquaint myself with it the more I feel as if submerged in cold porridge.

Nevertheless it has done me one favor for which I must ever be grateful to it. It has brought me in touch with a host of new friends, to whom I acknowledge my indebtedness for much of the foregoing information.

This is the last of four articles on Sedum. The other three appear in Vol. 35 *pp.* 88, 136 *and* 183. — *Ed.*

THE SHOW BENCH

Annual Meeting 1978 — Plant Show

Class I: 3 pans of rock garden plants of distinct genera, in flower — 8 entries: 1st *Rhodohypoxis* 'Albrighton', *Erigeron aureus, Asperula suberosa* — Joel Spingarn; 2nd *Arisaema sikokiana, Trillium grandiflorum flore pleno, Dactylorhiza elatior* — Harold Epstein; 3rd *Berberis irwinii* 'Corallina Compacta', *Carduncellus pinnatus acaulis, Lithospermum oleifolium* — Frank Cabot.

Class II: 1 pan of rock garden plants in flower — 14 entries: 1st Alpine primula in variety — Kris Fenderson; 2nd *Ramonda myconii* — Howard Pfeifer; 3rd *Gentiana acaulis* — Howard Porter.

Class III: 1 pan rock garden plant, new, rare or difficult in cultivation — 10 entries: 1st *Primula nipponica* — H. Lincoln Foster; 2nd *Primula allionii* x *carniolica* — Fenderson; 3rd *Trillium sessile quadriform* — May Turk.

Class IV: 1 pan Saxifraga — 9 entries: 1st *Saxifraga cebennensis* — Porter; 2nd *Saxifraga* hybrid seedling — Paul Palomino; 3rd *Saxifraga cymbalaria* — Fran Lubera.

Class V: 1 pan Primula, species or hybrid, in flower — 14 entries: 1st *Primula* 'Gold Laced' — Palomino; 2nd *Primula darialica* — Lubera; 3rd *Primula marginata* 'Amethyst' — Foster.

Class VI: 1 pan Primulaceae — 5 entries: 1st *Dodecatheon* species — Lubera; 2nd *Androsace imbricata* — Bill Brown; 3rd *Androsace sempervivoides* — Foster.

Class VII: 1 pan bulbous or rhizomatous plant suitable for the rock garden — 10 entries: 1st *Fritillaria acmopetala* — Ron Beckwith; 2nd *Rhodohypoxis* sp. — Palomino; 3rd *Calochortus uniflorus* — Cabot.

Class VIII: 3 pans Crassulaceae, distinct species — 8 entries: 1st *Sempervivum arachnoides* 'Tomentosa', *Sedum spathulifolium* 'Rosea', *Rosularia pallida* — Lubera; 2nd *Sedum spathulifolium* v. *purpureum*, *Sedum laxum* 'Mina', *Sedum spathulifolium* 'Capa Blanca' — Palomino; 3rd *Sempervivum arachnoides* x *rubicundum*, *Sempervivum* 'Crested', *Sedum spathulifolium* v. *purpureum* — Michael Dodge.

Class IX: 1 pan bun, cushion, polster — 7 entries: 1st *Asperula nitida puberula* — Porter; 2nd *Androsace carnea* x *pyrenaica* — Palomino; 3rd *Draba mollisima* — Paul and Marg Halladin.

Class X: 1 pan Lewisia — 8 entries: 1st *Lewisia cotyledon* — Foster; 2nd *Lewisia pygmaea* — Herbert Kaufman; 3rd *Lewisia tweedyi* — Cabot.

Class XI: 1 pan hardy fern — 12 entries: 1st *Adiantum pedatum* var. *aleuticum* — Paul and Marg Halladin; 2nd *Pellaea truncata* — Panayoti Callas and T. Paul Maslin; 3rd *Phyllitis scolopendrium* — Gladys Zimmerman.

Class XII: 3 pans of plants native to the U.S., distinct genera — 8 entries: 1st *Trillium grandiflorum flore pleno*, *Anemonella thalictroides*, *Phlox subulata* Sneewitchen' — Lubera; 2nd *Dodecatheon amethystinum*, *Anemonella thalictroides* 'double white', *Trollius laxus* — Foster; 3rd *Hypoxis hirsuta*, *Houstonia caerulea*, *Erigeron* sp. — E. LeGeyt Bailey.

Class XIII: 1 pan rock garden plant grown from seed — 7 entries: 1st *Mimulus* sp. C W 5257 Andes — Bailey; 2nd *Phyteuma comosum* — Palomino; 3rd *Aquilegia* sp. — Buffy Parker.

Class XIV: 1 pan silver foliage plant — 10 entries: 1st *Raoulia hookeri* — Cabot; 2nd *Primula marginata* — Spingarn; 3rd *Primula farinosa* — Lubera.

Class XV: 1 pan Ericaceae — 11 entries: 1st *Cassiope lycopodioides* — Palomino; 2nd *Loiseleuria procumbens* — Bailey; 3rd *Rhododendron radicans* — Halladin.

Class XVI: 1 pan dwarf shrub other than Ericaceae — 10 entries: 1st *Daphne cneorum pygmaea* — Cabot; 2nd *Polygala vayredae* — Foster; 3rd *Acer palmatum coraliformis* — Spingarn.

Class XVII: 1 pan dwarf conifer — 8 entries: 1st *Tsuga heterophylla* 'Iron Springs' — Spingarn; 2nd (tied) *Chamaecyparis obtusa* 'Hage' — Anita Kistler; *Chamaecyparis obtusa flabelliformis* — Foster; 3rd *Pinus strobus* 'Witch's Broom' — Lubera.

Class XVIII: Container of 3 or more plants of distinct genera arranged for effect — 9 entries: 1st — Kistler; 2nd — Foster; 3rd — Lubera.

Special Awards were as follows:

First highest aggregate score — Fran Lubera

Second highest aggregate score — H. Lincoln Foster

Third highest aggregate score — Paul Palomino

Best in Show: Planter Class 18 — Anita Kistler

Connecticut Horticultural Society Award: Class 16 — Frank Cabot

Delaware Valley Chapter Award: Class 1 — Joel Spingarn

H. L. Foster Award, presented by the Connecticut Chapter: Class 12 — Fran Lubera

Pennsylvania Horticultural Silver Certificate: Class 13 — E. LeGeyt Bailey

Fran Lubera — Show Chairman

Seed Exchange

Don't forget! The deadline for sending in seeds for the Seed Exchange is October 31. Clean properly. Label correctly. Look up the name and spell it right. Send to Frances Roberson, 1539 NE 103rd Street, Seattle, Wash. 98125.

ROCK GARDENING IN THE SOUTH
Part I

ELIZABETH LAWRENCE
Charlotte, N. C.

Concerning the Gardener

All rock gardeners are snobs. I say this without fear of offending, for no one will take it to himself. "How right you are," he will say. "I have often noticed it in one or another, and there are times when I think you are something of a snob yourself."

Some snobbery is to be expected, for all are agreed that the cultivation of rock plants is the highest form of the art of gardening; and rock gardeners are essentially individualists, each with his specialty, his own dear delight. That every gardener should be a specialist is very right and proper, and that the specialist should hold himself a little above the common flower grower is understandable, but the specialist is perilously near the expert, and the expert is apt to put skill above enjoyment. Gardening ceases to be an art when the gardener admits that the "choicest subjects are generally the ones presenting the most difficulties, and are therefore the ones most sought for."

But gardening *is* an art and the rock garden, at least according to rock gardeners, is its purest form. Here the plants are grown for themselves alone, not for exhibition, not for cutting, and not primarily for display. All gardeners become rock gardeners if they garden long enough. They may not mean to, or even desire it, but it is natural to one long familiar with plants to single out certain individuals too newly come from wood or waterside to accommodate themselves to the perennial border, and to put them where stones can protect their flowers from the weather, and keep their roots cool and moist. One by one special corners are singled out for special treasures, until they become so numerous that they must be drawn together. In this way the rock garden is created, and for this reason it is the most personal of all forms of horticulture.

A delight in the individual plant, a desire for the rare and choice and a love of the miniature are traits common to all lovers of rock plants. From long intimacy with the earth and all that springs from it they become aware of the way a stem curls or a leaf unfolds. To those whose thoughts are "one with wind and leaf and mist," beauty has an elusive quality that depends more upon the texture of the petal than the size of the bloom. They take pleasure in the frail, the perishable and the uncertain flower, "seldom coming in the long year set." But above all else they love these plants because they are small.

A passion for the minute and perfect, and a desire to possess the smallest thing of its kind are not traits confined to gardeners. Do you remember how the old king in the fairy tale promised his kingdom to the son who could bring him a dog small enough to lie in a walnut shell? None of the tiny creatures they produced was able to do so. Always a paw or a tail, or at least an ear protruded. At last the youngest son handed his father a hazel

nut, begging him to crack it very gently. When this was done, a beautiful little snow white dog jumped out and wagged his tail and licked the king's hand, and barked at the other little beasts in the most graceful manner. The delight of the king and the whole court was indescribable, and the king told his people to throw all of the other little dogs into the sea.

The old king reminds me of the rock gardeners who search for years for a tiny form of a forest tree, who desire a rose small enough for a thimble vase, or a primrose smaller than a buttercup, or a four-inch thalictrum with flowers like fine mist, or an iris an inch high, or a sedum that is less than an inch. The rock garden is a world of dwarfs and creepers and trailers, frequently with names that indicate their size. *Nanus*, *pumilus* and *pygmaeus* mean dwarf; *minus* and *minimus*, smaller and smallest; *parvus*, *parvulus* and *parvissimus*, small, very small, and smallest; *minutus* means minute, and *minutissimus* means most minute. Then there is the unflattering *pusilla* for the small and insignificant; and *exiguus*, small and poor, while *humilis* means low-growing; *demissus*, low and weak; *humifusus*, sprawling, and *procumbens*, lying on the ground. The creepers have names like *repens*, *reptans* and *serpens*. When these terms, denoting a low or small form of a plant, are added to the generic and a specific name, and perhaps to another varietal name describing the color or form of the flower, it sometimes seems that the smaller the flower the longer and more complicated the name. A tiny primrose is *Primula veris lilacina flore-plena*; an inch high stonecrop is *Sedum dasyphylum glanduliferum;* while a houseleek that does not grow above a quarter of an inch is *Sempervivum arachnoideum cottettii*. They remind me of the little boy in the limerick,

Infinitesimal James
Had nine unpronounceable names.
He wrote them all down
With a terrible frown,
And then threw them all in the flames.

Concerning the Garden

Years ago, when I first thought of making a rock garden in North Carolina, I felt as if I were left all alone to face the rocks. Everything that was written seemed to be written for the North. Nothing was written for me. For rock gardening has been so long associated with the culture of alpines that it is hard to learn to think of it in terms of regional material. Southerners have been slow to resign themselves to the fact that alpines cannot be depended upon in a section where the winters are snowless or nearly so, summer nights hot and humid, and the growing season a long seven months instead of the bare three or four that plants from the mountain tops are accustomed to, and require. Only after years of disappointment and failure, are we now learning to grow material adapted to our region. "Time was," a Virginia gardener writes, "when I felt that no plant that grew below the timber line held any interest, and that only seeds grown by Monsieur Correvon were worth planting; but now with my third rock garden in its fourth year, I have learned that it is futile to weep over a blighted Edelweis, when so many lovelier plants rejoice in our summer heat and grow naturally close to our native stone."

The growing of alpines is suited neither to the habitat nor the temperament of the Southerner, who is not given to fussing over flowers. One of the most endearing traits of your true alpine gardener is his tender solicitude

for the comfort of his plants. "The alpine primrose," Anderson McCulley warns its lovers, "is better watered from beneath, but it will get along nicely if the hose or watering can is laid on the soil surface. When watering nearby neighbors a jar can be inverted over the crown of the plant to protect it. And when the temperature soars to the nineties, I usually stand a rock to the south of it for temporary shade." When the temperature soars to the nineties, few Southerners will be thinking about the alpine primrose. They will be seeking shade for themselves.

This is not to say that alpines cannot be grown south of Washington. If I made any such statement good gardeners would rise up on all sides to contradict me. "I do not guarantee that you can grow a mossy saxifrage in full sun in Virginia or Missouri, or *Primula mistassinica* on pure sand in Ohio," Mr. Mitchell of Barre, Vermont remarked in the introduction to his catalogue of rock plants for New England, "but these difficult plants are being grown by skillful gardeners in all of these states." Which is all very true. I suppose that you can grow any plant anywhere if you have determination. But I am not writing for determined gardeners. It is for gardeners who would rather spend their energies on finding the plants suited to their region, than in devising ways to grow those that are not suited to it.

If alpines will not grow in the milder sections of this country, what will? I asked myself this question long ago, and it is only partly answered. It cannot be answered in a word, it cannot be answered by one gardener, or even by one generation. It is the pleasure of each gardener to ask it anew, and always there will be a new answer. It is seeking that makes gardening, particularly rock gardening, an art that never grows old. Rock plants for the South must be sought in country gardens, they must be gathered from the wild, and imported from foreign countries, and culled one by one from the lists of dealers in rare bulbs. They must be collected one by one, and they need not belong to the traditional types that we think of as saxatile. I would not even call them rock plants if there were any other term to cover the little bulbs, the perennials that creep and crawl, and the delightful low-growing shrubs that are, or should be, characteristic of the gardens of the South. "Rock gardening among Southern gardeners must be an independent art, developed to meet peculiar climatic conditions," Violet Walker once wrote. "This opens up an enormous field of rarely beautiful material which can give to the Southern rock garden an individuality of its own."

Dear Voilet. Her pioneering spirit found an outlet not only in her provocative articles, but also in putting her theories to the test in Piedmont, Virginia. From her teeming rock garden in Woodberry Forest came flowers that now bloom in mine, and through her endless enthusiasm and generosity I learned to search out and grow the plants and bulbs that were dismissed as unsuited to gardens because they are not hardy in the North.

I am writing for the South in general, but primarily for gardens in Zone 8 of the Plant Hardiness Map of the Agricultural Research Service, U.S. D.A., where the average annual minimum temperatures range from 10° to 20°F. In Charlotte, N.C., we occasionally have temperatures nearer zero and in 1940 there was a short period of sub-zero weather. Roughly speaking Zone 8 begins in Virginia along the shores of Chesapeake Bay and winds in a narrow strip along the coast

through North and South Carolina, widening through Georgia and the Gulf States, then narrowing again to end in Southwest Texas. It starts again in Arizona on the Mexican border and meanders in a thin stream up the West Coast all the way to British Columbia.

The main thing that these areas have in common is that the plants best suited to them are those that withstand more heat than cold; but temperature is not the only factor that determines where a plant will grow, although it is the one that you can do least about. Exposure, soil, and the amount of water a plant gets can be controlled to some extent, but not much can be done about the heat of the sun or the furious winter rages.

Gardeners in the three most southerly zones also have in common their short and mild (or comparatively mild) winters, and their long hot summers, but they differ in the amount of moisture that comes to them. "A general statement which I believe is true," Claude Barr once wrote me, "is that all east of the eighteen hundred foot level where, roughly, the Great Plains begin, is moist and points west are dry. This notwithstanding that there is much talk of heat and drought all of the way to the East Coast. 'Hot' on the Plains means not a humid or smothering heat, but a dry, almost burning, dwarfing atmosphere. Sometimes a light shower doesn't create any humidity. Sometimes refreshing raindrops fall upon your hand while the air about your hand is hot and dry. In July (and rains mostly don't occur in July) the humidity following a good rain doesn't last thirty hours. The only relief is in the fairly cool nights. Most summers have no hot nights as in the corn belt. But these nights are sometimes so dry for weeks on end that there is no dew."

Here in the corn belt the air is heavy with moisture even when the ground is parched, and we have heavy dews when there has been no rain for weeks on end.

In so vast a region as the southern half of the United States there are, of course, great differences in the plant material suited to various sections. In the mountains a greater number of alpines can be grown than at lower elevations, even though in midsummer G. Latta Clement's gardens, at Niknar Nursery in Biltmore, N.C. look as parched as mine. When we came to Charlotte, which is Piedmont, from Raleigh, which is at the edge of the Coastal Plain, I was amazed at the number of plants I could grow that I had not succeeded with before. This is partly because the soil is better in the new garden, and because things grow better under pines than under oaks, though the slight change in elevation does make some difference. There is even a difference in gardens in the same neighborhood, but in general the plants in my garden will grow wherever the winters are short and mild and the summers long and hot.

As Dr. Orland White, former Director of Blandy Experimental Farm, Boyce, Va., pointed out, "There are plenty of opportunities for rock gardening in this region . . . Andrew Jackson's country is naturally a superb Sedumry. In late April and early May, *Sedum pulchellum* in pink perfection reminds one of Europe's heather . . . efforts should be made to preserve the natural rock gardens, the Peaks of Ottar, Crabtree Falls, Catesby's Mountain and Stone Mountain." Even where there is no natural stone in the neighborhood rocks can sometimes be salvaged from an old house or a chimney that is being torn down, or curbstones and cobbles from a street that is being

paved. And these need not be used in the conventional way, for the affinity between rocks and plants applies to walls and steps and paved terraces, as well as to ravines and mountain-sides.

In the South we must be allowed some latitude in design as well as in choice of plants. Even where there is no stone at all in the neighborhood the gardener need not forego the pleasure of growing tiny bulbs and dwarf shrubs, creepers and trailers and tufted perennials that luxuriate in the long sweet nights of summer, or come to life on winter days when the air is as soft as spring.

"We have not many hills about here," Mr. Wyndam Hayward wrote from Winter Park, "so the Florida rock garden is pretty likely to be on the level and with *no* rocks, which is pretty unorthodox; although I believe at one of the meetings of the American Rock Garden Society they thrashed it all out, and decided that it is all right to rock garden without rocks!"

In Louisiana Mrs. U. B. Evans grows rock plants on a "shady slope of a cypress slough, miles from any rocks," and from northern Missouri Mrs. Fordyce wrote, "I have always wanted a rocky hillside for a garden, but here I sit on a level prairie farm, my garden as flat as a table top. Have to dig drain ditches, raise my beds, do all the work myself; yet I have hundreds of plants and get away with the raising of rock plants very nicely. Of course I have to fix my soil to their liking, and give them the advantage of sun or shade where possible."

When it comes to design there are as many opinions as there are gardeners, but the majority are with Reginald Farrer; "The rules of the garden itself are the rules of art: the rules of the rock garden are the more awful rules of nature."

Dr. Orland White said it should "so fit the world in which it exists that any grocery boy will tear through it without thinking it other than a stony hillside," but unless it is part of a natural landscape, as his garden at Blandy was, it would be difficult — if not impossible — to take him literally. It seems to me that the awful rules of nature can be followed even in a small back yard. It is enough that each mossy stone, with plants that cling to it, look as if it were inevitable; that it should be where it is and nowhere else. It is impossible to make a rock garden from a preconceived plan, or to do it all at one time. It must be created by fitting the rocks to the ground as a costume designer molds the cloth to the figure; and it is more natural for it to come into being as the plants mature, than to emerge all at one time in its final form.

This is the first of a series of articles about rock gardening in the South by Miss Lawrence.

Woe is me! The experts who say that the soil mix in a Nearing Frame should be changed yearly are *so right.* If left in the frame too long the mixture gets mildewed and moldy in the closed atmosphere and northern light.

D. DeV., Easton, Conn.

TWO TOUGH NATIVES FROM ARID REGIONS

MRS. P. H. GOURLEY
Umatilla, Oregon

Gardeners beset by drought and facing water shortage and water rationing could consider experimenting with natives of arid regions. Such plants might well prove a boon to the rock gardener. Many plants make their home in areas of low humidity, little precipitation, hot and cold winds, extremes of temperature and sandy and stony soil. Such are the conditions in the Columbia River region east of the Cascade Mountains.

Salvia dorrii is a small shrub well deserving a trial in the rock garden. It seems also to bear the name *Salvia carnosa*. McMinn's *An Illustrated Manual of California Shrubs* states that typical *Salvia carnosa* is found from Walla Walla to Spokane and on the stony banks of the Klamath River as well as in other states. Peck's *A Manual of the Higher Plants of Oregon* lists only one shrubby salvia, *S. dorrii*, but gives *Salvia carnosa* as a synonym. In *Wildflowers of Sagebrush Country* by Taylor and Valum there are illustrations, one of which, on page 91, is an excellent likeness of the plant in full bloom though it gives very little idea of the handsome shrub itself.

This salvia has a wide distribution throughout the western states, often being the dominating plant, which should indicate its adaptability. It is less than three feet in height. The plentiful leaves, with entire margins and not wrinkled, are about an inch long, less in width, gray-green and hairy. The bushy plant is very aromatic, but with an entirely different smell from sage brush *(Artemisia)*.

The flowers appear in whorls toward the end of the stems and are accompanied by purplish bracts, which give the color leading to the plant's common name, Purple Sage. The flowers themselves are blue. It is very hardy, having withstood —20°F. with no snow cover. In fact it is often found on road embankments where snow does not collect, even if there is some on the neighboring fields.

I have grown *Salvia dorrii* successfully in my garden. The first plants I extracted from a rather stony site, wrapped them in a plastic bag without soil, and planted them immediately upon arriving home. They took hold quickly; when I planted them they were single-stemmed, about six inches tall and with roots about the same length. By fall they were about ten inches tall and very bushy. They bloomed the next spring. The winter and spring were very dry and they received no water until about the middle of April. I do water my desert plants to help them maintain that "alive" look and ensure a long blooming period. The soil here is virtually sand; there is little danger of over-watering.

I have since acquired more plants and find they reestablish readily here in the Umatilla area. Many grow on private property but the owners are usually willing to share a few small plants. Collecting natives from public land may soon be impossible without a permit.

My salvias are not yet mature enough for me to be positive that they will retain the same dimensions they have in their natural dry environment; time will tell. My experience with seed is

zero, but cuttings in summer root quite rapidly. The youngsters, however, are less hardy than the mature plants their first winter.

Another native of our area worthy of attention is *Sphaeralcea monroana*. Unlike *Salvia dorrii*, which is seldom mentioned in rock garden literature, *S. monroana* is consistently included. It is very widely distributed in nature in arid regions. I have seen it in abundance by the roadside on the highway from Toppenish to Satus Pass, near Prosser, and on the flats near the Columbia River between Pasco and Wallula in Washington. In Oregon I have found it near Umatilla, west of Boardman, and near Ione. I do not hesitate to identify these locations specifically in the fear that hordes of people will rush in to dig the plant up for I believe it renews itself abundantly from seed; there are always more seedlings around the older plants than can survive to maturity. This is especially true where pastures and such have been flood-irrigated; the seedlings come up thickly on the banks of the irrigaton ditches from whence they can easily be extracted and moved. They also come up in the dirt roads on farms where there always seem to be small plants just getting their first true leaves. They do not reproduce this lavishly where they grow in rocky places without moisture, however. Large plants should not be moved as their roots go deep but young plants present no problem.

Sphaeralcea munroana is generally described as floppy, or even sprawling, but as it grows here, both wild and "tame", it makes an attractive mound, producing innumerable wand-like stems, which are upright in the center though they may touch the ground on the outer circumference of the plant. Reference is also made to its growing among rocks and in clay, but my adopted plants have flourished in light soil, with or without rocks. I have grown fine, shapely, floriferous plants in extremely light sandy soil.

Scarlet Globemallow, this sphaeralcea's common name, indicates both its family and its flower color. Many American books of wildflowers and rock gardens have somewhat sketchy descriptions. The stems and lobed leaves are almost white in hot dry weather but gray-green at other times. The inch-wide "mallow" flowers are a lovely apricot-red or salmon-orange, borne abundantly in the leaf axils and in terminal spikes. It blooms almost continuously; as the first stems finish blooming and go to seed, new stems spring from the crown to blossom just as lavishly if the plants receive some water. This is one native of our arid region that accepts summer watering although it normally endures severe drought. I have had fine results by giving this plant the same treatment as I give annual phlox. They do not get watered artificially in winter, however, though despite some rain and snow, the soil is often dust-dry, with cold winds and low temperatures.

Although there seem to be numerous seedlings in this globemallow's natural habitat, I have never succeeded in growing them in a flat; the probable reason may be too much water. However, a few youngsters have appeared from seed scattered among the plants in the garden and these may be easily moved to other spots. *S. munroana* is rather shrubby, leaves and flowers reappearing on old stems, but I generally cut them back to the ground because there would otherwise be an over abundance of older, woody growth.

This plant does not like shade, any shade. Shade, rich soil, or even much watering will produce a rank, soft growth, which may have led to the

conclusion that *S. munroana* has a sprawly nature; hard conditions produce a graceful, symetrical mound of lovely blossoms. *Sphaeralcea munroana* and its kin deserve a spotlight in the summer rock garden.

• • • *of Cabbages and Kings* • • •

How important are the seed exchanges?

Vitally important. It is our own seed exchange and those of our sister societies that mainly furnish the gardens of which we are so proud. Without them, particularly in the United States, we would be reduced to growing only those few, fairly commonplace, easily handled staples available at the corner nursery. In fact it was mainly for this reason that the ARGS was founded: to disseminate the rarer rock garden plants.

To disseminate: to scatter abroad as in the sowing of seed. And this is precisely what happens. Though only about one third of our membership requests seeds from our Seed Exchange, it is their sowing and growing that supplies plants not only for their own gardens, but stocks the tables of our seedling sales, plant sales, and swaps. And one need only attend *one* of these affairs to know how avidly the other two-thirds of our membership depends on such sales for their plants. And all this dissemination results from the Seed Exchange, a dedicated group of volunteers who gather, sort, list, package and ship out the harvest.

Fall is the traditional season of harvest, when the riches of summer growth, blossoming and fruiting are garnered and stored in barn and crib, rootcellar and pantry. And it is also the season when the Seed Exchange goes into high gear. But for those members who supply the seed without which the Seed Exchange could not exist, the harvest starts much earlier, sometimes as early as late May. All summer these patient gatherers circle the garden weekly picking the pods as they ripen. Some search the woodlands and high mountain meadows and scramble up cliffs. Here, paper bags in hand, they crouch crabbed over the turf in hot sun and in rain, slapping the while at mosquitoes, to glean a few precious seeds of the rare wildlings we treasure in our gardens.

Those truly dedicated ones (may they be thrice blessed) check also in the literature, in so far as they are able, to make sure they have correctly identified the plants from which they collect the seed, be they garden grown or found in the wild. *Their* seed will not disappoint the recipient with *Gentiana decumbens* in lieu of the *Gentiana scabra* he hoped to receive.

And then, the harvest gathered in, each kind in its own carefully labeled bag, the hours of pod cracking begin and the sifting and sorting of seed from chaff goes on and on into the night until the hard-gained pinches of living grains are safetly sealed and labeled and sent off with a prayer to the Seed Exchange Chairman.

These are the people to thank, these few, a mere fifteen percent of the membership, who are willing to give days of patient, tedious work so that we may fill our gardens with rare and beautiful plants from all over the temperate world.

Blessed are the seed gatherers; may they dwell in the Gardens of Paradise forever.

Deer Problems, Anyone?

Jim Cross of Cutchogue, L.I., N.Y. sends in the following note on how (perhaps) to discourage some of the varmints that eat our plants:

"I recently learned of a repellent method for deer (rabbits and mice), which might be worth trying. It is certainly a much, much more economic approach than any we have used here up to the present time. Moreover, it would appear to be a harmless, riskless procedure. It comes out of several years of work by an exceptionally practical fellow, Dr. Frank Gouin of the University of Maryland. He uses:

100 gals. water
2 qts. of "Vaporguard" as a sticker
40 oz. Louisiana Hot Sauce!!

"I just bought a gallon of Trappy's Indi-Pep Pepper Sauce which is supposed to be the equivalent of the recommended item (from the local pub). I will let you know what takes place. At worst it will be one of the few pesticides which permit use in the kitchen for any leftovers."

I assume kitchen testing will take place without the addition of the "Vaporguard." I think this recipe would be strictly for ornamentals; it might prove a bit too flavorsome on the salad greens. We pass this on without proper testing either by Jim or ourselves in the thought that some of our members, who suffer as we do from the depredations of varmints, might like to try it and let us know the results.

For those of you with only a few plants not a whole nursery to protect, the recipe could be reduced to 1 tablespoon hot sauce (Tabasco Sauce would do nicely) to 1 gallon of water and 2 tablespoons of Wilt-Pruf or Vaporguard. The temperature should be above 40°F. at the time of spraying. Spraying the mixture on the trunks of shrubs and young trees is also supposed to prevent debarking by rodents and rabbits.

Another method to prevent deer from dining on shrubs reported to be successful at the Cary Arboretum in Millbrook, N.Y., which is infested with Bambi and his relatives, is to decorate your shrubbery with balls of human hair. (I have already made arrangements with Sue's Clip Shop and Margaret's House of Charm to save all their floor sweepings.) This is rolled into balls about the size of a baseball and put in bags made of plastic mesh (onion bags or plastic shading cloth.) Bob Hebb of the Cary Arboretum says you should hang about three balls on each shrub and that these will prevent the deer from nibbling that shrub all winter though they may denude the ones next to it. They plan at Cary to leave these balls on all summer and on into next fall to see how long they keep their repellent (to a deer) odor.

Unfortunately we received these various recipes too late last winter to try them out and the deer had already come down off the mountain and reduced our yews, laurel, azaleas and small leaved rhododendrons to ragged leafless stubs. Even the carpets of Bearberry and creeping juniper were moth (deer)-eaten by spring as the starving brutes had pawed down through the drifts to get at them. They even pulled up Linc's treasured *Shortia uniflora* and left its remnants scattered on the snow.

The previous winter we had hung creosote smeared burlap rags from posts scattered throughout the garden and it seemed to work — no deer.

This past winter we did the same but the creatures merely pushed the smelly rags out of their way and continued chomping unperturbed. We therefore assume that it was the heavy acorn crop in the forest that stayed the deer's appetites, not the creosoted rags festooning our landscape. Last year, no acorns, hungry deer. This year . . .?

Overseas Membership

James R. Le Comte, New Zealand Representative on the Committee of International Relations, sends in the following:

In the Secretary's Report (Bulletin Board, Summer, 1977) much was made of the total of 135 members in Japan and how that country ranked first in membership outside the U.S.A., having surpassed England with its 125 members. This is no doubt impressive but is based entirely on sheer weight of numbers. If comparisons must be made, would it not be far better to calculate membership on a per capita basis?

New Zealand, with only 3 million population, has 59 members and that must be the highest percentage of all. New Zealanders are a race of gardeners, as overseas visitors will have noticed, and there is an ever increasing upsurge of interest in the growing of miniature plants so that, with a little promotion, it should not be too difficult to at least double the membership.

We treasure all our overseas and Canadian and Central and South American members. Their contributions to the pages of the Bulletin and to the Seed Exchange, and through personal contact, whether by letter, plant exchange, or as friendly hosts to our more peripatetic U.S. members, adds a considerable dimension to the ARGS. We would be the poorer without them.

Query to City Gardeners

Some of you must do your rock gardening in the city (at least you have city addresses) and it has occurred to us that an article on rock garden plants that will grow in a city garden might be of interest to some of our readers similarly situated. We'd be happy to get brief notes on rock garden plants that do in city gardens (big cities, not suburbs) and what, if any, special cultural practices are necessary to keep them happy.

DISPOSING OF OLD BULLETINS?

The Society's reserve stock of back Numbers is seriously depleted or exhausted in the following. These are URGENTLY NEEDED to keep a supply available for Members who seek to build up their own libraries. If you have no further use for yours, others do. Many thanks to past donors; many more are needed to meet demands.

Vols. 1-10, inclusive — any and all Numbers
Vol. 11, No. 3
Vol. 12, Nos. 2, 3 & 4
Vol. 13, Nos. 1 & 2
Vol. 14, No. 1
Vol. 15, Nos. 1, 2 & 4
Vol. 16, all 4 Nos.
Vol. 17, all 4 Nos.
Vol. 18, Nos. 1, 3 & 4
Vol. 19, Nos. 2 & 3
Vol. 20, Nos. 1, 3 & 4
Vol. 21, Nos. 1, 2 & 4
Vol. 22, Nos. 1 & 2
Vol. 24, Nos. 1
Vol. 23, No. 3
Vol. 25, Nos. 2, 3
Vol. 27, No. 3
Vol. 28, No. 3
Vol. 29, No. 3
Vol. 31, Nos. 1
Vol. 32, No. 2

Please send to BUSINESS MANAGER, ARGS, 1421 Ship Rd., West Chester, Pa. 19380, who will also entertain offers for extensive "runs". Postage will be refunded.

WE SURE DO HAVE . . .

Hortus III, Hillier, Bacon, Leach, Rehder, Hartmann & Kester, Jaynes, Wyman, Hoshizaki, Harrison, Bloom, Pirone, Westcott, Symonds, Dirr, and of course, the Klaber VIOLETS

with literally hundreds of other New Books.

If you'd like to receive our Catalog Lists and our mailings for a year, send us $1.00.
(We'll include a Dollar-Off coupon!)

If you missed us at the Convention, don't worry . .. we ship!

HHH HORTICULTURAL
68 Brooktree Rd.
Hightstown, N.J. 08520

UNUSUAL SEED
Over a thousand different species, many collected in the wild.
★ PLUS ★
BARNHAVEN PRIMROSES
Seed & Transplants
1979 Catalog 50c will offer many new kinds from both North and South of the Equator.
FAR NORTH GARDENS
15621AR Auburndale
Livonia, MI 48154

Rock Plants, Alpines, Dwarf Conifers, Dwarf Shrubs etc. Many Rare
"Get Acquainted Special"
6 Hardy Sedums Labeled $3.00 Postpaid
Descriptive Rock Plant Catalog 50¢
RAKESTRAW'S PERENNIAL GARDENS
G 3094 S. Term St., Burton, Michigan 48529

NATURE'S GARDEN NURSERY
Species Primulas — Gentiana
Wildflowers — Some Ferns
Large Assortment of Sedums and Sempervivums
Send $1.00 for Informative Culture Catalog
Route 1 Box 488
Beaverton, OR 97005

"PLANTS FOR DRY SUNNY AREAS AND THOSE SHADY CORNERS"
Groundcovers, Alpines, Wildflowers and Succulents in variety
Catalog — 50c
WOODLAND ROCKERY
6210 Klam Road
Otter Lake, Michigan 48464
Sorry, we cannot accept Foreign orders.

SCARCE and INTERESTING BOOKS . . .

on gardening, botany, natural history, birds, etc. bought and sold. Secondhand reference works, color plate and rare antiquarian. Send $1.00 for catalog, sent air mail. Want lists welcomed. Books quoted without obligation.

BOOKS BOUGHT . . .

Please send details of any books you wish to sell. Good quality collections/libraries especially wanted.

Peter Kennedy
702a, Christchurch Road, Bournemouth, England
Telephone: Bournemouth 301461

Hardy Named
SEMPERVIVUMS SEDUMS
JOVIBARBA & ROSULARIA
Red, Pink, Purple, Blue & Green
New American Hybrids—Imports from Europe
Wholesale and Retail

OAKHILL GARDENS
1960 Cherry Knoll Road
Dallas, Oregon 97338
(Same location—new address)
Phone 503-623-4612 before 9:00 AM or after 5:00 PM
Visitors Welcome — Picnic Area — Garden Clubs welcome (please by appointment)
SORRY, WE NO LONGER SHIP
Helen E. & Slim Payne

PLANT JEWELS OF THE HIGH COUNTRY
Sempervivums and Sedums
by Helen E. Payne
111 Full Color Photographs
Autographed Copies $8.50 Postpaid

Oliver
NURSERIES
ericaceae

Specialists in

Azaleas,
Rhododendrons,
Dwarf Evergreens
and Rock Plants

For sale at nursery only.
Catalog 50¢
1159 Bronson Road
Fairfield, Conn. 06430

PLANTS FOR THE CONNOISSEUR

DWARF CONIFERS—for troughs and rock garden that will not outgrow their site in a short time.
JAPANESE MAPLES—only the finest are grown. Dwarf in growth—exquisite foliage.
The above for mailorder or pickup. CATALOGUE 50¢

The following for pickup only.
ROCK PLANTS—ALPINE HOUSE PLANTS—DWARF RHODODENDRON
Many rarities in quantities too small to list are available to those willing to visit the nursery and extensive rock gardens. By appointment only on Tuesdays—Saturdays and Sundays, call 516-MA 3-7810 after 8:00 PM.

JOEL W. SPINGARN 1535 FOREST AVE. BALDWIN, N.Y. 11510

STONECROP NURSERIES

Cold Spring, NY 10516
(Just off Rte. 301—between Rte. 9 & Taconic)

Offering a wide selection of
Alpine plants and wildflowers for the Rock Garden and Alpine House;
Trough Gardens; Unusual Perennials and Dwarf Shrubs.
Cash and Carry—No Catalogue
By Appointment only—914-265-2000
Display Gardens and Alpine House
Frank Cabot—Prop. (914-265-3533) Sara Faust—Mgr.

Grower of
ROCK PLANTS, HERBS
PERENNIALS
ANNUALS
Large Selection
No Catalog
All Plants for Sale at Nursery Only
SAMUEL F. BRIDGE, JR.
437 North Street
Greenwich, Conn. 06830

ROCK GARDEN PLANTS

Androsace
Dianthus
Gentiana
and many others

No Catalog—Cash & Carry
Please call **(617) 883-6697**

FRANK A. JARVIS
Quaker Street, Millville, Mass. 01529

GREER GARDENS

More than 600 varieties of Rhododendrons
Rock Garden Material—Lewisias, Dwarf Conifers
Japanese Maples, Meconopsis, Sedums & Sempervivums
Color Catalog hailed as being a worthy addition
to your Gardening Library—$1.00. Shipping a Specialty.

Dept. R, 1280 Goodpasture Island Rd., Eugene, OR 97401

GULL HARBOR NURSERY

Specializing in Rock Garden and Perennial Plants
Over 200 species, including
LEWISIA COTYLEDON,
PULSATILLA VULGARIS,
GENTIANA ACAULIS
and
CYCLAMEN NEAPOLITANUM
3944 Gull Harbor Rd.
Olympia, Wash. 98506
By Chance or Appointment—tel.: 943-0394
Weekends Only — March 1-July 15

A special issue of
PACIFIC HORTICULTURE
devoted largely to **Rock Gardening** has contributions from Fred Boutin, Molly Grothaus, Lester Hawkins Will Ingwersen, Owen Pearce, Chris Rosmini, Ray Williams, Jean and Joe Witt, and others.
Illustrated color quarterly:
Annually, $6 U.S., $7 Foreign. Write to P O Box 22609, San Francisco, CA 94122.

MINIATURE BULBS

We have an extensive collection of MINIATURE and SPECIES BULBS and HARDY CYCLAMEN from many countries. It includes OLD FASHIONED WILD DAFFODILS, a unique collection of SPECIES and HYBRID SNOWDROPS, CYPRIPEDIUMS, PLEIONES, EUROPEAN and other GROUND ORCHIDS.

Many are UNCOMMON and RARE — COLLECTORS ITEMS
We offer speedy deliveries by air freight and U.P.S.
Our catalog, over 40 pages of fascinating reading, is available from
BLACK and THOMPSON, 124 N. 181 ST., SEATTLE, WA 98133
Price 50c including postage

J. A. MARS of HASLEMERE, Haslemere, Surrey, GU27 2PP, England

ORCHID GARDENS

Over 150 Native Plants, Ferns, Club-mosses Shrubs, Ground Covers, offered in our Copyrighted Wildflower Culture Catalog.
Send 50¢ for your copy
All plants carefully dug and expertly packed to arrive in top condition
Mr. and Mrs. Clair Phillips
6700 Splithand Road
Grand Rapids, Minnesota 55744
Sorry we cannot accept foreign orders

ALPENFLORA GARDENS

17985-40th Ave., Surrey, B.C.
Canada V3S 4N8

New list in 78; many new & rare plants, colorful primroses, many dwarf & species irises, alpines, floriferous rockery plants, choice perennials, ornamental grafted trees, evergreens, rhododendrons, ground covers, miniature roses.

Buy Canadian, U.S. $ at premium!
Quality plants in 4" pots;
quantity discounts
Open weekends & holidays only

FRESH SEED OFFERING

Paraquilegia grandiflora, Queen of the Himalayan Alpines
One packet approximately 25 seeds — $5.00
Seed collected in three locations in Kashmir, Himalayas
August, 1978
Send orders to:
H.K.S. COLLECTORS
P.O. Box 4492
Medford, Oregon 97501

THE ROCK GARDEN

Maine Hardy Plants

Choice Cultivars — Uncommon Species
Grown and Mailed in Peat-lite
New Varieties Annually
Seedlings from Several Exchanges
and other European Sources
Many Ericas and Callunas
Mail Order Catalog 40¢

LITCHFIELD, MAINE 04350

PUSKAS WILDFLOWER NURSERY

Native plants—Perennials
Wildflowers from all over the world
Groundcovers
Alpines—Ferns—Herbs
Rare bulbs

Kent Hollow Rd.
RR #1, Box KH-37A
Kent, Conn. 06757
Phone (203) 927-3680

GARDEN ROCKS FOR SALE
Wholesale & Retail
at location in the
ILION GORGE, ILION, NEW YORK 13357
Calcareous Tufa, also called "Horsebone"
The proper kind of stone for rock gardens and Religious Grottos. Large variety in size, shape and appearance.
In large quantities—$25.00 per ton
In small quantities—$2.00 per Bu.
2¢ per lb.
Selected specimens somewhat more
Depending on size and appearance
JOSEPH T. FERDULA
300 Litchfield St., Frankfort, N.Y. 13340

Dwarf Evergreens
Holly
Unusual Trees and Shrubs

Send 52¢ Stamps
for lots of interesting information

DILATUSH NURSERY

780 Route 130
Robbinsville, N.J. 08691

WATNONG NURSERY

The place to find some
"HARD TO FIND" PLANTS

Gaylussacia brachycera
Dwarf Conifers, LeiophyHum, dwarf & low growing Rhododendrons, R. yakusianum & several of its hybrids
By Appointment, at the Nursery Only

Hazel and Don Smith
201 — 539-0312
Morris Plains, New Jersey 07950

THE WILD GARDEN

Box 487
Bothell, Washington 98011

Offers some 300 new plants this year—alpines and perennials of middling height—in a 50¢ Catalog Supplement (ready early spring). The $1.00 Main Catalog (1976-1977) is current and still available.
—G.S.

DWARF CONIFERS, ALPINE PLANTS SEMPERVIVUMS, HOSTAS, BAMBOOS, ORNAMENTAL GRASSES, EXOTIC MAPLES

Large illustrated Catalog 50¢
Plants also available at the nursery
Telephone: 215-536-4027

PALETTE GARDENS
26 West Zion Hill Road
Quakertown Pennsylvania 18951

RARE PLANTS and SHRUBS

Dwarf slow growing conifers that stay dwarf and other shrubs all suitable for Bonsai culture.
Large collection of Alpines as well as unusual plants are listed.
Please send $1.00 for catalog.

ALPENGLOW GARDENS
13328 King George Highway
Surrey, B.C. V3T 2T6, Canada

THE ALPINE GARDEN SOCIETY

Membership of the Alpine Garden Society puts the American alpine gardener in close touch with those throughout the world who share his interest in one of the most absorbing branches of horticulture.

The Quarterly Bulletin of the A.G.S. is respected internationally as one of the most informative publications of its kind. It will bring into your home a distillation of the experience and ideas of some of the finest gardeners, plant explorers and horticultural thinkers of our time.

Among the many other benefits of the Society, its uniquely comprehensive seed list alone is worth more than the modest subscription of $10.00 for Overseas Members. Apply to:—

The Secretary, The Alpine Garden Society
Lye End Link, St. John's, Woking, Surrey, England

THE SCOTTISH ROCK GARDEN CLUB

Offers you . . .

its twice yearly Journal, well illustrated and containing authoritative articles on all aspects of rock gardening, rock plants, and their world wide haunts.

Its excellent annual scheme for the distribution of rare & unusual seed, amongst its international members.

for £2.50 per year ($5.00)

R. H. D. Orr, C.A. 70 High Street, Haddington
East Lothian, Scotland will be glad to send particulars.

THE ALPINE GARDEN SOCIETY'S PUBLICATIONS,

WRITTEN BY ACKNOWLEDGED EXPERTS IN THEIR OWN SUBJECTS, OFFER OUTSTANDING VALUE

THE GENUS LEWISIA **By R. C. Elliott**
The only monograph on this fascinating American genus $3.50

SAXIFRAGES **By Winton Harding**
A guide which should be read by every rock gardener $3.00

ALPINES IN SINKS AND TROUGHS **By Joe Elliott**
A most useful guide by one of our best known nurserymen $2.00

THE GENUS CYCLAMEN **By D. E. Saunders**
The most up to date book on this wonderful genus $2.00

ASIATIC PRIMULAS **By Roy Green** $7.00

DAPHNE **By Chris Brickell and Brian Mathew** $7.00

ANDROSACES **By George Smith and Duncan Lowe** $7.00

(All prices postpaid)

AGS Publications are available ONLY from:
D. K. HASELGROVE, Distribution Manager, 278/280 Hoe Street, Walthamstow, London E17 9PL, England

DIRECTORATE

AMERICAN ROCK GARDEN SOCIETY

President Emeritus
HAROLD EPSTEIN, 5 Forest Court, Larchmont, New York

President ..... JAMES A. MINOGUE, Rt. 1, Box 126A, Bentonville, Va. 22610
Vice-President ..... ROBERT L. MEANS, 410 Andover St., Georgetown, Mass. 01833
Secretary ..... DONALD M. PEACH, Box 183, Hales Corners, Wisc. 53130
Treasurer ..... FRANCIS H. CABOT, Cold Spring, N.Y. 10516

Directors

Term Expires 1979
Harry Elkins — Wayne Roderick — Sharon Sutton

Term Expires 1980
Norman C. Deno — Mrs. Louis (Molly) Grothaus — Ms. Deon R. Prell

Term Expires 1981
Elizabeth Corning — John Kovalchik — Charlotte Ray

Director of Seed Exchange
Frances Kinne Roberson
1539 NE 103rd St., Seattle, Wa. 98125

Director of Slide Collection
Quentin C. Schlieder
Box 1295-R, Morristown, N.J. 07960

ARGS-PHS Library Service
Pennsylvania Horticultural Society Library
325 Walnut St., Philadelphia, Pa. 19106

CHAPTER CHAIRMEN

Northwestern ..... SHARON SUTTON, 8235 NE 119th St., Kirkland, Wash. 98033
Western ..... WILLIAM S. FOLKMAN, 2640 San Benito Drive, Walnut Creek, CA 94598
Midwestern ..... AILEEN MCWILLIAM (Acting Chm.), 711 Magnolia St., Mena, Ark. 71953
Allegheny ..... DR. ROBERT MCDERMOTT, 1507 Mifflin Rd., Pittsburgh, PA 15207
Potomac Valley ..... MRS. WILLIAM G. BANFIELD, 15715 Avery Rd., Rockville, Md. 20853
Co-Chairmen ..... MRS. HERBERT L. KINNEY, 3611 King William Dr., Olney, Md. 20832
Delaware Valley ..... ANITA H. KISTLER, 1421 Ship Road, West Chester, Pa. 19380
New England ..... EDWIN F. STEFFEK, Cedar Hill Rd., Dover, Mass. 02030
Great Lakes ..... HARRY W. BUTLER, Rte. #1, 2521 Penewit Rd., Spring Valley, OH 45370
Wisconsin-Illinois ..... VAUGHN AIELLO, 2322 North Wayne, Chicago, IL 60614
Columbia-Willamette ..... KENNETH J. LOVE, 3335 N.W. Luray Terrace, Portland, Ore. 97210
Connecticut ..... RICHARD W. REDFIELD, RFD #1, Hampton, CT 06247
Long Island ..... JOHN BIEBER, 185-8th St., Bethpage, NY 11714
Hudson Valley ..... JOHN TREXLER, c/o Frelinghuysen Arboretum, Box 1295-R, Morristown, NJ 07960
Minnesota ..... MRS. HUGH COCKER, 4140 Highway 14 East, Rochester, Minn. 55901
Siskiyou ..... CATHY KING (MRS. DON KING), 1101 Comet Ave., Central Point, OR 97502
Western-No. Carolina ..... FRED REES, Rte #1, Saluda, N.C. 28773
Rocky Mountain ..... T. PAUL MASLIN, 819 14th St., Boulder, Co. 80302
Adirondack ..... KATHIE LIPPIT, 6 Glen Terrace, Scotia, NY 12302

YOUR ARGS STORE

1. ARGS BULLETINS, back issues. Refer to CUMULATIVE INDEX and listing in this issue for subjects, availability and prices.
2. ALASKA-YUKON WILDFLOWER GUIDE, Helen A. White (Ed.), paper only, many color plates and b & w sketches $6.00
3. SEED GERMINATION REPORT, Dara E. Emery (Ed.), data on selected species and forms by various reporters $1.00
4. THE ROCK GARDEN, Henry T. Skinner (reprint) $1.00
5. LIBRARY BINDERS, each holds two years $3.00
6. ARGS EMBLEMS, lapel or safety-clasp pins. Specify $3.00
7. ARGS SHOULDER PATCHES, washable $2.00
8. CUMULATIVE INDEX to ARGS **Bulletins, Vols. 1-32, incl.** ..... NC
9. ARGS SLIDE LIBRARY CATALOGUE ..... NC
10. MEMBERSHIP LIST ..... NC
11. LIBRARY SERVICE LIST ..... NC

Please order from Anita Kistler, 1421 Ship Rd., West Chester, Pa. 19380. All orders prepaid (foreign orders in U.S. funds, please); make checks or Postal Money Orders payable to "ARGS," (no cash). U.S. destinations **must** show ZIP code. Orders will be sent surface mail, postpaid; airmail charges billed at cost.

BULLETINS FOR SALE — Back Numbers

Available at $1.00 each

Vol. 22, No. 3
Vol. 24, Nos. 3 & 4
Vol. 26, No. 2
Vol. 27, No. 1
Vol. 28, Nos. 1 & 4
Vol. 29, Nos. 1, 2 & 4
Vol. 30, Nos. 2 & 4
Vol. 31, Nos. 2, 3 & 4
Vol. 32, Nos. 1, 3 & 4
Vol. 33, Nos. 1, 2, 3 & 4
Vol. 34, Nos. 2, 3 & 4
Vol. 35, Nos. 1, 3 & 4

All Nos., Vol. 1 thru 10, & any Nos. in Vol. 11 thru 33, not specifically listed above, are $2.00 each, when available. Please inquire as to availability.

"BARGAIN PACKAGE"

Large stocks of certain numbers permit ½-price offer — ten numbers at $5.00, Society's selection, but your stated preference will be observed, if possible.

* * * * * *

For specific articles as listed in the Cumulative Index, give Vol. & pages listed. Issue will be sent, if available; otherwise, a charge of 15¢ per page for duplication from file copy.

Please remit with order; foreign orders in U.S. funds, please. Shipments postpaid, except airmail (billed at cost). Please make checks/money orders payable to:

AMERICAN ROCK GARDEN SOCIETY

1421 Ship Road **West Chester, Pa. 19380**