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Vol. 19 July, 1961 No. 3

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ROCK GARDEN SOCIETY

C. R. Worth, Editor

Vol. 19 July, 1961 No. 3

UTILIZING STEEP SLOPES IN A GARDEN

HENRY TOD, PH.D., *Roslin, Midlothian, Scotland*

AS SOME READERS MAY KNOW, Edinburgh is a city which is built on a series of hills, and the resulting effect on the levels of building sites can be easily imagined.

In many cases the houses are built ten to twenty feet back from the sidewalk and anything from three to twenty feet higher up the slope. This leaves a short, murderously steep bank to be developed into a front garden, and the attempt has nearly broken a number of hearts—to say nothing of backs.

Such a slope may be grassed down—but cutting the grass neatly is extremely difficult—or else planted in, say, roses or shrubs when, even in our less violent climate, erosion of the soil may become a problem.

The best solution is, of course, to develop such a site into a rock garden where the slope can be a real asset, and much more satisfactory results may be obtained. My present garden errs badly at the other extreme, for it is quite flat, but the garden of the house we built over twenty years ago had as odd a collection of levels as a quarter-acre site could well have, so I have a background of experience in what I am writing about.

I mentioned that erosion was not one of our more serious problems in this part of Scotland, but that particular suburb of Edinburgh did have a severe erosion problem, as much from wind as water, as the soil was light and the exposure severe.

As it happened, on the road side of the house, which was really the back, the garden had only a gentle slope of a few feet and was sheltered, but the other side faced into the storms and had the odd levels. We had a sunk lawn to escape from the wind, and this left a strip some ten feet wide, about six feet above the level of the lawn, and this strip began its existence as a herbaceous border. Within a year or so the edge began to break down and fall, so that we were left with a continuously crumbling edge of soil and rock which descended onto the lawn with each storm of rain.

We had built up some banks as the nucleus of a rock garden, incorporating an exposure of bed-rock to the west of the lawn, and had found to our annoyance that the banks were stripped by either wind or rain, or both. Thus, in any new

construction, some measure would have to be introduced which would cure this trouble.

We decided to change this crumbling border and slope to a rock bank which would look reasonably well, and at the same time would be stable. For this purpose we used far more stone in the building of the bank than was really necessary for appearance, working it in strata-wise. To do this we cut back into the bank to a depth of about three-quarters to seven-eighths of the depth of the stone to be laid, setting the stone in with a backward and downward slant (Figure 1), making each stone absolutely firm and steady. This gave a terracing effect which did not look too well at first, but developed quite pleasantly as the plants grew (Figure 2). The stones were left some three to four inches apart in the horizontal line, but these spaces were as seldom as possible left one above the other.

The effect of this method of construction was to give a structure analogous to contour plowing, and the down-and-back slope of the stones carried the water into the soil, rather than producing a run-off flow. The staggering of the gaps tended to minimize rivulet- and gully-formation, and in twenty years' exposure to severe storms it has hardly altered in outlines and levels.

To carry out this type of construction, a stone with a flat cleavage is almost essential (i.e., a sedimentary rock, such as sandstone), as it is extremely difficult to bed in large "chunky" stones in such a way as to produce anything resembling a convincing (or even practical) result. The operation must be started from the bottom of the slope, bedding in each stratum of stone along the full length, and then rising up to the next level, and repeating the process until the top level is reached, when it can be levelled off into a path, grass or the like.

In my beginner's ignorance I worked from the straight line of the edge of the lawn, and obtained far too hard a result; it would have looked infinitely better had I started with a gently curving broken line. An example of such a bank in front of a small bungalow is shown in Figure 3.

An alternative method of dealing with a steeply sloping area is to work it in definite terraces with "dry stone dykes" for change of level (Figure 4). For this purpose, again, easily swinging curves should be used to avoid too hard and formal an effect, and the beds (1, 2, 3, Figure 5) can consist of varying soil mixtures as required—always remembering, however, that any lime-enriched beds should be lowest.

For this layout, the line of the lowest wall should be marked out and the foundation of the wall cut back into the slope. The wall is then built up of stone, using earth alone as "mortar," and leaving pockets between the stones for planting. Water-worn stone is useful for this type of construction, as the stones "sit" more easily than do sharp, jagged lumps of newly quarried stone, though very beautiful results can be obtained with rough-hewn blocks of sedimentary stone which will have parallel planes of cleavage and will lie perfectly. The wall should have a definite backward "batter," i.e., the front face should lean back two or three inches for each foot of height. This will give added stability to the whole construction.

The wall should end a few inches *above* the natural level where it cuts the slope, and then the soil dug out for the site of the next wall will make up the missing depth (Figure 6). The subsequent walls should not follow the first or each other too closely; one can get a variety of narrow or wide beds by moving them in relation to each other (Figure 5) which gives quite a good effect. The wall-building process is then repeated right up to the top of the slope. A garden of this type is shown in Figure 7 where, however, the terracing

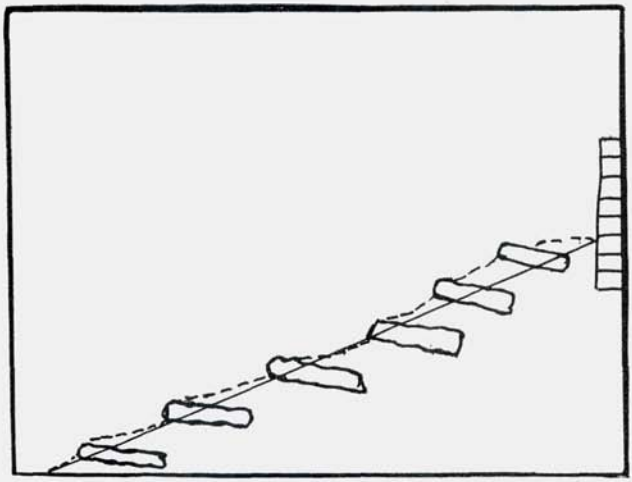

Figure 1

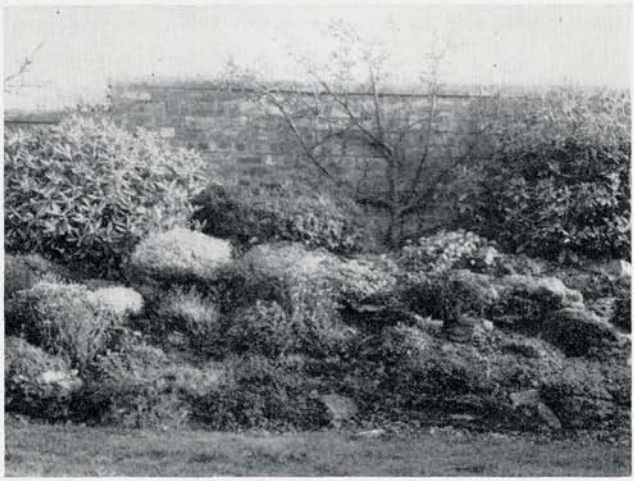

Figure 2

Figure 3

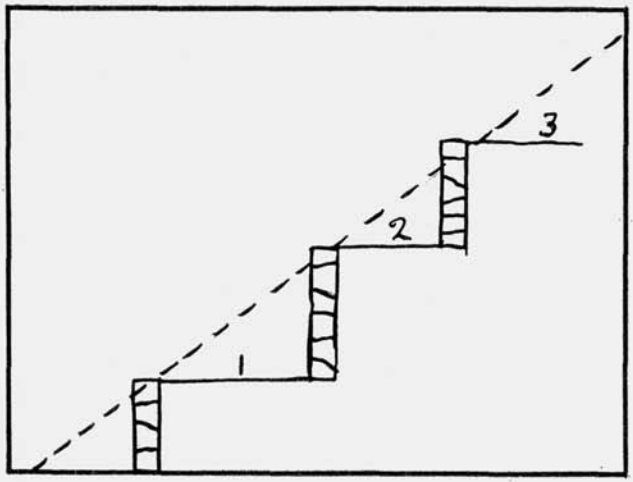

Figure 4

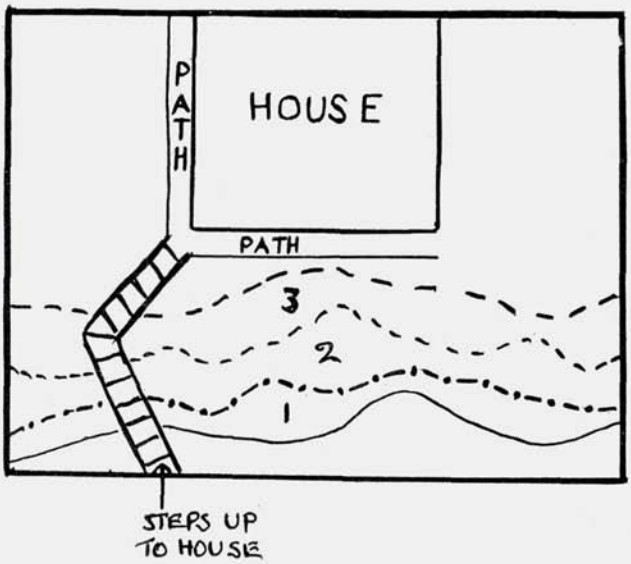

Figure 5

effect is not clearly shown owing to the angle of light and the level of the camera.

These walls should, ideally, be planted up as they are built, but then one loses half the fun of seeing whether plants *will* grow in them, so most rock gardeners leave pockets between the stones and plant them up later. Here I should like to make one point which old William Robinson first made some eighty years ago in "The English Flower Garden"—namely that many plants which are barely hardy *grown on the flat* will resist much harder conditions if they are growing in a dry wall with their roots into the soil behind. Wall conditions give probably the best results from the bigger encrusted saxifrages, ramondas, haberleas, lewisias and such-like plants which do not like to get their

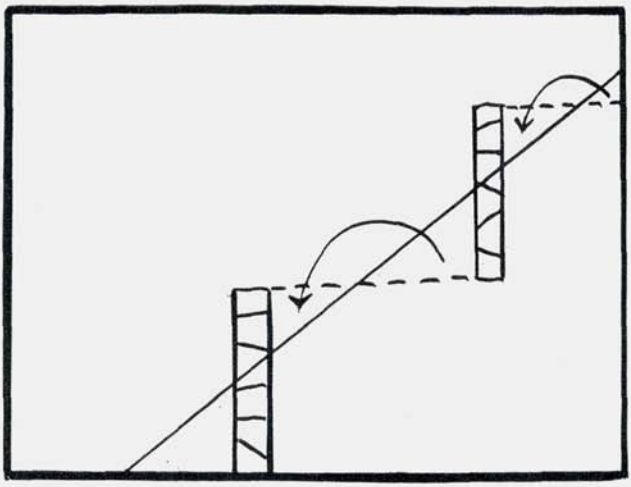

Figure 6

Figure 7

necks wet. A good plant of *Saxifraga* 'Tumbling Waters' sending its great plume of blossom out from a wall needs to be seen to be believed.

A third method of dealing with a slope is to construct peat walls. Here the construction is very much the same as with the dry walls, except that one builds with blocks of peat instead of stone, and enriches the beds between with liberal additions of peat-moss litter. This, however, is not so well adapted for dry areas, for if peat soils once dry out they are quite fiendishly difficult to dampen again—as I found here in the very dry summer of 1955, when the rainfall was negligible for nearly four months, and the temperature very high for Scotland.

It is often stated that only soft, spongy peat should be used for construction. With this I flatly disagree. If you have unlimited labor and time to allow of rebuilding every few years, by all means use soft peat lumps, but if you have not, use the hard blocks of burning peat (if you can get it), and build just as you would with bricks. Use nothing except perhaps a little earth to bind

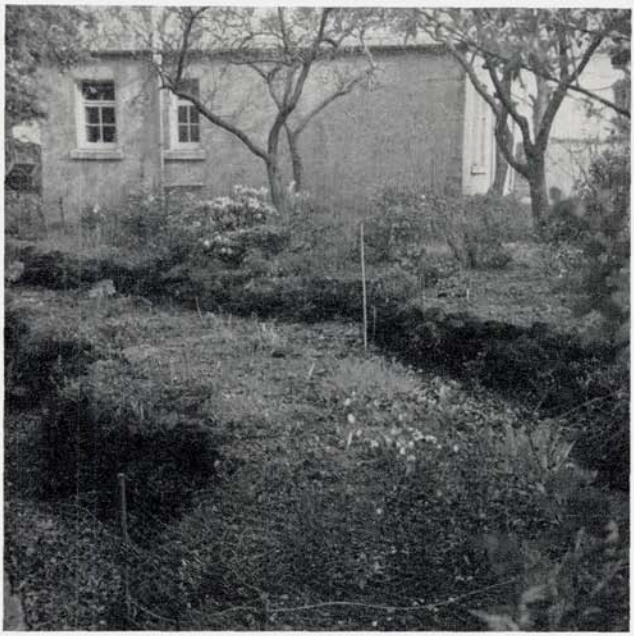

Figure 8

them together, and keep a heavy "batter" for stability. If the blocks show signs of bulging or slipping, they can be pinned together with thin canes driven down through them (not, by the way, hazel twigs as is sometimes recommended; a friend of mine did this and they all struck as cuttings!) The hard peat blocks may not be so pretty, but they *will* last, and they grow the plants just as well as the other kind, in spite of what the pundits may say.

In the dry-wall garden, the mat-forming plants will form lovely curtains to hang down over the face of the walls, and the crevice-growers will revel in the chinks between the stones. The creepers like sedums and small saxifrages will join the stones with a living mortar, and the beds between them will grow almost any rock plant you may want to grow, except perhaps the few that need a lot of moisture. Even these will probably do well at the base of the lowest wall.

The peat-wall garden is essentially for peat-lovers, and calcifuge plants generally. Primulas, gentians, meconopsis, dwarf Ericaceae, almost all the Asiatic plants will do well there, and a very effective background at the top is a thicket of dwarf rhododendrons. For preference the peat-walls should face between east and north, and should have a little dappled shade to break the most severe heat of the sun. Figure 8 shows my own peat walls.

The rock-bank itself is the ideal place for any rock plants—how I wish I had a sloping bank in my present garden!

* * * * * *

Please note the change in the Secretary's address effective July 1, 1961:
E. L. Totten, 1220 Everett Way, Hendersonville, North Carolina.

A WINTER RAINFALL GARDEN IN CENTRAL CALIFORNIA

LEO BREWER, *Orinda, California*

ALTHOUGH eastern gardeners often envy Californian gardens for their long growing season, they are not often aware of the great liability of these gardens—the need for constant watering during the many months of summer drouth. The average annual rainfall in California varies widely from less than 5 inches in the south to more than 50 inches in the north Coast Ranges and in the Northern Sierra Nevada, but the distribution is similar everywhere with 55-60% of the annual rainfall in December to February and 70-75% in the four months December to March.

In the hills above Orinda, the average rainfall is 35 inches, but our garden is situated on a knoll from which the winter rains run off very quickly and are largely wasted. The average total for the four months June to September is 0.6 inches, but this average is the result of rare moderate rain storms in September and little rain falls in most years. On an average every other year has a five month drouth with less than 0.5 inches of rain. Six month drouths with a total of less than one inch of rain occur on an average of every four years and we have had rare drouths with less than one inch of rain in a period of eight to nine months.

Twelve years ago we began an experiment to determine if it were possible to have a large attractive garden in central California which would persist on natural rainfall alone. The above rainfall statistics indicate that such a garden would be quite a challenge which would require unusual plants. We have, of course, made use of plants from all over California, but we have also drawn upon plants from dry-summer areas all over the world. The acre garden is divided into woodland areas, which are dominated by native conifers; shrubby areas, which are dominated by Arctostaphylos and Ceanothus; and the grasslands, which are dominated by annuals and by bulbous plants of the Amaryllis, Lily, and Iris families, which are not discussed here. A review of the amaryllids which have proved satisfactory under our conditions will appear in *Plant Life*, vol. 17, January 1961. An article on some of the iris species of our garden will appear in the Region 14 *Bulletin of the American Iris Society*, vol. 4, No. 2 (1960). This report will deal with the low growing woody and herbaceous perennials which have been successful in our garden with only the natural winter rainfall.

The garden is on the east side of the Oakland-Berkeley hills at 1200 feet altitude. The hills to the west range from 1700′ to almost 2000′ in altitude and thus shield us from much of the fog of the San Francisco Bay area and our climate is not moderated by the ocean as much as the San Francisco Bay area. Our summers are hotter and drier with the temperature reaching 90°F a number of times during the summer, and our winters are colder and wetter with the temperature dropping below freezing during most winters.

The knoll on which the garden is situated was originally part of the natural grasslands with no shrubby plants other than some *Rhus diversiloba*—the ubiquitous poison-oak of the western states. The many shrubby seedlings which are found each spring are unable to get their roots deep enough to survive the hot dry summer, but appropriate trees and shrubs which were watered during the first summer are able to persist without additional care. Most plantings were made in the late fall so that the winter rains could establish the plants. Mulches were used to retain moisture during the first summer.

Many of the plants from dry-summer climates have not had to develop resistance to the many fungus diseases which develop rapidly under warm wet conditions. Thus it is important to water new plants during periods of cool weather with no water at all for established plants during the summer. Plants from the California coast which are shielded from the sun by fog in their natural sites often required part shade under our conditions. We are fortunate in having a heavy adobe clay soil which retains winter moisture through the spring growing season but which normally has become bone-dry by summer.

The manzanitas, which in California range from 35′ trees to prostrate ground cover, have played an important role in the garden. The bearberry, *Arctostaphylos uva-ursi,* which occurs around the world in the northern latitudes, is found in California only along the fog-bound coast north of San Francisco. There is some variation among the plants, possibly due to hybridization with other manzanitas, but all of the varieties have to be grown on northern slopes or in considerable shade under our conditions. They make nice ground covers 6-8″ in height and 5-6′ in spread. Compared to other manzanitas, flowers and berries are not plentiful. Other low manzanitas along the coast south of San Francisco or inland from the coast are more drought resistant. *A. edmundsii,* the Little Sur manzanita, has very attractive leaves and is smothered with pink flowers in the spring followed by bright red berries. It grows ½-1′ in height and 4-8′ in spread and is excellent as a ground cover. *A. hookeri* with a height of ½-2′, *A. franciscana* with a height of ½-1′, and *A. densiflora* with a height of 1-1½′ are similar in appearance with beautiful pink flowers and have spreads of 4-6′. The last two are endemic species with less than 100 plants of each growing in the wild. *A. glandulosa,* a 2-4′ high shrub of the Coast Ranges of California, has a dwarf variety *cushingiana repens* which grows to 6-8″ in height, has a spread of 5-6′, and makes a lovely grey carpet although the white flowers are not plentiful. All of these plants have been particularly valuable for covering north-facing, sterile, heavy-clay banks from which the top soil has been removed. When they are planted out from pots, the soil around the roots must not be disturbed and they must be carefully watered during the first summer. They are all rather slow growing.

The very rapidly growing Ceanothus usually form large shrubs or trees, but there are a number of dwarf forms that make excellent ground covers for hot dry sites in full sun. *C. thyrsiflorus repens,* from the coast north of San Francisco, and *C. griseus horizontalis,* from south of San Francisco, are similar with deep green leaves and blue or lavender flowers with heights of 1-2′ and spreads of 8′. A number of natural and horticultural hybrids of these two species with other Ceanothus species are available with a variety of leaf forms and with very deep blue flowers. The most prostrate Ceanothus is *C. glorious* which is usually 1′ high with a spread of 4-6′ and lavender-blue flowers. It is not as drought resistant as the others and requires a north slope when grown without summer water. *C. foliosus,* 3′ high, and the variety *vineatus,* 1½′ high with spread of 4-6′, have deep blue flowers. In contrast to the usual blue or lavender flowers of Ceanothus, *C. rigidus var albus* forms a beautiful white mound 2-3′ high and 4-6′ across. All of the Ceanothus grow well on sterile, unwatered, sub-soil banks and provide rapid cover. They do not tolerate water well during warm weather due to fungus diseases and must be on well drained sites if there is any chance of rain during the summer. The related genus Rhamnus tolerates more water but does not have showy flowers. The lowest shrubs with heights of 2-3′ are *R. crocea* with red berries and *R. californica compacta* with black berries.

The buckwheats with their interesting grey leaves and their ability to thrive in the hottest driest spots are excellent candidates for well drained sites. *Eriogo-*

num crocatum with sulfur-yellow flowers and *E. rubescens* with pink flowers grow ½-1′ high and 1-1½′ wide, but they will probably not take temperatures below 20°F. *E. umbellatum,* the ½-1′ Sulfur Flowers of the high mountains; *E. parvifolium paynei,* 1½′ high with small whitish flower heads; *E. wrightii scaposum,* ½-1½′ high and wide with white or pink flowers; and *E. lobbii,* ½′ high and 1-1½′ wide with white flowers are all quite hardy. *E. elongatum* with its 2-3′ stems is particularly valuable for its interesting bloom in September and October. The flowers of all these species are excellent for cutting and are ever-lasting flowers that do not need to be kept in water.

The Humming-bird trumpets, *Zauschernia californica, Z. cana,* and *Z. latifolia* are similar grey leaved plants with blazing scarlet flowers in September and October. They spread by seed and by creeping rootstocks to form a cover 1-3′ high. They are usually found on steep cliffs and desire good drainage. Under our conditions, they need north slopes or part shade for best growth. *Z. latifolia* is the most desirable species and is certainly hardy as it grows to 8500′ altitude. The related oenotheras have not persisted here. They undoubtedly need more moisture and lighter soil.

The Figwort family provides a number of valuable plants for our garden. The three monkey-flowers, salmon to cream *Diplacus grandiflora,* brick red *D. parviflorus,* and yellow *D. aridus* are under 2′ in height and take full sun to part shade. They are usually found on steep cliffs and should have good drainage. The pentstemons, *P. heterophyllus* and its forms *P. azureus* and *P. australis* with violet to blue flowers, grow to about 2′ high and wide. The scarlet *P. corymbosus* with small dark glistening green leaves forms dense mats 1′ high and 1-2′ wide. They are not permanent in moist heavy soil. We have healthy 10 year old plants in heavy adobe clay, but they should be planted in light soil if there is danger of summer moisture. Under our conditions, they do best with part shade. Indian Paint Brush, *Castilleia parviflora* var *californica,* has done best under larger shrubs. The better growth near other shrubs is often attributed to Castilleia being parasitic on roots of other plants. Under our conditions, the main benefit is probably shade from the full sun.

The Mint family with its many grey leaved representatives contributes importantly to our garden. *Salvia brandegei* is an erect plant 2-3′ high and wide with pale lavender flowers. Dark violet *S. pachyphylla* and crimson *S. spathacea* grow 1-2′ high. *S. clevelandii* is 1-3′ high with attractive blue flowers that stand out well and is the most desirable small sage. *S. sonomensis* forms a basal mat ½′ high and 4-6′ wide. *S. spathacea* is grown in full shade. The others take full sun to part shade. *Trichostema parishii* from the desert mountains is an erect 2-4′ high and 4-5′ wide shrub with handsome blue spikes in June. We have had difficulty establishing *T. lanatum,* a more widely distributed species. Although the European Spearmint, *Mentha spicata,* prefers wet conditions, it can apparently obtain enough moisture from our heavy soil to persist in shade without summer water. The very fragrant *Micromeria chamissonis* is a trailing evergreen that requires full shade under our conditions to provide a ground cover. *Rosmarinus officinalis prostratus* and *R. lockwoodii* both take full sun on dry, sterile, sub-moist banks *Nepeta mussini* and the more upright *N. nuda* form silvery blankets and will take some shade. Another group of plants for hot dry sterile soils are the many forms of *Thymus serpyllum* as well as *T. angustifolium, T. adamovici,* and *T. balticum. Monardella villosa,* with 1-1½′ height and width and small purple flowers, and *M. macrantha,* with 4-6″ high scarlet flowers and creeping rootstocks, require part shade.

Most members of the Rose family either need summer water or are too high to be included here, but *Fallugia paradoxa,* a deciduous shrub from the

mountains of the Mohave Desert, has white showy flowers followed by attractive purple tinged plumes through the summer. It takes full sun. *Cowania mexicana stanbouriana* comes from the same region and has cream colored flowers in late spring. The sand strawberry from the California coast, *Fragaria chiloensis,* is remarkably drought resistant. In full sun it goes dormant in late summer but revives with the fall rains. *F. californica* requires full shade. Both make good ground covers.

The Composite family provides a number of unidentified asters and other similar plants growing naturally in our garden. *Wyethia helenioides* has yellow sunflower-like flowers, 3″ wide, on 1-2′ stems and grows in full sun in the grass. *Baccharis pilularis* from the coast north of San Francisco grows ½-1′ high and forms a mat 4-6′ wide. The flowers are not showy but the white fleecy seeds are pretty. It is a good cover for sub-soil banks. *Coreopsis maritima* has showy yellow flowers but does not persist many years. *Achillea millefolium* and *A. tomentosa* are excellent for dry sterile heavy soils in full sun. The former is 2-3′ high with white or rose flowers. The later forms a flat mat with ½-1′ yellow flower stems. *A. tagyeta* and *A. filipendulina* persist but appear to suffer from the summer drought. The Seaside Daisy, *Erigeron glaucus,* 1-1½′ high and wide with lilac petals and yellow center, grows along the sandy shore but takes full sun in heavy soil in our garden. *Eriophyllum lanatum arachnoideum* forms a mat only a few inches high which is covered by yellow flowers on 1′ stems in full sun.

There are four low growing species of the Saxifrage Family surviving in our garden without summer water. *Heuchera micrantha* and *H. maxima* require full shade. *Ribes viburnifolium* requires at least part shade and can take full shade to make a ground cover 2-3′ tall and 6-12′ wide. The flowers are not showy. The leaves are very unusual for a Ribes and are evergreen. *Lithrophragma affinis* with its lovely white flowers in April grows in the open grass on north slopes or in considerable shade.

The Buttercup Family provides *Ranunculus californicus* which grows in the grass in full sun and goes dormant during the summer. *Aquilegia truncata* requires full shade. *Anemone coronaria* and *A. fulgens* grow in full sun but do better in some shade. *A. apennina* and *A. blanda* with their variety of colors do best with some shade. *Pulsatilla vulgaris* does poorly and is probably not as drought resistant as indicated in the literature.

Eschscholtzia californica grows any where in the sun and even takes considerable shade. *E. glauca* is similar except for the yellow color. Yellow *E. cucullata* is a prostrate plant spreading 2½′. *Dicentra formosa* takes full shade. The white form Sweetheart is much less vigorous and needs water to do well. *Corydalis diphylla* from Kashmir takes full shade.

The Shooting Star, *Dodecatheon hendersonii,* does best on north slopes or part shade. *D. clevelandii* has done poorly here. *Cyclamen neapolitanum* in its pink and white forms, pink *C. cilicium,* and white and red *C. cyprium* are particularly welcome for their fall color. *C. europaeum* does not take the summer drought well. The spring blooming *C. coum* and its rose and white forms do much better than the hybrid *C. x atkinsii.* Light pink *C. libanoticum* and crimson *C. repandum* and *C. pseudibericum* are dependable spring bloomers. All of the cyclamens are grown in full shade.

Lupinus albifrons var. *collinus* is a remarkable prostrate plant which dies back to the base each winter and blooms in the spring, but it always manages to put out additional late summer and fall bloom under the hottest and driest conditions. *Calliandra eriophylla* from the South West deserts has attractive feathery leaves and pink flowers and does best in part shade.

Convolvulus subacaulis, the Short Stemmed Morning Glory, does not exceed 1′ and has attractive white flowers. It grows in full sun. *Dichondra carolinensis* does not form a dense ground cover without water, but it does persist among other plants in full shade.

Helianthemum scoparium var. *aldersonii* has bright yellow flowers on 1-2′ stems and take hot dry conditions. *H. nummularium* is more or less prostrate with yellow to red flowers. *Dianthus deltoides* persists in part shade. *Gypsophila paniculata* and *G. repens* last only a few years. They apparently desire lighter soil and a cooler climate.

A few miscellaneous plants which have taken our summer drought are *Armeria maritima* var. *californica* in part shade, *Vinca minor* in full shade and several of the small leaved *Mesembryanthemum* in sun to part shade. The yellow flowers of *Sanicula arctopoides* form a pleasing yellow mat 4-8″ across in March. *S. bipinnatifida* has dull purple-red balls of flowers. They both grow in the grass in full sun. The attractive mallow flowers of *Sidalcea malvaeflora* are always welcome in February to May. It grows in full sun to half shade in the grass.

Although our garden is dominated by the foliage and flowers of *Arctostaphylos, Ceanothus, Fremontia, Romneya, Dendromecon, Carpenteria* and other tall shrubs, the character of the garden would be entirely changed without the very important contribution of the low plants listed above together with the bulbous plants. We are fortunate in finding so many attractive plants that can accommodate our long summer droughts.

FROM PETS TO PESTS

HAROLD EPSTEIN, *Larchmont, New York*

THE EVALUATION of most perennials or shrubs can usually be determined only after a few seasons of experience in the same garden. Many disappointments and surprises have resulted from too hasty judgment of new acquisitions.

There are many factors that enter into the evaluation of plants, and one that should score heavily is the longevity or degree of permanence. This broad term would include winter and summer hardiness, resistance to pest and disease, non-aggressiveness, shy seeder, and undemanding of special conditions.

Several plants in my garden have been selected for their durability, but each of them has the same trait of being rather aggressive and at times a nuisance, so that they must be controlled. These were all obtained as choice and unusual plants not less than three years ago and in the intervening years have thoroughly established themselves, thus revealing their true habit.

Disporum sessile variegatum (Liliaceae) is a member of a genus widely spread in North America, Japan and other parts of Asia. In the United States they are known as "Fairy Bells." A few years ago, three individual rhizomes of this variety were planted at the base of some shrubs in partial shade. They bloomed the first spring with a surprising color arrangement. Whereas the type species has white flowers, this variety has similar variegated coloring on both the foliage and its slender funnel-shaped flowers. The combination is green and a creamy white. Is there another hardy plant existent with this combination of variegated leaves and flowers? (Several are known amongst tropical plants). After a few years of moderate growth, it has finally spread by underground creeping rhizomes at a very rapid pace and has appeared in amongst many other choice Japanese woodland neighbors and out into the path. It is an attractive

plant, about 16 inches tall and blooming in May and June, often mistaken for a variegated bamboo. But its rampant habit of growth requires moving it to an area without these more refined neighbors. The Western American *D. hookeri* is much more restrained and does not send out these rampant rhizomes. Even some of the other Japanese disporums are more conservative and remain within bounds.

Lysimachia japonica var. *minutissima* (Primulaceae) is a Japanese native that appeared to be quite a jewel for the first few years. But being a close relative of the European Creeping Jenny *(L. nummularia),* that should have been a sufficient clue to its propensity. It produces compact, dark green mats of its little leaves which are covered with almost stemless bright yellow flowers during the summer. It appears to prefer damp areas in partial shade where it will ramp. Before it indicated its true character, a few plantings were made amongst choice small plants hoping to use the mats as ground cover for smaller bulbs. But its great ability to disperse its seeds in all directions has required a complete revaluation of its uses. A plant that will produce its seedlings a dozen feet away up a steep incline can be a dangerous weed and must be used with caution irrespective of all its virtues. During the past two years, it has established its dense flat mats in the lawns, in the midst of choice small plants, and hidden at the base of procumbent plants and shrubs, all difficult spots to weed. It is now taking possession of a few moss covered steps in a path, where it is being given free reign for it will be controlled by the tread of many a garden visitor. Its removal two years ago from an area of choice plants is not as yet completed for seedlings persist in appearing at a steady pace. Yes, this plant can really be classed as a pest.

Pinella ternata (Araceae), also known as *P. tuberifera,* is a member of a genus of tuberous herbs native to China and Japan. It is a quaint and uncommon plant with trifoliate leaves and queer little green arum flowers like a hooded cobra. It prefers a shaded and cool spot. The tubers are small, up to ¾″ in diameter and new snail-like ones, ⅛″ to ¼″ across, are regularly formed on the leafstalk above ground. These are all hardy, eventually drop to the soil and consequently increase at a rapid pace. They do spread and can become a nuisance, particularly where the tubers lodge between other plants and shrubs.

Pseudosasa owatarii (Gramineae) is a dwarf Japanese bamboo, the genus (three species) being technically distinguished from the related and more numerous *Sasa,* which is the Japanese name for small bamboos. Reference to a Japanese text lists about 250 species plus many varieties of the *Sasa* genus.

A small clump of this shrub was obtained from Japan about five years ago with little knowledge as to its source or hardiness. It was about three to four inches tall with a creeping rootstock and was retained in a pot and cold-frame for two years. Half the plant was then tested in the open in a small pocket in the rock garden where it has spread with extreme vigor creeping under rocks and through crevices and encroaching on some choice plants. It has proven its hardiness, having come through the severe winter of 1958-59 and the succeeding milder one.

Again, this plant, spreading in typical bamboo manner, must be restrained and transferred to a more open area. In the richer soil where it has spread, its height has risen to 6 to 8 inches and it is lusher than in its restrained quarters in a pot. It is nevertheless a desirable and graceful plant in the proper aspect.

Sedum cauticolum (Crassulaceae) or should the spelling be *'cauticola'?* Reference to a Japanese botanical book refers to the last syllable as 'lum' whereas the Royal Horticultural Society, 'Dictionary of Gardening,' lists it as 'la'. All texts and nursery lists in the United States and England use 'lum' with the

exception of one British alpine nursery using 'la'. Can one of our botanical friends please clarify this and submit some definite conclusion to our editor?

This neat and comparatively recent addition to the choice group of Sedum emanates from Japan and is related to the more familiar *S. sieboldii,* being a smaller edition of this latter plant. But it is distinguished by its opposite stalked leaves and the trailing stems. Its rose-red flower heads are produced in September and precede those of *S. sieboldii* which is October blooming. The glaucous, grey-green leaves are very effective although they die back completely in winter. It is an excellent wall plant and although supposedly needing a sunny spot, seems to do very well in this garden in partial shade. In fact, it is another plant that really does too well, for in the last few years, the few plants inserted in a rock crevice of a perpendicular outcrop, have produced innumerable seedlings in the adjoining area and also at the base, all intermingling and growing out of a very shallow planting of *Sedum lydium, S. album,* and even amongst a dense cover of the previously described *Lysimachia japonica minutissima.* This sweep of *Sedum cauticolum* (right or wrong, I will stay with the majority spelling) has been most effective, particularly when in bloom. Actually these seedlings have appeared in a wide spread area in the garden, but they are easily controlled and really have not become the nuisance compared to other rampant wide-spreading sedums like *Ss. sarmentosum, album, acre* and many others.

In recent years a few very similar sedums have appeared on nursery lists under the names of *Sedum hidakanum, lidakense* and *pluricaule.* The variations, based on rather superficial comparison, seem very minor. Can anybody determine the extent of their variation?

Viola yakusimana (Violaceae) is a minute plant that has been in and out of this garden for many years. Emanating from the most southern of Japanese islands, it is not dependably hardy here and usually kills back each winter, only to appear again the succeeding season as self sown seedlings. It is the smallest of all violets (also known here as *V. nana*) with tiny glossy leaves producing white and lavender flowers between ⅛″ and ¼″ in diameter. It will do best in a moist cool area in the rock garden. While it cannot be considered a nuisance here, it is interesting to find its seedlings in the most unlikely spots in the garden, a typical viola characteristic. It certainly does not have the vigor and ramped character of the previously described lysimachia. It should be an excellent subject for trough gardens.

A few years ago a small plant which appeared identical to this viola species was received from Japan under the name of *Viola verecunda* var. *yakushimana.* Reference to Nomina Plantarum Japonicarum by Dr. Masasi Honda lists this plant which is probably the correct botanical name for the species. Further research is being done to definitely establish this.

Phlox stolonifera (Polemoniaceae)—Whereas all the plants referred to previously are Japanese natives that have readily established themselves in this garden, there is one from eastern United States that is becoming a nuisance, requiring continual control. This is *Phlox stolonifera* with its various color forms which, when grown in partial shade, can run about, rooting at the joints at a most rapid rate. The oval leaves make a low evergreen mat and seem to overrun everything in their path. The color form 'Blue Ridge' has inch wide soft blue flowers on 8 to 12 inch stems and is undoubtedly the best and most popular variety introduced. There are many other color variations from pinkish to varying shades of purple or lavender, but surprisingly, not any white introduction of this species.

The 'Blue Ridge' form was planted on a slight bank under some shrubs at a substantial distance from a beautiful and solid mass of *Shortia galacifolia.*

Within two years the phlox had spread several feet down the slope and completely overrun the shortia. Persistent thinning of the phlox has been necessary, but this has not prevented the shortia from being smothered and partially killed. The two plants are not good neighbors and one of them must be shifted.

Other color forms of this phlox have been used as ground covers among azaleas and other shrubs, and with its dense growth are very effective in preventing the establishment of weeds. But it covers ground rapidly and requires control if other smaller and weaker plants are in its path.

While all of these plants increase here at a rapid pace, there are many others that are radically contrary and restrained, with a mimimum of annual growth. A future article on such a group of plants may be of interest.

TWO NEWCOMERS

IRMA M. GOURLEY, *Oakland, Oregon.*

IT IS ALWAYS a happy occasion when new additions to one's garden exceed one's expectations. Two newcomers endeared themselves to me last season; they are *Iberis taurica* and *Aethionema iberideum.*

Iberis taurica was described as pink, but to me it is a lovely tint of lilac or pale lavender. Before ordering it, I looked it up in my rock garden reference books, and found only very scanty descriptions, most of which placed it in an almost annual category. When the plants arrived, I planted them in the same type of soil and exposure as the white candytuft. They grew rapidly into compact mounds of green, soon covered with abundant flowers. They bloomed later than the white candytuft, but this may have been entirely due to their having been so recently transplanted. After the first lavish blooming, the plants made new growth which in turn became sprinkled with blossoms. Because of its rapid growth and heavy flowering, I was afraid that the plant would indeed prove annual, so I took late fall cuttings, which have rooted and will bloom this spring. The original plants are now husky, but very compact. I am hoping that the floral display will continue to be later than that of the white *Iberis sempervirens* and *I. saxatilis.*

The second newcomer, *Aethionema iberideum,* is quite different from my other stonecresses in both foliage and flower. The leaves are shorter and wider than is typical of the 'Warley Rose' group; also they are gray-green, rather than bluish. The flowers are white, very pure and lovely even in rainy weather, which browns so many white blossoms. Although the plant bloomed in June and July last year, after being transplanted, it is evidently an early bloomer. It is now March 1, and already the plant is studded with tiny white crosses. In fact, it looks somewhat like a very miniature arabis. with its gray leaves and white flowers right down on the foliage instead of in spikes. It is probably evergreen, but last winter the old leaves disappeared, and new ones are decorating the little branches after the manner of aubrieta. This perfectly endearing miniature seems as tough as the other aethionemas. The plants were still very tiny last fall, but I plundered them of a cutting or two. These have rooted and are now visible with their new gray-green leaves. The plants seemed to suffer some last summer and the older leaves dried up. This may be a normal summer dormancy. This summer I shall be able to ascertain whether it remains in good shape throughout the dry months, as it is now well established.

A year that adds two such attractive plants to the rock garden is a successful year indeed.

COLLECTING PLANTS FROM THE WILD

Charles Thurman, *Spokane, Washington*

The high school biology teacher told us, at the beginning of the semester in January, that we must have thirty species of wildflowers pressed and identified by April 30, 1930. Being a typical teen age boy, I procrastinated until two weeks from the deadline before even starting the project. Finally, one day I asked a pal to come up to my house that evening and see how many of the required flowers we could find. I knew of a few that grew near my home on the sandy terminal moraines that the Great Ice Age had dumped around Spokane as it retreated, but did not believe that that many wildflowers existed. There were that plant we called sunflowers *(Balsamorrhiza sagittata),* honeysuckles *(Mertensia oblongifolia)* as the little kids called them, and of course buttercups *(Ranunculus glaberrimus)* which turned the fields of sand into a sheet of yellow in early spring. And then there were the yellow bells *(Fritillaria pudica)* which everybody likes. But thirty wildflowers was an impossibility! However, we might as well get started even if the fellows did call us a couple of posy pickers.

We started from my home, which was on the north edge of town with lots of vacant fields and pine trees *(Pinus ponderosa)* around, at 4:00 P.M., and by supper time we had fifty different flowers in our pressing books. We decided that this was fun, and that we would see how many we could have by the deadline. We rode our bicycles all around the countryside looking for new species, so that on April 30 we had 208 species to present.

This started two young fellows on a hobby of collecting wildflowers and on a companionship of several years. As we found more and more flowers for our collections, our bicycle trips extended as far as sixty-five miles from Spokane and, it seemed, we found prettier flowers each trip. This led me to ask my father for a small piece of ground in the garden, in which to build a rock garden and pool. After much pestering on my part, with a promise to take care of it, he finally gave up a small piece of ground. After I had hauled in rocks on the carrier of my bicycle, he saw that I meant business, and helped me build a pool.

I started to bring in plants that appealed to me, and this was the beginning of my thirty years' experience in transplanting and growing western wildflowers. I started a native plant nursery (Evergreen State Native Plant Nursery) in the late 1930's, but the war disrupted my life, as it did that of millions of others, and the nursery went by the way. However, I still collected, on vacation trips, plants from practically every life zone of the West for the yard and rock garden which I have always managed somehow to keep going.

In these years of collecting I have learned a few things that may save others from disappointment and will probably save quite a few plants from an untimely end. One of the first lessons learned was that wildflowers were wild and did not always approve of the conditions to which I subjected them. This led to a study of the habitat and soil conditions in which each plant grew. That each group of plants from a given habitat needs similar conditions in the garden, if they are to prosper, is not always a hard and fast rule, but is generally true. Let's take *Echinocactus simpsonii* for an example. This lovely red and brown spined cactus with a ring of bright pink to red flowers atop a six inch green barrel has for its native habitat a volcanic ash soil that gets hard and dry early in spring, and remains that way until late fall when rains come to soften the shallow soil. The humidity in summer is around 5%, and the temperature ranges

from 90° to 120°. The first plants of this lovely cactus which we moved to an area of eighteen to twenty-five inches of rainfall lasted about one winter, and in the following spring rotted right out from under their mass of clustered spines. What was wrong? Simply, the soil of their new climate was too heavy and held the moisture from the late spring rains too long. As soon as they were planted in coarse sandy soil atop a cluster of basalt rocks they settled down and now bloom nicely each year, happy in their new surroundings. One would hardly expect a lady-slipper from shaded woodlands to thrive beside this cactus. So we see that plants are like people: some can live with the Webfoots of Oregon, but others would choke to death from asthma in that climate.

The next thing we learned (or maybe it was simultaneously with the first) was that there is a proper and an improper time to move plants. This rule too can be varied to suit special occasions, but in general plants moved at the proper time have a much better chance of survival and consequent establishment. This time is usually when they are dormant. In the case of the cactus mentioned above, for example, we found that during the period of dry soil, practically all main roots and by far the greater proportion of feeder roots were severed in lifting the plant from dry ground. By waiting until the rainy season of late fall or very early spring, when this hard baked soil had become a sea of sticky mud which clung to the feet until they became like footballs, practically every root of the choice cactus came up encased in a nice protective layer of soil, ready to go on growing as if never moved.

This is not the case with all plants, however, as we find that in our area the alpines from above 5000 ft. are buried under snow, in many seasons from Labor Day until late June or July. This gives only the latter part of July, August and early September in which to move them, so that nearly all rules have to be broken if one is to obtain plants. Most of these plants are accustomed to cool air and soil during their period of growth. To remove them to an elevation of 2400 ft. here at Pleasant Prairie means that they must endure temperatures of 80° to 100°, warm soil and hot dry air at that time of year. This is quite a shock, so that a method of creating conditions more to their liking is necessary, if they are to survive.

This brings us to a third rule, probably the most important of all: the method of transporting collected plants and of handling them when they arrive at home. Alpines, for the most part, grow in rocky soil or rock crevices from which they must be pried in a way that will retain as many roots as possible. We have found that small plants are generally easier to move with a maximum root system, and less subject to shock resulting from disturbance. If we find a plant of a given species in a particular area, we usually find others close by. With a little search one can usually find plants that are diggable. We used to use burlap in which to wrap these freshly dug plants, but since the advent of polyethylene bags we find these much lighter to carry in, while our backs do not become so wet when we are coming out with the plants. When burlap is used, the plants must be moistened often, but with the bags one wetting when the plants are dug is sufficient for several days. The plants are kept as cool as possible while in transit home, where upon arrival they are planted *immediately*. Failure to do this probably accounts for the loss of more plants than any other single factor. Upon arrival at home, the plants are planted in sand in pots or flats, placed in the lath house or shaded greenhouse, and kept there until established. After they become rooted they are knocked out of the pots and planted in a permanent position in the rock garden at the most favorable time of year—early fall or spring.

One thing strange to us is the way in which seemingly difficult plants from many diverse soils root in pure sand. Even the difficult to move plants or cuttings of our western heather, *Phyllodoce empetriformis,* will ofttimes strike root up to 50% in sand and peat. Some of our alpine phlox will root even better if cuttings are taken at the right time of year.

With the possible exception of those plants requiring acid soil, we have found that this same moraine sand which nature dumped so lavishly in our area is an ideal basic soil for our alpine rockery. The layers of extremely fine to coarse sand that came from our basement are mixed just as the bulldozer shoved them out, and are the base for our flourishing alpine garden.

In this soil we have alpines from all types of rock formations growing very happily: *Phlox viscida* and *P. douglasii, Eriogonum piperi* and *E. strictum, Balsamorrhiza terbinthacea, Penstemon venustus* and *P. triphyllus, Monardella odoratissima, Cheilanthes gracillima, Viola venosa* and others from the volcanic soils of the Blue Mountains of Washington; from the granitic and limestone soils of the Selkirks of Washington, Idaho and British Columbia, *Sibbaldia procumbens, Aster alpigenus, Penstemon lyallii, Hypericum bryophytum, Salix nivalis* and *S. petrophila* (?), *Epilobium hornemannii, Dryas drummondii* and *D. octopetala, Erigeron salsuginosus, Arenaria formosa, Saxifraga austromontana, Eriogonum subalpinum, Polemonium delicatum, Allium collinum* and *A. fibrillum;* from granitic formations of the Cascades and Wenatchee Mountains, *Penstemon tolmiei, P. menziesii* and *P. rupicola, Arnica aurantiaca, Claytonia nivalis, Douglasia dentata* and *D. laevigata, Phlox diffusa, Lewisia tweedyi* and *L. columbiana, Polystichum lonchitis* and *P. lemmonii, Petrophytum cinerascens, Eriogonum umbellatum, Salix cascadensis,* and *Potentilla flabellifolia;* from the Beartooth Range of Montana, *Eritrichium elongatum, Polemonium confertum, Sieversia turbinata, Silene acaulis, Potentilla glacialis, Allium cernuum, Heuchera ovalifolia* var. *alpina,* and *Antennaria lanata.* There are others too numerous to mention all thriving happily in this sandy moraine soil. I think that one of the reasons for our success here, where heat and low humidity prevail in summer, is the fact that this rockery is on the northwest side of the house and receives only late afternoon sun. The sandy soil is kept moist at all times and the plants send their roots down deep, even as they do in the rock crevices in the mountains.

Established plants at home make it possible to collect seed when ripe and to make cuttings in November and December, which are rooted overwinter in a cool greenhouse.

We have found one of the best collecting tools to be what we call a pickaroo —a short handled tool with a pick on one side and a grub hoe on the other, used by our Armed Forces and sold at Army surplus stores. It is fairly light, but large enough to loosen soil and rocks far enough away from the plant to enable one to get most of the roots. Another aid to transplanting, especially in summer, is a product called Wiltpruf which leaves a thin plastic film on the foliage. This cuts down evaporation of moisture from the foliage and retards wilt, which is very desirable in transplanting plants from the wild.

Plants should never be taken close to roads or trails, but from wilder areas where plants of a species are plentiful. If at all possible, plants should be grown from seeds, or obtained from a reliable nursery where experienced men grow them and can give instructions for their proper culture.

KNOWING THE HARDY SEDUMS

DONALD G. ALLEN, *Barre, Vermont*

DOUBTLESS YOU HAVE HEARD of sedums and may own, or at least have seen, several varieties. Have you ever guessed that within this genus there lies a fascinating assortment which you can grow successfully in your garden whether you live in the North or in the South? Don't be dismayed if the only sedums you know are weedy kinds which are more of a pest than a pleasure, because there are many other species some of which are actually hard to grow! Even the kinds which appear weedy may be only in the wrong place; put where they belong they will probably prove desirable.

The name sedum (pronounced "see'-dum") derives from the Latin word meaning "to sit." Evidently this was suggested by the manner in which some of the shallow rooted species appear to sit on the surface of the ground or on a shallow crust of earth covering rocks. The common name, "stonecrop," also suggests a plant capable of thriving on a rock. This is made possible by the fact that many varieties are drought resistant and can subsist on a minimum of water. "Liveforever," another common name, was inspired by the apparent indestructibility of the more vigorous sorts.

Now, let's get acquainted with the individual species. Even though you may already have or know many, by learning how to recognize them by name and to utilize them more successfully you may be able to transform them from an unattractive heap to a prized possession. If you have names for your sedums you had better check: some varieties have passed through many hands, or have been neglected to the point where their true identities may be completely jumbled. Besides all this, almost everyone will find some choice new kinds to act as a spice or inspiration to the more basic sorts.

In discussing the sedums from a standpoint of quick visual identification we may roughly divide them into two categories: the linear-leaves mossy species, and the flat broader-leaved species.

THE LINEAR LEAVED MOSSY SPECIES

Perhaps the most prevalent stonecrop is *Sedum acre,* often known as gold moss and called in days of yore by such interesting names as wall pepper because of its peppery taste, and by such amusing ones as Welcome-Home-Jack-Though-Never-So-Drunk, likely in reference to its invasive nature. The old time herbals claimed it had considerable medicinal use, namely as an astringent, fever preventive, and dressing for wounds and sores. In many old cemeteries it served as an ornamental groundcover. It resembles mats of fleshy moss which are blanketed with small yellow starry blooms in June. In a dwarf form called *S. acre minus* it can prove desirable as a modern groundcover if kept restricted. Although it flowers best in full sun, the foliage is often better in light shade. In some locations it has to be reset every few years to prevent it from becoming shoddy. This difficulty is avoided by *S. sexangulare,* a similar but less rampant species which remains attractive in dry places for many years without attention. It is somewhat less showy and later in bloom than gold moss, and is taller than *S. acre minus.* Another sedum like the last, but in buff color with cream blooms, is *S. gracile.*

Sedum album offers banks of cream colored starry blooms in the June sun. More delightful to some are its fat little leaves positioned on their upright stems like stacks of miniature sausages which come from under the winter snow crisp

and maroon red. It must have similar culture to gold moss and likewise be confined. The foliage of *Sedum globosum* might at a quick glance be confused with that of *S. album,* but close observation will show that the plant is more prostrate and has more fully orbed leaves. It differs also in being less floriferous and slower spreading.

A fleshy blanket of gigantic gray moss rising three inches high marks *Sedum rupestre,* often called *S. pruinatum.* On stiff stems four inches above its foliage stand masses of golden disks composed of numerous star florets which reflect the full glory of the sun in June. This plant makes a beautiful groundcover, flower border and dry wall subject, yet one should keep in mind that it spreads rather rapidly. *Sedum sediforme* is similar but is easily distinguished by its more pointed foliage and flowers. *Sedum anacampseros* resembles a condensed form of *S. sediforme* with a lavender cast to its foliage. It has creamy or mauve blooms. *Sedum rupestre minus* looks much like a dwarf *S. sediforme.* Of like form and habit, but with emerald foliage having unique comb-like stem crowns, is *S. reflexum cristatum.* With freak stems and beauty included in the bargain, this variety proves itself a stunning novelty.

So far all of the sedums mentioned have been European natives, but the genus is not restricted to that continent. A western American native noted more for its oddity than for its beauty is *S. stenopetalum.* A scrawny green moss, it grows about three inches high bearing yellow stars in June. Then comes its curious stunt: to propagate, it forms tiny new plants at its leaf joints. The parent dies forthwith, dropping the newcomers to renew the life cycle.

Among the mossy sedums are certain distinctive kinds, each of which is in a class by itself. To many the most outstanding one is *S. dasyphyllum,* a gem less than one inch high. In locations which lack good drainage it does rather poorly, but where conditions are well suited to it, it makes a solid nest of opalescent gray, blue and pink beads which are so jewel-like as hardly to resemble plants at all. Above this rise small pink stars in June. It comes from the Mediterranean region but is unquestionably hardy in the North. Another European of equally diminutive size is *S. anglicum minus* which forms a one-half inch mat of fragile green moss graced with pink stars in early summer. A real gem, it is not of sufficient size to trouble its most delicate neighbors despite the fact that it spreads.

Sedum middendorffianum from Siberia has thrifty mounds of feathery bronze-maroon moss about four inches high which have such a dignified, restrained bearing that it can keep the finest company. Its yellow star blooms are small and sparse, but the foliage is a sufficient prize without adornment.

Although most mossy stonecrops require full sun in rather dry soil, three demand light shade in a slightly moist location. One of these, *S. hispanicum bithynicum,* forms a thick blanket of delicate blue-gray moss about an inch high, topped by occasional pink stars in summer. Another, *Sedum lydium* from Asia Minor, looks rather like a reddish form of gold moss with pink stars. The third is a western American native, *S. leibergi,* the foliage of which resembles that of *S. dasyphyllum* with the beads somewhat flattened. The sparse flowers are borne in yellow cymes.

THE BROAD, FLAT LEAVED SPECIES

It is unfortunate that the trailing, vine-like foliage of the oriental *Sedum sarmentosum* has become a pest to some folks, but this usually happens only when among small choice subjects. Its rampant habit can be turned to an asset when it is used as a groundcover among taller rugged perennials or in sunny confined areas. Small yellow stars spangle the plants in early summer.

Sedum stoloniferum, another Asian, sprawls over the ground like a sunbather, with its flat, slightly notched leaves on a tangle of partially naked brown stems. Its sparse flowers are pale pink stars gathered into large, flat, upright clusters. Similar in structure and requirements is *S. spurium* of the Caucasus, which has a pale white-flowered form, *S. spurium album,* but is best known for the choice *S. s. coccineum* or 'Dragon's Blood'. This striking form marshalls troops of upfacing clustered stars of deep, penetrating crimson. As if this were not enough, its foliage likewise glows with the same rich color. In some areas the stoloniferum-spurium types tend to be aggressive and should be watched.

An old favorite, the orange stonecrop, *S. kamtschaticum,* always remains a neat, six inch high, broad leaved clump keeping its form so well that it can be used to advantage even in edgings. A similar form is *S. ellacombianum,* which is differentiated by paler foliage and flowers. *S aizoon* is like a somewhat more floriferous, less compact *S. kamtschaticum. S. kamtschaticum variegatum* is a sure eyecatcher. In form much like the orange stonecrop, it is glorified with splashes of pink and white on its green leaves. It might be said to resemble a cross between *S. kamtschaticum* and *S. stoloniferum,* possessing a special beauty of its own. Like the preceding four species and the four which are to follow, it is a native of the Orient.

Forming a low mat of gray foliage, *Sedum ewersii* makes an attractive groundcover or dry wall plant in sun, enhanced by fluffy pink clusters in June. *S. sieboldii* has similar structure of a somewhat more regal rendering. Its stems and leaves are often tipped red; huge pink blossoms are displayed in September. More dwarf and even more choice is *S. cauticolum* which has foliage of a quaint purple cast and clusters of a rosy hue in August. A slightly enlarged version of *S. cauticolum* is sometimes offered as *Sedum* 'Rosy Carpet.' *S. ewersii homophyllum* is a rare sprawling, contorted form with partially naked stems draped in whorls of glaucous leaves. The blooms are thickly set, handsome hemispheres of rosy pink.

A certain group of sedums has the leaves ranged round the stem in the fashion of rosettes. Most of this type are choice low species which require semi-shade in damp soil. Numbered among them is *S. spathulifolium* from the American northwest. Its rosettes are spread in small colonies about an inch high which bear angular yellow star clusters above the foliage in July. A glaucous form is listed as *S. spathulifolium capablanca.* The same plant in glorious crimson foliage is *S. s. purpureum.* All of the *spathulifolium* types tend to have a faint white powder on the foliage. However, a difficult miniature, *S.* 'Wright's Hybrid', is thoroughly powdered chalk white. Another native of our far west, *S. purdyi,* has small flat glossy rosettes dipped red, which are cast out from the parent plant on red thready runners. The plant resembles *Androsace sempervivoides* but usually proves more troublesome to grow.

Sedum oreganum is another rosette former of the Northwest which has the leaves so flattened as to give a considerably different effect; unlike the others it does best in sun where it forms tidy little clumps three inches high, bearing cymes of yellow stars in June.

From the southeastern United States comes another trio of light shade loving types. Probably the best known of these is *Sedum nevii,* which forms two inch olive brown mats bearing scattered white flowers in June. *S. glaucophyllum* is like a more compact *S. nevii* in a charming pale blue-green which makes it a gem in any garden. *S. ternatum* is a larger, less refined kind with plain green leaves. It is somewhat more floriferous than the others, bearing angular white starred clusters in June. In the semi-shaded wild garden it makes a choice groundcover. Suggestive of this group in appearance is a sun-loving subject from southern

Europe, *S. monregalense*. Its freely spreading rosettes bear massed creamy stars in midsummer.

Sedum populifolium is a shrubby novelty from southern Europe with wide toothed poplar leaves loosely arranged on ten inch brownish stalks. Given a sunny location, it offers creamy stars in midsummer.

A native of mountain areas in various parts of the world, *Sedum roseum* is sometimes cultivated in gardens. Its foliage somewhat resembles that of *S. stoloniferum* in an upright stance six to ten inches high bearing creamy star clusters in early summer. The explanation of its name is that the crushed root has the odor of wilting damask roses. A western American relative, *S. integrifolium,* has purplish flowers.

The prototype of most of the tall stonecrops is *Sedum spectabile,* commonly known as the showy stonecrop. Its huge flat flower clusters, often four inches across in the in the September sun, are not quickly forgotten, and even make useful cutflowers. Any time in the summer its foot high sentry-like stems ringed with gray-green oval leaves make a pleasing sight. *S. spectabile* in type form is a weak pink, but proves most popular in the bright crimson variety 'Brilliant'. Two new color forms, 'Meteor', a deep glowing rose, and 'Stardust', a true white, are much in demand now. *S. alboroseum* is much like a pink flowered *S. spectabile* with charming varigated foliage. *S. verticillatum* resembles a cream flowered *S. spectabile* rendered more daintily.

Spectacular indeed is *Sedum maximum atropurpureum.* It is similar in structure to *S. spectabile* but towers much higher—over two feet. A glowing purple-maroon enhances the entire foliage which is crowned by huge thickly-set heads of luscious rosy-pink in late summer. It is a true perennial despite the fact that some forms of *S. maximum* are annuals. The tall sedums of the 'Showy' type make good border subjects; they are all orientals.

Somewhat similar in structure to *S. spectabile* is *S. telephium,* a familiar subject of old time gardens which has escaped and gone native in many places. It is commonly called liveforever and garden orphine. For generations children have delighted in making "purses" by inflating its fleshy leaves. During the summer it bears reddish-purple clusters. Certain improved forms—one of which is known as 'Indian Chief'—are sometimes offered by nurseries.

In concluding the list of sedums I must warn that it is far from definitive—the number of known species is almost endless. However, it does give a general idea of the hardy perennial kinds which are commonly available and cultivated in America. A diligent and earnest attempt has been made to arrive at accurate identification, but sedums are perhaps more confused in nomenclature than any other genus—except that other branch of succulents, the sempervivums, so we cannot claim to be impeccable.

Remember that on the foregoing listing there are species of *Sedum* appropriate for any and every part of the home grounds in sun or semi-shade. Some are valuable in the rock garden or dry wall. Many kinds make attractive ground-covers or bulbcovers, while others are useful in parts of the wild garden. Certain varieties blend well in the perennial border and a few may even serve as edgings.

Propagation of sedums is proverbially easy. Root division is the simplest and quickest method. Stem cuttings are reliable, and seeds, when available, prove prolific.

* * * * * *

As we have received no word regarding the Seed Exchange, we assume that it will be once again in the very capable hands of Bernard Harkness. Save seeds for it!

NOTES FROM THE SEASON OF 1960

BETTY JANE HAYWARD, *Scarborough, Maine.*

Clematis macropetala. This lovely alpine vine is one of the nicest things to come to the garden in a long time. Grown from seed and in its second blossoming year, it gave much pleasure in late June, twining over the top of an old specimen of *Pinus mughus montana.* It is a species close to *Clematis alpina,* but of Chinese origin. The wide flowers are a lovely pale blue in color, enhanced by a center of cream stamens. Fluffy seed pods form after the flowers fade. They are ripe when ready to fall, and were planted in late autumn, in the hope that some will germinate. These alpine clematis are quite at home trailing over low bushes, as that is their habit in the mountains.

Patrinia triloba. This was written about in a recent issue by my friend Grace Dowbridge; I should like to join in recommending it as an addition of merit for summer bloom in the rock garden. After many trials with seeds that did not germinate, finally a small group was assembled on a sunny slope. In midsummer for many weeks the twelve inch stems were topped by flat sprays of flowers that swayed in the sea breeze. The color is a pleasing shade of yellow that complements the many hues of the campanulas in bloom at the same time. Farrer, in "The English Rock Garden", suggests using it with *Gentiana asclepiadea.* With that in mind, it was planted across the path from an old group of the gentian. However, the blossoming did not coincide: *P. triloba* was long past flowering before the first bud of the gentian opened.

Gentiana asclepiadea. The old group mentioned has been in that spot for many years, coming up faithfully year after year. The crowns increase slowly, with a few more stems to sway in the wind each season. Every authority gives the height as approximately thirty inches. These plants never exceed sixteen at the most. I think that somewhere I have read of a type that is dwarf, so perhaps that is the answer. Recently, some of the white form has been raised. It will be pleasant to have them, but can any white gentian compete with a fine blue one?

Sedum cauticolum. This fine sedum has recently received an Award of Merit in England, and is becoming well known to rock gardeners in America. Coming from the island of Yezo in Japan, it is similar in some respects to the familiar *S. sieboldii,* but is greatly superior to that species in ease of culture, for *S. sieboldii* has an unstable way of doing well in some gardens and failing in others. There is no concern at all about *S. cauticolum:* everywhere it is planted it goes ahead without failing. Being a cliff-dweller, it likes and looks best in sunny crevices where the fine blue-gray foliage is shown to advantage. When, in September, the deep rose blossoms come out, they cover the leaves and give a renewal of bloom to the garden, heartening when little else brightens the scene. The plant is so easily increased that from a few plants many may be had in a short time. Spring division will give established specimens by autumn. In spite of the lateness of bloom, seed will often ripen. The dried withered flowerheads can be taken off in November and will give a quantity of viable seed.

Sedum ewersii. Like the foregoing, this species is receiving some attention. It is sometimes listed as *S. pluricaule,* while another species masqueraded for many years under the name of *S. ewersii,* adding to the confusion. While not quite so showy as *S. cauticolum,* it is worthy of a place in the choice collection. The leaves are gray-green and the habit is trailing; the delicate stems extend along the ground in a vinelike fashion. The flowers of rose come in summer. If planted above a low rock or on a wall, the effect is pleasing. It too can be raised from seed.

Sedum spathulifolium var. *capablanca.* I wish that I might report some real success with this attractive sedum. A few specimens linger about here and there, existing in various places. The almost white foliage is unique. The pale yellow flowers on short stems come in summer. Having graduated long ago from collecting common species, I find a special appeal in these smaller choice kinds.

Crassula milfordii. I am happy to report that this little known plant came through the winter unscathed, in spite of Clay's statement in "The Present Day Rock Garden" that no crassula can be hardy. The little mats of short semi-succulent leaves increased during the summer, and a number were broken off to increase the stock. The original tufts were four or more inches across. The flowers, said to be white on tiny stems of one inch, did not appear, but the plant is attractive enough alone, especially when in autumn it takes on a rosy-red hue. It seems refined enough to associate with other small treasures.

Lewisia brachycalyx. Our beginning with this desirable lewisia was one plant, grown from seed. After some years, by adding other seedlings, the group has grown to a sizeable cluster of twelve. The mother plant brings forth its circle of lovely white blossoms faithfully each spring. Now that it is surrounded by its children, the effect is rewarding. Other lewisias are in the garden, coming and going, as is their way. *L. brachycalyx* seems permanent with none of the uncertainty that one expects of the evergreen types. After the flowers are past the leaves develop, the seeds ripen, then the plant becomes dormant for a period. Toward autumn the green tips of the leaves pierce the ground and remain just showing until spring. If seed is watched for, some can be harvested, and new seedlings can be hoped for.

Morisia monanthos. Although native to the warm climate of Corsica and Sardinia, where it grows at sea-level, this plant will survive the winter in the north, providing the drainage is adequate. It grew and bloomed in our first rock garden nearly thirty years ago, then was lost, and only recently recovered. Several plants came through winter, and are grouped on one of the low walls, surrounded by stone chips. We look forward to seeing the attractive yellow flowers that cluster around the crown among the dark green toothed leaves. Propagation is by seeds that bury themselves around the plant, or by cutting the thick roots in short pieces and leaving them in the sand frame until they sprout and develop new roots. These strong roots evidently delve into the ground and pull the flat crown down among the chips, nearly burying the center.

Androsace carnea var. *laggeri.* This is one of the high alpine types that it is possible to grow and to keep. When suitably established, the dark green tufts will increase in size year by year, furnishing more of the glowing pink blossoms. Seed of androsaces is slow to germinate. A method we have tried with some is to let them ripen on the plant, then to shake them into the stone chip covering around the plants. A number of plants in a carefully selected spot mingle with mats of *Gentiana verna, Thlaspi limosellaefolium, Primula rubra,* etc. Plants from the mountains look happiest growing with their alpine kindred.

Primula x *juliana* 'Dorothy' is a plant that makes little show as an isolated specimen, but grouped it is really effective with many stems displaying thick sprays of pale yellow blossoms. I have in mind a woodland path with the primrose combined with a large planting of *Tiarella cordifolia,* and at the back of these groups many mature plants of *Phlox divaricata,* a lovely effect of pale yellow, creamy white and soft blue.

ACANTHOLIMONS

ROBERT M. SENIOR, *Cincinnati, Ohio*

THE ACANTHOLIMONS, at one time called Statice, are a genus of plants that are not very well known in this country. Possibly the only species that have been raised in America are *AA. glumaceum, echinus,* and *venustum*—all very low growing plants with linear spiny leaves, eminently fitted for the rock garden; in fact, of the hundred odd species that have been described, I believe there is not one tall growing form. The most complete account of the various species was given by Bunge in 1872, entitled "Die Gattung Acantholimon." Since then a number of additional species has been found, and some day a painstaking taxonomist will probably revise the genus. Incidentally, Acantholimon belongs to the family Plumbaginaceae, which includes Armeria, Limonium, and Ceratostigma, as well as that troublesome weed, the plantain.

One reason why so few species are cultivated in this country may be that they grow naturally in unfrequented places, such as certain localities in Iran, Iraq, and parts of Turkey. There is only one species, *A. echinus,* native to Europe; this attractive plant has been found on the island of Crete.

Probably another reason why the plants are not cultivated more widely is that seeds procured from European botanic gardens are almost invariably infertile. Probably these plants were originally gathered in their native habitats, or seeds were procured from this source. We ourselves have procured seeds from European gardens, and although we have planted them in various media, not a single seed has ever germinated. The only plants we have ever raised from seed were those of *A. echinus,* which had been collected by Peter Davis in their native habitat. R. Ruffier-Lanche of the Institute Alpine de Lauteret has written an article on this subject, in which he states that he also was absolutely unsuccessful with all seeds obtained from European sources. Any reader who has obtained seeds gathered in their native habitat may be interested in Mr. Lanche's statement in regard to his experience with seed obtained in this way. He finds that, unlike many alpines, they do not need a chilling process in order to germinate successfully. He reports that a temperature of about 65° to 70° Fahrenheit is satisfactory; but even here he observes that the percentage of germination is generally rather low. In his experience, if the seedlings do not appear in eight to ten days, the seeds probably will not germinate at all.

Farrer, in his "English Rock Garden", calls this genus "thornyfields" and "hedgehogs," and he describes briefly about thirty species, but I daresay many of these he saw only in various herbaria, or read of in floras, since I can find no record of most of them ever having grown in England. He considers the genus a beautiful one, and states that the plants should be raised in a well drained soil, enriched with lime and with an abundance of grit and rock chips.

Roy Elliott, in the March, 1955, *Bulletin of the Alpine Garden Society,* writing of a couple of acantholimons that he had raised, mentions *A. venustum,* which I believe can be purchased in this country. He says: "Few keen growers of alpines would miss *A. venustum* from their collection, with its lovely sprays of bright pink flowers," and later adds: "It seems a pity that only a dozen or so of the known species of Acantholimon are in cultivation, and it is hoped that . . . some of our collectors will make a concentrated effort to re-introduce some of the treasures of Asia Minor."

Acantholimon echinus grew for a time in our rock garden, where it was protected in winter by a pane of plass. When it finally perished, we planted seeds which it had developed, but naturally they failed to germinate. However, we were able to purchase another plant from an American nurseryman, and now we have several offspring which were propagated by cuttings.

THE THIRD INTERNATIONAL ROCK GARDEN PLANT CONFERENCE

C. R. WORTH, *Ithaca, N. Y.*

It was my good fortune to be able to attend the Third International Rock Garden Plant Conference, arranged jointly by the Alpine Garden Society and the Scottish Rock Garden Club, as the guest, while in Great Britain, of the first-mentioned organization. The administration of Ithaca College had generously offered to permit me to remain abroad until September, but the burden imposed on colleagues by my absence, and the needs of my plants, especially the seedlings, made it advisable to limit my absence to the duration of the Conference. Also attending the Conference were President and Mrs. Epstein, Mrs. Margaret Williams of Reno, R. E. Saxe of San Francisco, and Harry Logan of Westport, Conn.

My intention had been to report briefly on the papers presented, as they will be published this autumn, and more fully on the shows and visits to gardens. But an overcrowded schedule often necessitated a choice between events, while frequent interruptions while I was viewing the shows resulted in few notes on the plants seen. It seems that I can do no more than make a very personal report of activities and impressions, with probably more than a few specific names incorrectly remembered.

Leaving Ithaca on April 15, after twelve hours in propellor plane, helicopter and jet, I arrived at London Airport at five the next morning. My suitcase had been left behind at Idlewild, to the consternation of BOAC officials, who held up the city-bound coach while an investigation was made, and the next morning delivered the missing luggage to my hotel gratis. It was growing light as we travelled over the Great West Road, and I had my first glimpses of England. On arrival at the quite magnificently Victorian St. Ermin's Hotel, just off Victoria Street and only a short walk from the RHS Hall, Westminster Abbey, and Buckingham Palace, my room reservation could not be located until at last someone discovered that the name had been recorded as "North".

Finally settled, after a sleepness night, I wandered in the neighborhood of the hotel, more baffled by the short and irregular streets than by any unmapped mountain wilderness, found all the shops closed, so that I could not purchase even reading matter, and gloomily debated returning to America at the first opportunity. In the evening, Stuart Boothman came into the city to see me for a few minutes, and by the next morning, with luggage recovered, everything looked brighter.

At 2:30 P.M. on Monday, April 17, at the invitation of Mr. C. B. Saunders, Secretary of the Alpine Garden Society, I strolled over to the RHS New Hall to watch the show being set up. Barely had I located Mr. Saunders when I was introduced to Mrs. A. N. Griffith, with whom I have exchanged seeds for several years, H. C. Crook, author of two well-known and excellent books on Campanula, and several other persons. From then on there was never a dull moment, for nearly everyone at the Conference semed to know my name and to wish to talk to me; I found the British people most charming and friendly.

As I wandered around the Hall, gasping at the marvellously grown specimens, Mrs. Saunders, one of the most distinguished exhibitors, and I converged simultaneously on a specimen of *Raoulia eximia,* to which the exhibitor had attached a long note detailing its history. We agreed that the plant was extremely

dead, and speculated on whether its owner had unwittingly been nursing a corpse ever since its arrival from New Zealand two years previously. Later, at Edinburgh, we saw a definitely live specimen of the Vegetable Sheep, wrapped in short white wool, whereas the corpse had been completely naked. That evening, Mr. C. H. Hammer, President of the Alpine Garden Society, and I were dinner guests of Mr. Saunders at his club.

On Tuesday morning, before the show opened, I was permitted, not merely to remain in the hall, but to accompany a team of three judges, headed by Sir Frederick Stern, as they made their decisions. Their comments were most illuminating and clarified many points on which I, in my ignorance, might have disagreed with them.

Even with this extra allowance of time, I was unable to examine to my satisfaction all of the eight hundred exhibits, many consisting of three or six pans of different species. Perhaps most impressive to me were the cushion plants, perfect domes and pillows six inches or much more across, chiefly dionysias, *Draba mollissima* and *D. bryoides imbricata,* and *Gypsophila aretioides.* Lewisias were plentiful, and there were many terrestrial orchids, especially pleiones, which in spite of their beauty, seem to me to be out of place among hard-bitten alpines. Most primulas were past their best, so that only a few were exhibited, chiefly European species, with one or two *P. aureata* of the difficult Petiolaris section. Kabschia saxifrages likewise were out of season, but a few englerias were shown, and a number of encrusted ones, especially "Southside Seedling' so heavily dotted that the flowers appeared to be brilliant red with white margin. For the first time I saw *S. cotyledon* with *green,* almost unpitted leaves, and realized that the true plant must be virtually unknown in this country. There were a number of rosettes of the fabulously rare and difficult *S. florulenta,* apparently still many years from flowering. Magnificently grown plants of *Daphne rupestris* were covered with bloom, *Corydalis cashmeriana* was dazzling in its pure deep blue, and there were several pots of *Eritrichium nanum* in flower, the rosettes much greener and more open than are those of our American species, although several persons assured me the plants were quite in character. Cassiopes and a few dwarf rhododendrons, the former of incredible size, were among the many plants which grow but feebly, if at all, for me. The American plants were disappointing, for most of those exhibited were rather easy woodlanders, although there were some fine specimens of *Kelseya uniflora,* all past bloom. Of plants grown from my collected seed I could find only *Erigeron* sp. aff. *simplex, Douglasia montana,* and a pan of seedling *Aquilegia scopulorum* with one poor flower; it was not until later that I realized that one or two seasons would be inadequate time for a seedling to reach show size and quality. Dr. J. G. Elliott's plant of *Castilleja hololeuca* (which he thought had come from my seed, but the plant was entirely new to me), growing in magnificent solitude without a host, won not only a cultural certificate for its owner, but the Farrer Memorial Medal for the best plant in the show—a decision that, I was told, will be debated for years to come.

In the center of the hall, Wisley built up to a height of several feet a sizeable rock garden set with a wealth of both familiar and rare plants. Out from this were four tables on which trade exhibitors had built miniature rock gardens, mostly well done, but one or two with too many and too large plants. Near the entrance Ingwersen had a large table covered with plants in pots, some for sale, others precious propagating stock. Nearby Cambridge Botanic Gardens had an even larger table covered with an enormous variety of plants arranged according to geographical distribution. On the other side, A. G. Weeks had constructed a very large table garden covered with lewisias only, full of bloom. Among them were seedlings grown from Mrs. M. I. Byman's seed, a brilliant

red hybrid originated by the exhibitor, and a number of *L. tweedyi,* full of flowers but looking rather drawn. A table of sempervivums and large displays of dwarf conifers received scant attention, as too many other plants were of greater interest to me.

The Conference Show opened at noon, and shortly thereafter the Overseas Delegates were guests at a luncheon given by the Royal Horticultural Society and presided over by Sir David Bowes Lyon, uncle of Her Majesty the Queen. In addition to the Americans already mentioned, guests were Herr Schacht of the Munich Botanic Gardens, M. Ruffier-Lanche of Lauteret (whose generous contributions have added much to our Seed Exchange), Professor May and others from France, Miss Schlesinger from Australia, Dr. Kiesenhofer from Austria, and others whose names I did not catch. After the toast to the Queen, there were toasts to the Conference and to the Overseas Delegates; to the last Mr. Epstein made the reply. At three Mr. Hammer opened the Conference, after which my paper was presented (and was too long, as were most of the others; apparently I set a bad example), so that I was free to enjoy the remaining days. The show closed at six, allowing an hour in which to freshen up before the Conference Dinner, at which there was a very large attendance. As we went in to dinner, I was approached by Dr. Sampson Clay, author of "The Present Day Rock Garden," who had come up to London especially to see me. Not until late that night did we have a chance to become acquainted, after twenty-five years of correspondence, nor did I see him again.

On Wednesday morning I missed Prof. May's paper on "European Orchids" in order to have more time at the show, but listened to the discussion on "Plants in the Show", and in the afternoon to "Some Interesting Plants from the Eastern Mediterranean" by Mr. M. Ogilvie Grant of Greece, which dealt largely with bulbous plants and orchids, and to Mr. Roy Elliott's "Alpine House Cultivation", in which the speaker was largely concerned with the maintenance of the present-day houses, and with the completely controlled house of the future. In the evening, the Overseas Delegates were guests of the Horticultural Club, oldest of its kind in existence, at a dinner and exhibition of slides of famous English gardens. Meanwhile the show had closed at five o'clock, after an all too brief span of glory.

On Thursday morning Mr. Eliot Hodgkin showed fascinating slides on "Interesting Plants seen during my Travels" in Spain, the eastern Mediterranean, Japan, Peru and Chile; and the paper reading at London terminated with a symposium, "My Experience in the Growing of Difficult Plants." Mrs. Saunders discussed dionysias, Dr. Kiesenhofer read a paper by Mr. Martin on daphnes, Mr. Shackleton talked on celmisias as grown in Ireland, and Mr. Lilley concluded with cassiopes, which he grows to super-perfection.

In the afternoon three coaches of visitors went to Wisley, for an all too brief two hours, even for those who did not waste time on tea. The enormous rock garden is spectacular, but the plants grown there are selected largely for show rather than for rarity. Most impressive were a huge plant of *Rhododendron* 'Temple Bell' covered with enormous pink flowers, a huge plant of *Haberlea rhodopensis* in full bloom, and sheets of golden *Caltha palustris fl. pl.* Battleston Hill, covered with rhododendrons and azaleas in full bloom, was dazzling in color, perhaps a bit garish to some tastes, but out of this world to me—flowers of incredible size, in scarlets more brilliant than I had ever imagined, rich blues and purples, as well as the more familiar shades, small bushes and medium sized trees. A glimpse of the Bowles Memorial Garden, where many of the plant oddities he collected are being preserved, completed the allotted time, and left much of Wisley still unknown to me.

On Friday an all-day excursion began with a visit to Kew, where the rock garden, now being rebuilt of huge rectangular blocks of some yellowish stone whose name I could not learn, suggested a city of stubby, flat-topped castles, but doubtless as the plants mature, the artistic effect will be improved. Among the established plants *Penstemon scouleri albus* fully two yards wide dropped over several rocks and exquisite *Genista* x *kewensis* did credit to its birthplace. But our guide hurried us along to the alpine house, used to display plants in bloom. Then by special dispensation a few of us were allowed to visit the propagating yard, and that was my undoing—I saw no more of Kew. Among the thousands of young pot-plants in frames were many bearing my name as collector, and each of these must be examined in detail, to see what would grow, and how, under those cool cloudy skies. Kew is particularly successful with penstemons, and *P. palmeri* throve magnificently, although under "more suitable" conditions in the States it rarely prospers. But others were more or less out of character, and I pondered long over a single specimen labelled *P. montanus,* looking like a minute stunted holly with crowded dark leaves, instead of its usual loose mat of succulent grey-green foliage.

After lunch at Kew, we passed through Eton and had a glimpse of Windsor Castle on our way to the Savill Gardens at Windsor Great Park. A bit late in starting, our coaches lost their way for a time, so that the visit was greatly curtailed. Here only did I see the lovely woodland and waterside plantings so often illustrated as typical of the English countryside. A row of table gardens on the south side of a high wall displayed many rock plants in full bloom. It was difficult to round up the party and move on to a tea served by some of the local ladies.

On Saturday the tour was to the President's garden, and to the Cambridge Botanic Garden, where there is a large rock garden; after this I was to visit Mrs. Griffith's garden and return to London by train that night. But I was under the weather and spent most of the day in my hotel room, faring out for a brief walk in the afternoon.

On Sunday, April 23, a large party of those attending the conference took the 10 A.M. train to Edinburgh, arriving there at 7:30 P.M., delayed two hours by road repairs. But the long journey passed all too quickly, with the uninterrupted discussion of plants and gardens—and gardeners. Our hotel in Edinburgh, the Minto, comprised of two or possibly more houses, suggested an American tourist home, except for the dining room, bar and ballroom, but was full of what would probably be priceless antiques in this country, though commonplace and of little value there, according to Mrs. Saunders. It seemed bitterly cold, with only small heaters here and there, and hot water bottles in the bed at night. The metered electric stove in my room misbehaved, and continued to operate all five nights I was there, on a single shilling! Either the temperature improved, or I became used to the Edinburgh climate, for the first night was the only one which I found uncomfortable.

Next morning, the frenzied round began again. Papers were read at the Edinburgh School of Agriculture, the show was at the Music Hall on George Street in the heart of the business district, and the Royal Botanic Garden was some distance farther on, while luncheons were at the Minto. Bus service was provided, but much precious time was spent in travelling from one place to another. Mr. E. E. Kemp opened the Edinburgh program with a paper on "The Peat Garden", an excellent preparation for our visit to the Botanic Garden. The death of Mr. David Wilkie, who was to read a paper on gentians, forced a change in the schedule, and Mr. Schacht's paper on "The Habitats of Some Rare Rock Plants" was advanced to the first morning. Mr. Schacht showed

marvellous slides of plants growing in many ranges of Europe and Asia minor, including *Jankaea heldreichii* (which had appeared in bud at the London Show), and *Viola delphinantha*. After lunch, a paper on "The Heather Garden" by Mr. F. P. Knight was extended beyond its scheduled time by projection difficulties, leaving all too few hours for the marvels of the huge rock garden, scree, and peat garden at the Royal Botanic Garden. A small dinner party given by Mr. and Mrs. Davidson and Mr. and Mrs. Kilpatrick proved so enjoyable that we arrived at the reception given by the City and Royal Burgh of Edinburgh after the Lord Mayor had departed, barely in time to join in singing "God Save the Queen".

On Tuesday morning, once again privileged to be at the show before its official opening, I missed the papers on the subjects, "Has the Rock Garden a Place in the Modern Garden?", by Mr. Joe Elliott and Mr. H. Esslemont, and "Dwarf Conifers", by Mr. H. G. Hillier, on the theory that I can read the papers in the Conference Report, but the plants must be seen. Mr. Lawson of Aviemore was permitted to remain with me, and to help me form opinions of the plants shown. The competitive classes had fewer entries than at London, disappointing me in a few cases, but most of the plants were entirely different. At both shows there were Aretian androsaces in quantity, and one of these won the Forrest Medal at Edinburgh. Especially interesting were the primulas of the more difficult sections—Nivales, Petiolaris, and Soldanelloides—Meconopsis, chiefly *M. integrifolia* and *M. grandis*, and several plants introduced by Mrs. Tweedie from Patagonia. But by this time the senses were satiated by so much beauty, and individual impressions are blurred. The trade exhibits were to me especially interesting, in particular one featuring double primroses, and the fabulous plants shown by Mr. Drake and Mr. Lawson. Fascinating too were the incredibly low prices—for 3/6 (50c) to 5/- (70c) one could acquire (at the end of the show) plants never available in this country, such as *Anemone patula obtusiloba*, and fabulous primulas and cassiopes. Only the thought of our American customs restrained me from purchasing an unparalleled collection of treasures. In the evening (the afternoon was devoted to the show) Will Ingwersen talked on plants which had interested him, holding them up in a manner such that few of the audience could see them; and Mr. Saxe followed with an unscheduled showing of some of his slides.

Wednesday it rained—the only rainy day during the Conference, and the one I most wanted to be fair, for we visited two of the most famous gardens in Scotland, both of which have been described, all too modestly, by their owners, in earlier numbers of the *Bulletin*. Which is the more wonderful I cannot say, for both are fabulous, and choice must rest on personal taste. Branklyn, home of Mr. and Mrs. J. T. Renton, is a gem of two acres, with a bit of lawn around the house, the rest of the garden made up of rock gardens, screes, and shrub plantings separated by wide grass paths. The number and variety of alpines is incredible, with lovely commonplaces nestling side by side with the greatest rarities. Buds on the meconopsis promised (especially as here and there one had opened) an overwhelming display in a few days, rhododendrons, cassiopes and other ericaceous plants were massed in bewildering variety, *Ranunculus lyallii* grew like a weed. In the pouring rain I could not give the attention I wished to the great screes, which I should like to have examined plant by plant, but here and there I glimpsed magnificent specimens grown from seeds I had sent: *Polemonium mellitum* and *P. brandegii* in full bloom, clearly pointing out their differences, *Synthyris pinnatifida* and *S. laciniata*, an enormous *Aquilegia jonesii* —doubtless many others which I overlooked.

Keillour's setting is grand, almost beyond comprehension. The restored

castle stands on a tongue of land between two deep ravines, down one of which (at least) pours a raging torrent. The plantings are on a far larger scale than is possible at Branklyn, and utterly demoralizing: difficult primulas, especially those of the Petiolaris section, bedded out in quantity as I should bed Julianas. Yet it must be confessed that the Petiolarids did not win my heart, in spite of their rarity—to me they seem a bit sloppy, with too much leaf for flower. Meconopsis of course, some five hundred species and clones of rhododendrons, and a host of rarities suited to damp rather shady conditions, including ramondas almost as large as cabbages, and even *Jankaea heldreichii* nestling under a rock in the depths of the ravine, *Corydalis cashmeriana* seeding in the paths—these were but a few of the marvels I saw. This is a relatively young garden, started by Major and Mrs. Knox Finlay in 1947, and is being extended every year. In both gardens most of the work is done by the owners, at least where choice plantings are concerned. Mrs. Renton allows no gardener to stray beyond certain limits, and Mrs. Knox Finlay, I was told, is lowered on ropes to weed the precipitious sides of the ravine.

Back in Edinburgh that night, Major Sherriff showed films of the marvellous flora of Bhutan, incredibly profuse and varied, of which he sent back bountiful supplies of seed before his retirement; some of his collections are among the most prized gems of Branklyn and Keillour. Mr. R. C. Elliott showed a sound film of his own creation, designed to arouse the interest of the beginning rock gardener, but greatly enjoyed by experts as well.

On Thursday morning Mr. E. B. Anderson and Mr. T. H. Hoog of Van Tubergen's discussed bulbs, one from the amateur, the other from the professional standpoint. The high spot to me was the set of slides, including some of extremely beautiful bulbous iris hybrids created by Mr. Anderson. This discussion was followed by slides and films taken by Mrs. Ruth Tweedie in southern Patagonia during visits to a sheep farm owned by her husband's family. Mrs. Tweedie has introduced a number of really magnificent plants which seem to be taking hold well, especially *Oxalis laciniata* with thread-like leaves and enormous flowers in a variety of shades, and scarlet *Ourisia ruellioides*. It is to be hoped that the recent collection of "scarlet gorse" will prove as successful.

In the afternoon I again "cut classes"—in this case a paper on rhododendrons, which strongly disapprove of me—to revisit the show and the Botanic Garden. At the latter, my name secured admission to the closely guarded propagating houses and frames, where I saw seedlings of a number of my recent collections. At five the trade exhibitors were allowed to start selling plants, and I looked longingly at the eager purchasers. I heard one exhibitor begging someone to give him a shilling (14c) for a polyanthus of good color, colossal in plant and flower! At six the show was over, and after dinner with Mr. Anderson, we returned to the lecture room for a symposium on "Shows, Showing and Judging", by Mr. Anderson, Will Ingwersen, J. L. Mowat, and Dr. Tod. Discussion from the floor became so lively that at times it verged on the acrimonious.

On Friday morning was another symposium on "Tricky Rock Plants", by Mrs. Boyd Harvey, Jack Drake, R. C. Elliott, and the writer. The Conference Luncheon brought the Conference to a close, although many visitors remained for a tour to Major General Murray-Lyon's garden and the Aviemore nursery, in northern Scotland.

Following the luncheon, Mr. and Mrs. Saunders, Mrs. Williams and I were the guests of Mrs. Boyd Harvey in her garden at Dirleton, on the Firth of Forth. Here Mrs. Tweedie's introductions are being grown most successfully, especially *Oxalis laciniata* in great quantity. *Primula clarkei,* almost lost to cultivation, was in profusion, while *Mertensia primuloides* wandered around like a weed. Mrs.

Saunders was given several treasures, and Mrs. Tweedie, who lives nearby, presented each of us with some of the seeds she had just brought back from Patagonia—priceless treasures of great potential beauty.

That night Mr. and Mrs. Saunders and I returned to London. Mr. Saunders took me to Capt. Mooney's garden at Sevenoaks, southeast of London, a truly spectacular place where many difficult plants seem to flourish, and tender shrubs grow to vast size in the open. On viewing the plants there, mostly strange to me, I felt like the merest novice. We returned to the Saunders' home, where I was admitted to the alpine house from which come so many prize-winners at the London shows. Aretian androsaces, dionysias, *Primula allionii* and rare cyclamen grow there in such quantity that I could observe nothing else intelligently —what would I give for *one* of those plants!

In London the next day there was time for a farewell visit to Westminster Abbey, another view of the Changing of the Guard, before leaving for the airport in the afternoon. At eleven that night, EDST, I was once more in Ithaca, the marvellous adventure over, nothing tangible to show but a few kodachromes, some precious seeds, and an extensive collection of catalogs. But the memories will remain throughout my life—of plants grown with incredible skill, of gardens wonderful beyond even my dreams, and most of all, of the cordiality and friendliness of the people I met.

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