

Bulletin of the
American Rock Garden Society

Volume 48 Number 3

Summer 1990

Cover: *Phlox divaricata* 'Eco Regal'_____

Painting by Carolyn Crawford, of Louisville, Colorado.
A photograph by Don Jacobs served as her model.

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Phlox pilosa 'Moody Blue', left; *P. divaricata* 'Fuller's White', right

Tracking the Timber Phlox

by *Don L. Jacobs*

Of the nearly 70 kinds of phlox recognized as distinct species by most botanists, only one is native outside North America. *Phlox sibirica* apparently escaped from its nearest relatives in Alaska by crossing the Bering Strait more than 100,000 years ago, before the great Pleistocene ice sheets eliminated that migration route. Today, it is a fairly uniform, small, woody species growing over a wide range in Siberia. The other species make up a very diverse, mostly perennial group scattered over all of North America from Mexico to northern Alaska and Canada. There are phlox native to each of 49 states. The native flora of Georgia includes 13 species and 6 additional subspecies, as ascribed by Dr. Edgar Wherry. Several additional species are grown in our gardens, and some of these have escaped and become naturalized. Most notable of these is the northern moss phlox, *Phlox subulata*, which is superficially difficult to distinguish from *Phlox nivalis*, our southern pine phlox, or thrift, with which it hybridizes.

But, like all plants, phlox do not occur in nature as species. They occur as infinitely variable individuals. Only groups of individuals produced by successive vegetative propagations from a single original individual are likely to be completely uniform in their genetic make-up, and in their performance in a specific garden environment. Such a group, or *clone*, constitutes a *cultivar*, which is likely to be given a precise name. This name is not to be used for any other plants of that species, although it may be assigned to other unrelated cultivars, for example, *Rosa* 'President Lincoln' and *Rhododendron* 'President Lincoln'. Cultivars may differ not only in visible traits such as color, size, and shape, but also, or only, in invisible traits revealed by cold-tolerance, drought-resistance, etc.

If a gardener says, "Oh, yes, I am growing *Phlox divaricata*," he isn't telling us very much. This species, called the timber phlox by Dr. Wherry, has one of the widest ranges found in this genus. It occurs from eastern

Texas to central Minnesota, across the southern Great Lakes and Canada to Vermont, and south to Georgia, and in much of the circumscribed territory. It is highly variable, and gardeners in each part of our country are likely to be acquainted with only a few of its variations. If major geographic barriers (a mountain range or ocean) had formed to divide the populations of *Phlox divaricata*, we would undoubtedly have separated and named at least two species. In fact, however, the differences exist in rather continuous series from one region to the next, because of freely interbreeding populations, so no one has been able to ascertain where to draw lines to separate species in this complex.

From north Georgia to Michigan, southern Canada, and New York *Phlox divaricata* characteristically has distinctly notched petals, averages 10"-12" in height, and has flowering shoots with glandular hairs, and rather blunt-pointed leaves. These plants comprise *P. divaricata* as originally described. To the west, from central Georgia to east Texas, and north to Minnesota and Wisconsin, plants characteristically have unnotched petals, average taller (12"-15"), and have upper leaves more taper-pointed. These plants have been designated as subspecies *laphamii*.

In the northwest corner of Georgia, a particularly diverse group of woodland phlox occurs. Each clump may have a unique combination of flower color, petal width, petal notching, plant height, and hairiness, but all are physiologically adapted to the same environment. From this diverse population, the different traits appear to sort out into more uniform popula-

tions at each of the range extremities.

In the Texas-Louisiana area, notched petals are virtually unknown, plants are most robust in spring, but, uniquely, go dormant in summer. Only here are deep purple and dark blue flower color the rule. In western Pennsylvania, notched petals and light lavenders prevail. In southern Minnesota, unnotched, light blue to lavender-blue is characteristic.

In southwest Georgia, from the Flint to the Chattahoochee Rivers, petals are not notched, and red-eyed flowers prevail. The petal ground color is usually some shade of lavender or light purple. About 1950, Mrs. J. Norman Henry introduced her *Phlox divaricata* 'Chattahoochee' from near the Florida-Georgia border. Edgar Wherry states, in *The Genus Phlox*, "Recently Mrs. J. Norman Henry has placed in the trade as 'Chattahoochee' clones of t. *laphami* [sic] from the valley of that name in northern Florida, with deep violet corolla-limb and intense purple eye-ring."

It is significant that Dr. Wherry used the plural *clones*, indicating that the collected material was not genetically uniform, and therefore represents a color type but not a single clone. To complicate this situation, at least two cultivars which are definitely not forms of *Phlox divaricata* are available through several mail order nurseries as *Phlox* 'Chattahoochee'. They are each very attractive in their own right, and worthy of independent recognition.

One of these imposters, a non-*divaricata* cultivar, is a decumbent plant with thick, firm, dark green, roughly hairy, tapered leaves, less than one quarter inch wide at the

base, and with margins rolled under. The petals are rounded and purplish-blue with a contrasting violet-red eye. Unlike *Phlox divaricata*, this plant does not root freely at the nodes, and it bears no gland-tipped hairs on its flowering shoots. In fact, it resembles *Phlox divaricata* only in flower color. In vegetative characters, it most closely approaches *Phlox amoena* ssp. *lighthipei*, to which it is similar in leaf shape, texture, hairiness, lack of glands, non-rooting decumbent stems, and petal shape. The rich *P. divaricata* fragrance is absent from both this cultivated plant and *Phlox amoena* ssp. *lighthipei* itself. Furthermore, both plants commonly exhibit purple stems and undersides of leaves, seldom seen in *P. divaricata*.

I have obtained this plant from several different nursery sources, including Holbrook Nursery, Fletcher, North Carolina, but none could establish an origin for it. Despite the resemblance, it is not a simple selection from *P. a.* ssp. *lighthipei*. It is most likely a garden hybrid of that species with an eyed *P. subulata* or *P. pilosa*. The eye of the hybrid is composed of a pair of purple bars at the base of each petal, making it sharply defined. This is characteristic of eyed forms of *P. pilosa* and *P. subulata*, but eyes in *P. divaricata* diffuse onto the petals. *Phlox divaricata* is a species of mature floodplain woods and surroundings, whereas the chalice phloxes (*P. amoena*) are sand-hill, and more exposed upland plants. The blue flower color of the hybrid distinguishes it from its likely relatives, whose flowers are pink to mauve. It has hairs on its flower tubes as found in some *Phlox pilosa*, but not in *P.*

amoena or *P. divaricata*.

Mounting evidence indicates a British garden origin for this cultivar; it was probably a spontaneous hybrid in the early 1970s. Will Ingwersen published his *Manual of Alpine Plants* in 1978 to commemorate the Golden Jubilee of his Birch Farm Nursery. By his statements, we know the writing was done within the two prior years. He states in his list of phloxes: "x 'Chattahoochee'. Possibly a hybrid between *P. divaricata* and *P. pilosa*. A recent introduction and a splendid plant." Here Mr. Ingwersen ignored his earlier reference, "I am indebted to the admirable monograph of the genus *Phlox* written by Dr. Edgar Wherry, and published in 1955." Wherry unequivocally identified 'Chattahoochee' as a selection of *P. divaricata* ssp. *laphamii*, not a hybrid. I find no record of the Ingwersen plant known as 'Chattahoochee' in the USA prior to 1980, nor do I have information as to who supplied him with it. Allen Bush of Holbrook Nursery introduced it here at about that time. At this point, it becomes obvious that the plant needs a cultivar name. I will leave it to the nurseries propagating and distributing the plant to choose a new name.

I first observed a second aberrant phlox at an ARGS plant show as a superior specimen exhibited by Howard Porter of Connecticut under the name x 'Chattahoochee'. As with the *P. amoena* hybrid above, many gardeners express familiarity with this second plant, indicate it has had a short stay in their garden, and believe it was a clone from Mrs. Henry's collections. This is not possible since this second plant is clearly a form of

Phlox pilosa. A characteristically detailed drawing of this plant, by Laura Louise Foster, appeared on the cover of the ARGS *Bulletin* in 1975, while Howard Porter was editor.

This May, new light was finally shed on the identity and origins of this phlox as, with immeasurable delight, I opened a carton from Baldassare Mineo of Siskiyou Rare Plant Nursery. It contained a specimen of the plant which they have distributed since the mid-1970s as 'Chattahoochee'. This matched in every detail my memory of Howard Porter's plant. I can now confidently assign it to *P. pilosa* ssp. *fulgida*, the glistening prairie phlox. This subspecies was first collected near Minneapolis, Minnesota. It is the northernmost segregate of *P. pilosa*, ranging from Alberta to Wisconsin, Illinois, and Nebraska. Apart from its conspicuous hairiness, including even the flower tubes, it is distinct in other ways from all forms of *P. divaricata*. Flower tubes of *P. divaricata* are always hairless, but stems, leaves, and sepals bear gland-tipped hairs. No gland-tipped hairs occur on *P. pilosa* ssp. *fulgida*. Other characteristics that align this phlox with *P. pilosa* and separate it from *P. divaricata* are that it has a vigorous, erect habit, without stems rooting at the nodes; there is an absence of broad-leaved sterile shoots; and the broadest leaves are near the inflorescence.

The *P. pilosa* complex is second only to *P. divaricata* in the extent of its range and exceeds that species in north-to-south distribution, and in morphological diversity. Wherry recognized at least seven subspecies.

The plant of Howard Porter and Siskiyou Rare Plant Nursery is a desir-

able, red-purple-eyed, bluish form. The flower is outstanding, not only for its sharply-defined reddish eye, but also for the blue ground color of the petals on a strictly erect plant (photo, p. 223). Siskiyou Rare Plant Nursery is again propagating this plant and will henceforth sell it under the new name *P. pilosa* ssp. *fulgida* 'Moody Blue'.

Finally, we come to the problem of Mrs. Henry's 'Chattahoochee'. The name apparently was based on a collection of several similar plants, definitely belonging to the *P. divaricata* complex. According to Miss Henry, daughter of Mrs. J. Norman Henry, and current Director of the Henry Foundation, there have been no verifiable descendents of the original collections at the Foundation for a number of years. Plants purchased from other nurseries for reintroduction have included the two plants discussed above. Other specimens were similar to Mrs. Henry's original collections. Taking into consideration the confusion surrounding this cultivar name, I recommend using the term "Chattahoochee type" (photo, p. 222), and assigning new, precise cultivar names for red-eyed *P. divaricata* forms. For several years I have propagated a clone which I have named *P. divaricata* 'Eco Regal' (photo, p. 222) from a West Georgia collection made between the Flint and the Chattahoochee Rivers. Compared to other plants of the type, this cultivar is taller (15"), larger-flowered (1.5" diameter), and has a purple-blue ground, with a contrasting violet-red eye in a pale zone. It exudes a rich fragrance. It epitomizes the 'Chattahoochee' type.

Wherever *Phlox divaricata* occurs, albinos may appear, but they are rare.

The best-known cultivar is 'Fuller's White', a northern, deeply-notched form that does not perform as well in Piedmont Georgia as it does in the glaciated areas north of here (photo, p. 221) 'Eco Notchless White' was selected from northwest Georgia seedlings and is a dependable performer here (photo, p. 221). Other desirable cultivars, all with delightful fragrance include 'Eco Blue Moon', a superior 10"-12" blue with broad, overlapping rounded petals, sometimes six (photo, p. 221), and 'Eco Texas Purple', with large, dark-purple flowers with red-violet eyes, to 15" (photo, p. 223). No clear pink flowers have been observed in this species, but they may occur somewhere.

Once superior cultivars are obtained, every effort should be made to perpetuate them, but we must not put all our eggs in a few baskets. Natural seedling production, both among selected garden forms, and in wild communities, should be encouraged and monitored to ensure the fullest potential of timber phlox for the future.

Throughout its range, the timber phlox seems to prefer stabilized, wooded, flood plains, wet from fall through spring, but quite dry in summer. The deciduous trees that dominate such habitats are leafless from fall until midspring, and this is when the phlox are most active. Moisture is abundant, sunlight is unimpeded, though less intense than in summer, and temperatures are cool, but conducive to sturdy growth. The soil is moderately fertile and near neutral, never strongly acid. Gardens in the Southeast can furnish these

conditions readily, but our usually high rainfall leaches nutrients and induces increasing acidity. Frequent light applications of lime and a balanced fertilizer will therefore make our timber phlox happier here. Some cultivars can even tolerate full-sun exposure, if year-round moisture is adequate. With such versatility there should be cultivars to please every gardener.

Reference

Wherry, Edgar. *The Genus Phlox*. Associates of the Morris Arboretum: Philadelphia. 1955.

Don Jacobs is a pioneer rock gardener in the Southeastern Uplands. His garden, near Stone Mountain, Georgia, has served as a laboratory testing a broad range of traditional alpiners under southerly skies. He has sought out little known natives in their haunts throughout the South. He has also travelled and introduced ferns, hardy gesneriads and other novelties from as far away as the mountains of Southwestern China, and distributes his plants by mail order through Eco-Gardens. He has a PhD in ecology, and formerly taught plant geography and ecology in Georgia and Minnesota.

Illustration by Rob Proctor.



Pinellia ternata



Pinellia pedatisecta

Pinellias

by James Rugh

All right, I admit it: I'm rather fond of odd plants. That said, I'm attracted to the aroids. Deni Bown, in her book *Aroids*, points out that, "if you rid yourself of ideas of prettiness the inflorescence can be appreciated for its sculptural quality, an almost space-age attention to line and form which is at the same time primitive in its symbolism." However, let's face it; a family with plants that have hoods and tongues and smell vile is just plain odd.

The huge aroid family is more common than many suppose. It includes such familiar house plants as *Monstera deliciosa*, economic plants such as sweet flag (*Acorus calamus*) and taro (*Alocasia* and *Colocasia*), as well as ornamentals, such as calla lilies (*Zantedeschia aethiopica*) and *Caladium*. An aroid species familiar to many American gardeners is the native jack-in-the-pulpit, an arisaema. Like all aroids, the "flower" is actually an inflorescence; a modified leaf (the "pulpit") surrounds a spadix or shaft (the "Jack"), around which are found small, primitive flowers.

The genus *Pinellia* is an obscure branch of the aroid tribe, in the subfamily Aroideae. The genus was named in 1830 by an Italian, Michele Tenore, and it is so closely related to *Arisaema* that it almost takes a botanist to separate the two. The main difference is that *Arisaema* ovaries always have two or more ovules in each locule, but *Pinellia* has ovaries with a single ovule. In other words, *Arisaema* berries usually have two or more seeds, but *Pinellia* berries have just one. There are other differences, but to the casual observer they are not noticeable.

There are six species. Of these, *Pinellia integrifolia*, *P. cordata*, *P. peltata*, and *P. pedatisecta* are native to China. *Pinellia tripartita* is endemic to Japan, and *Pinellia ternata* is widespread across China, Japan, and Korea.

Every plant family seems to have a black sheep or two. Unfortunately for *Pinellia*, one plant has caused many gardeners to avoid the entire genus for fear it may be weedy. Let's get

the black sheep out of the way first. It's *Pinellia ternata* (Thunb.) Breitenbach, and it appears to have been the first species described. That was in 1784, and it was originally named *Arum ternatum*. Tenore then listed it as *Pinellia tuberifera* when he split the genus. The rules of nomenclature support the first species name given, and thus the plant is now known as *Pinellia ternata*. In its region of origin, it is found in a wide variety of habitats, including cultivated fields and along roadways. It has even been reported growing beside the Great Wall of China. It is a small plant, 4"-6" tall, and has green, three-segmented leaves 6"-8" long that are oblong-elliptic to ovate-lanceolate in shape. Often the juvenile leaves are entire. Each segment is about 2" long. A narrow, 3"-long, pinched, green inflorescence with a purple cast is produced on a scape that rises above the leaves. A slender spadix extends out and upward an inch or two beyond the slightly hooded spathe. An extended spadix is a common feature of the genus, and it is believed that this directs insects to the flower parts hidden within the spathe.

What makes this plant unwelcome to some gardeners is its habit of forming bulbils at the base of every stalk near the soil surface. Some growers report that it pops up everywhere, while others do not find it so invasive. I have found it easy to pull up—some of the wild seeders are far harder to control (*Aquilegia* comes to mind).

In China, pinellias are used medicinally to cure vomiting, malaria, toothache, and earache. *Pinellia ternata* is the most commonly used

species. From it the drug *tubera ari* is extracted. Studies of the drug have shown that it does relieve nausea. However, it can be poisonous in quantity. The Chinese recommend ginger as an antidote.

The Japanese endemic, *P. tripartita*, is similar in appearance to *P. ternata*. It has broad, green, 6"-8" leaves with three lobes. The leaves are not divided into separate leaflets as in *P. ternata*, and they are twice as large. The center lobe can be up to 6" long, the side lobes smaller. The spathe is pale green and glossy on the outside, light purple and covered with wart-like projections on the inside. The spadix forms a thin tail that extends 4"-6" above the spathe. Like all members of the family, it forms a small underground tuber and blooms in summer. It does not form bulbils.

The smallest member of the family is *P. integrifolia*, at 6" tall. It can be recognized by its sharply pointed leaves, which are ovate and unlobed. The tiny green spathe is just over 1" long with a spadix extending not more than half an inch above the spathe. *Pinellia peltata* is the most recently described species, first published in 1935. It has leaves shaped like a shield. It is rarely referred to in the literature.

We now come to a real gem, *Pinellia cordata*. The late H. Lincoln Foster grew this in his alpine house and pronounced it a real beauty with a scented bloom. I second his assessment, although I find the odor very faint. In Japan, it is grown as a pot plant, and this has caused it to be reported as native to Japan. It actually comes from southeastern and eastern China, and it has proven hardy in

Key to the Species of *Pinellia*

(Based on a key to the Chinese species, supplied by the Beijing Botanical Garden and translated by Dr. Shiu-Yang Hu.)

- 1. Leaves simple
 - 2. Leaves not peltate
 - 3. Leaves ovate or oblong, base not cordate *P. integrifolia*
 - 3. Leaves elongate-triangular, oblong-ovate or sagittate, purple beneath, base cordate, bulbils form at junction of leaf and stalk *P. cordata*
 - 2. Leaves peltate, ovate or oblong *P. peltata*
- 1. Leaves trilobate or palmately parted
 - 4. Leaves lobed or cut in threes
 - 5. Leaves cut to base in three parts; plant 4"-6" tall
 - 6. Lobes not linear, bulbils form at base of stalk *P. ternata* f. *ternata*
 - 6. Lobes linear *P. t. f. angustata*
 - 5. Leaves only lobed in threes; plant 5.75"-7.75" tall; endemic to Japan
 - 7. Spathe light purple inside *P. tripartita* f. *tripartita*
 - 7. Spathe deep purple inside *P. tripartita* f. *atropurpurea*
 - 4. Leaves palmately parted, like the fingers of a hand *P. pedatisecta*

zone 5 gardens in New England.

Considering its small size, the genus *Pinellia* offers an amazing array of leaf shapes. The leaf of *Pinellia cordata* is quite striking and very handsome. It has an undivided, heart-shaped leaf (some of the other species produce cordate leaves when immature) and is the only one with variegated leaves. The leaves are glaucous, often reaching a length of 6", held on pink or purple petioles. The undersides of the leaves have a pronounced purple cast. The upper sides are dark, glossy green with the vein network clearly defined and nearly white.

It comes up early and soon pushes up a very small, pale green spathe

with a pale purple interior. The spathe ends in two blunt tips which curve over the top. The spadix is thin and extends out of the spathe at an angle, then bends and shoots skyward. This one also forms bulbils, both on the stalk near the soil surface and at the junction of the leaf and the stalk. They are horned, perhaps to catch in the fur of passing animals. Considering what a choice plant this is, I don't imagine many would find the bulbils objectionable.

The most stately member of the group is *Pinellia pedatisecta*. It was originally described as a subspecies of *P. ternata*. Having grown both, I see very little similarity. This native of eastern China is hardy at least to

zone 5. Like all members of the genus it grows best in rich, well-drained, woodland conditions. Its leaf is so different from the single leaf of *P. cordata* that, out of flower, you would hardly suspect the two are related. *Pinellia pedatisecta* produces lush, ten-segmented leaf fans 2' tall. The separate bloom stalks reach 3' and have the typical, narrow, pinched, green *Pinellia* scapes, 9" long. There is an amazingly strong resemblance to our native *Arisaema dracontium*.

In New England, *Pinellia pedatisecta* does not show itself above ground until mid-June but then grows rapidly and is in full bloom just three or four weeks later. It will come up through low, early spring bloomers. I planted a clump in a bed of *Phlox stolonifera* f. *alba*. By June, the

phlox is finished blooming and forms a green carpet. Letting the *Pinellia* grow through this light cover adds an exciting summer interest to an otherwise dull area.

Arisaemas are often functionally self-sterile, but not *Pinellia*. The seeds of *P. pedatisecta* mature rapidly and by September the bloom stalk flops. The white berries can be collected and the seeds removed and sown fresh. If kept warm, they will often germinate in a few weeks. They can also be stratified moist over winter in a refrigerator. During the first year a tiny tuber and a single leaf are produced. The immature leaves are usually cordate. Each year the leaf gets larger and begins to take on the mature characteristics of the particular species. After four or five years the plant will be of blooming size.

Acknowledgement

Z.M. Zhang of the Beijing Botanical Garden graciously provided information on the Chinese species. Jennifer Quigley of the Arnold Arboretum kindly obtained Chinese reference literature.

References

Brown, Deni. 1988. *Aroids*. Portland: Timber Press.

Foster, Laura Louise. 1987. "*Pinellia*: Harper's Poison, Hamilton's Meat." *Bulletin of the American Rock Garden Society* 45(4): 201-202.

Glattstein, Judy. 1987. "Hardy Aroids in the Garden." *Arnoldia* Vol. 47(2): 27-34.

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Drawings by Dick Bartlett.

Arabis

by Vaclav Plestil

The genus *Arabis* is a widely conceived one with more than 100 species. With the sound of the name, most of us immediately think of *Arabis caucasica*, commonly grown as a border plant, or even as carpets over graves in cemeteries. It is really a good groundcover for drier places and poor, alkaline or neutral soils, and is even tolerant of partial shade. There exist forms and cultivars with lilac flowers and double flowers, and cultivars with variegated foliage. For a smaller rock garden, it is a bit too robust and fast-spreading, but it is always worth having some small colony somewhere in the garden. Propagating by cuttings or layerings is easy.

Closely related is our European *Arabis alpina*. It is a dweller of moist places, brook sides, and moist screes at upper elevations of the Alps and the Carpathians, always preferring limestone. This plant does not form large, cushion-like colonies, but only one to several loose rosettes of vivid, pale green, sinuate or irregularly

bluntly-dentate leaves, covered by scattered, short, stiff bristles, and held close to the ground. The flowers have petals a bit narrower than in *A. caucasica* and are in a loose raceme on a stalk 20-25 cm tall, with one to several stalks per rosette. In the garden, it does well if planted in moister places in a well-aerated soil mix with a good part of limestone. It is always short-lived in the garden, and thus it should be retained by continual repeated sowing. In my opinion, it is a plant for collectors. But I am writing about it because there is another closely related species, *A. pieninica*. This plant is endemic to a very small area of Triassic limestone on the border of Slovakia and Poland, a bit eastwards of the High Tatras. It inhabits cliffs and crevices along the river Dunajec. *Arabis pieninica* is smaller and daintier than *A. caucasica*, forming similar carpets of grayish green rosettes, its white-flowered stalks only 10-15 cm tall. This plant is easy in the garden and easily adaptable even to

harsh conditions—and in contrast to *A. caucasica*, it is more shade tolerant, not becoming lax and loose. It is easy both from cuttings and seed.

Another medium-sized European species is *A. muralis*, with lilac to pale mauve flowers in dense, spike-like racemes on 20-25 cm high stems. Leaves are appressed to the ground, arranged in rosettes which are not too dense, rather similar to those of *A. alpina*. However, the leaves are leathery, dull green to bronze-tinged, and a bit glossy on the surface, with short, stiff hairs loosely scattered over their surface. This plant is often only biennial. For us it is significant that this species often mistakenly appears in seed exchanges in place of the more desirable *Arabis blepharophylla*, even in many botanical garden exchanges. But it is a very modest and well-meaning plant, able to survive even under conditions where only the hardiest sempervivums will grow.

Sometimes here and there seed of *A. japonica* is offered, now correctly called *A. stelleri* var. *japonica*. This is a lovely, smaller plant, so often only biennial, but self-sowing well in the rock garden. Most beautiful are plants with very regular, single rosettes of a darker, bluish-green, ligulate leaves loosely crenate on their margins, and always appressed to the ground. The flowers are smaller than in the previous species, but numerous, and held densely together in short, cylindrical to conical inflorescences. The entire plant is usually only about 10 cm high at flowering time, up to 15-18 cm in the fruiting stage. Its tolerance of very variable conditions is admirable, as it can

survive and be beautiful both in scorching sun and in shade, on nearly pure limestone grit or even on pine leafmold, which is very acidic. As it self-sows well, only one care need be taken—from time to time remove all surplus seedlings.

Another interesting and often-grown group of plants is the alliance of species around *A. soyeri*. All of these plants come from corners of the Alps and have spatulate or nearly rounded, ovate to obovate, significantly petioled leaves, arranged in more or less dense rosettes about 4-6 cm across. The leaves are in most cases a bit leathery, glabrous, and glossy. In *A. soyeri* ssp. *jacquinii*, which is most often grown, the leaves are grassy green and regularly arranged. *Arabis caerulescens* seems to prefer more sun and a drier spot. There are numerous forms and varieties, sometimes listed as separate species, but if you have one of these in your garden, you have them all.

Another quite different group are the plants forming carpets composed of smaller rosettes, mostly less than 4 cm across. Many species grow in southeastern Europe, some in the Alps, and nearly all of them are very lovely and desirable alpiners. *Arabis aubrietioides* can sometimes be obtained from specialized nurseries. Its ash-gray to greenish leaves really do recall some species of the related genus *Aubrieta*. The flowers are white. *Arabis ferdinandi-coburgi* from Bulgaria is a dainty species with small, grayish-green rosettes arranged in a dense cushion and white flowers on stalks 5-8 cm high.

Some time ago, two species from the Alps were grown here more

commonly and were offered as excellent plants for beginners! One is *Arabis x sturii* with small, grass-green rosettes of lanceolate, more or less blunt-tipped leaves only 15-20 cm long, rapidly increasing into colonies over a foot across on limestone. The second species, unidentified, seems to prefer more moisture, and its leaf rosettes are densely silky-hairy to tomentose in a sunny position. In both plants, the flowers are in loose racemes, irregular, pure and shining white; neither is usually more than 8-10 cm high. I like them very much. *Arabis androsacea* also belongs here, another lovely species forming only small, more or less dense cushions, with white flowers on short stems. I cannot say more, as I've never grown this species.

Arabis x kellereri is really a gem among the European species, as it is a very small and slow-growing alpine of the eastern Alps. Its rosettes are usually less than 2 cm in diameter and composed of tiny, lanceolate, dark green leaves sometimes turning bronze, and covered with very short, appressed hairs, especially on its margins. Shining white flowers about 1 cm across are held in loose, irregular racemes, all only 5-7 cm high. This is a limestone dweller, doing best on drier scree or in a crevice among stones, or in the tufa. It seems to be happiest in the same conditions under which warmth-tolerant porophyllum saxifrages grow. Here it is shy in setting seed but easily propagated by cuttings. Similar, but more robust, and with vivid green leaves, is *A. x sundermannii*—but this plant I have never tried here.

All the American species, including

the segregate genus *Boecheera* (named to honor the author of *Flora of Greenland*, Tyge W. Böcher), seem to be very different. None of these is carpet- or cushion-forming. The majority of the species are perennial with a branched caudex, often becoming more or less woody, and forming rich, dense clumps of rosettes on its branchlets. Many of these plants are lovely and worth having in the rock garden. Several have become a constant part of plantings in our rock gardens here.

Perhaps most popular and most often seen in rock gardens is *A. blepharophylla*, introduced into our country about 25 years ago. Its magenta flowers are large and make the whole plant very attractive. There are some selections of pinkish or carmine-shaded flowers. In stature, it is similar to *A. muralis* at first sight—especially when not flowering—and it is very frequently mistaken for this plant. It is not difficult here in any well-drained soil, but is often short-lived. For older plants, our regular mid-winter thawing periods are often fatal. But they are easily replaced by new seedlings. Perhaps the nicest effect is when the plants are scattered on scree. My first plants of *A. blepharophylla* were received in the 1960s from Mr. Bohumil Janouch, to whom I am still grateful for many good plants and much know-how.

Another species relatively frequently grown here and originating in the American West is *Arabis lemmonii*, a small plant with nice rosettes of bluntly spatulate, glaucous leaves with fine, scattered and appressed hairlets. The entire clump is rarely more than 8 cm

wide. Inflorescences are about 10-15 cm high on a leafy stem, the flowers smaller than those of *A. blepharophylla*, lilac to pale mauve or rose. This plant is very adaptable to an ample spectrum of conditions, tolerant of hot sun or partial shade, and soils from very acid to pure limestone grit, often self-sowing but not becoming weedy. A close relative, *Arabis lyalii*, seems to be much more difficult, and it is probably less ecologically plastic and adaptable. It forms, with age, dense tufts of very small and narrow, ligulate to narrowly lanceolate, blunt-tipped leaves, pale, glaucous green but less glaucous than those of *A. lemmonii*. The rosettes here are therefore smaller, only 20-35 mm in diameter, and dense. Flowers are borne on stems only 5-7 cm tall at anthesis, and are small and of the same shape and color as in the previous species. Here, it does best in a sunny spot on very sandy, gritty soil, mildly acid to neutral, and top-dressed with chips of volcanic melaphyre. It is grown in combination with other plants that also dislike too much moisture, such as *Townsendia*, *Astragalus purshii*, *Draba sierrae*, etc. It sets seed relatively well. I hope that this species will spread itself among our alpine gardeners and be retained in cultivation, since in the wild—they say—it is becoming endangered and scarce.

I also like *A. platysperma*, a very small plant with dark green, glossy, widely spatulate, small leaves in rosettes on a semi-woody, branched caudex. The flowers are small and lilac, on stems 3-4 cm high. They are followed by very wide, long silicles, which are bizarre and very decorative.

The seeds have wide, pellucid, winged rims.

About 20 years ago I had *Arabis parishii*, a jewel with tiny leaves, on first sight recalling *Petrophytum*, but less blue. The stems were only 2-3 cm tall and the flowers very small and rose. The silicles were only up to 8 mm long and about 2 mm wide. Over time this species has been lost here. If somebody is growing this lovely dwarf *Arabis*, please let me know. *Arabis microphylla* is also related, but it is still not available.

Finally, I will mention two hirsute and ciliate to bristly species. *Arabis cusickii* is worth a try. Although it does not belong to the true dwarfs, its open clumps of bristly, leafy stem bases are quite nice, as are its pinkish to nearly white flowers. But I'd like to recommend—even simply as an interesting foliage plant—*Arabis sparsiflora*. Its variety *atrorubens* I have acquired as seed from the Berry Botanic Gardens, in Oregon, and it is becoming one of my favorites. Its rosettes, when not flowering, recall some smooth-leaved *Draba* of the *Aizopsis* section. They are only about 4 cm in diameter, nicely grassy or darker green, bristly, and hairy. The stems become too tall to be decorative, up to 10 cm tall. But if these are cut off in time, the plant will flower again several times. It is very drought resistant and it self-sows freely. So I would like to recommend this species to beginners.

Vaclav Plestil is a highly experienced and widely travelled Czechoslovakian gardener. He is very knowledgeable about American plants, as well as those from other parts of the world.



Aquilegia jonesii,
in the Vesalls' garden (see p. 192)

David Vesall

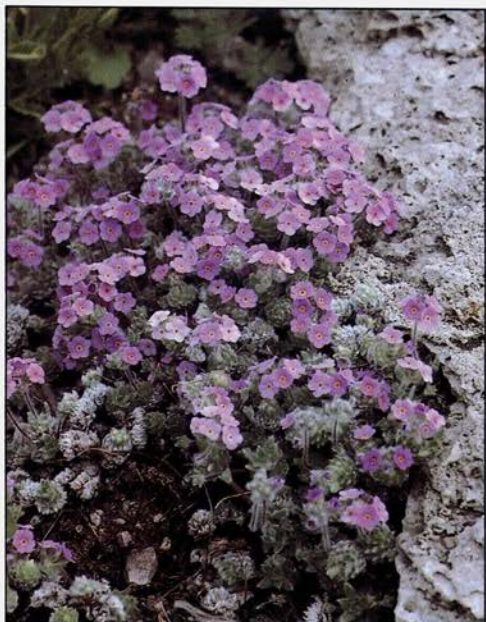


Androsace lanuginosa (see p. 189)

Panayoti Kelaidis

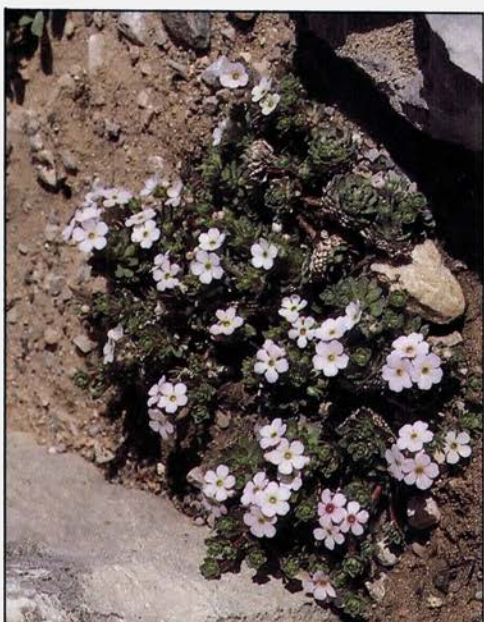
Androsace jacquemontii

Panayoti Kelaidis



Androsace mucronifolia

Panayoti Kelaidis





Astragalus sericoleucus, in habitat (see p.184)

James Locklear

Astragalus sericoleucus (see p. 184)

James Locklear





Phlox oklahomensis
(see p. 182)

James Locklear



Clematis fremontii (see p. 182) James Locklear

Melampodium leucanthum
(see p. 184)

James Locklear



Aster fendleri (see p. 183)

James Locklear





Hedyotis nigricans (see p. 185)

James Locklear

Nemastylis geminiflora (see p. 181)

Panayoti Kelaidis



Rock Garden Plants of Kansas

by James H. Locklear

It is no secret that Kansas suffers an image problem. In the minds of many, no place is closer to the middle of nowhere than Kansas. Even the state's tourism slogan, "Linger Longer in Kansas," implies that Kansas is a place people pass through to get somewhere else.

Once, when writing about the uninviting nature of Great Basin landscapes, Panayoti Kelaidis suggested that plantspeople should take such apparent emptiness as a signal that great riches are to be found there. Given Kansas' reputation, it should come as no surprise that there are many gems to be discovered in the flora of the Sunflower State, if one takes the time and knows where to look.

Kansas is famous for its wheat fields, and a good portion of the western half is cultivated to this crop. There are, however, excellent stretches of native grassland in the hillier parts of the state that possess a wide array of wildflowers.

Some of the largest and finest tracts of tallgrass prairie in the United

States are found in the singular Flint Hills of eastern Kansas. Wildflowers abound in this region and many, such as prairie violet (*Viola pedatifida*), white-eyed grass (*Sisyrinchium campestre*), and prairie iris (*Nemastylis geminiflora*; photo p. 180) are of rock garden stature.

Farther west, mixed grass and then shortgrass prairie dominates the landscape. It is in this part of Kansas that the finest rock plants are found. Here, particularly on rocky hilltops, river bluffs, mesas, and buttes, natural rock gardens of unexpected beauty occur.

In the mixed grass prairie region of north central Kansas, two ranges of hills give a rolling topography to the landscape. The eastern range is referred to as the Smoky Hills, underlain principally by Dakota sandstone. The western range is called the Blue Hills, and here limestones predominate. The Blue Hills are also referred to as Post Rock Country. A familiar sight in this region are miles of limestone fence posts, quarried by the early settlers of this essentially treeless country and still standing today.

It is in the Blue Hills that some of the state's most distinctive wildflowers can be found. Many gardeners are familiar with the Missouri primrose (*Oenothera macrocarpa* ssp. *macrocarpa*), which occurs here on rocky hillsides and roadcuts. A hardly-known local relative is Fremont's evening primrose (*O. macrocarpa* ssp. *fremontii*), once held as a distinct species and now treated as a subspecies. Imagine a smaller scale Missouri primrose with narrow, silvery leaves, pale yellow flowers, and a more tufted growth habit. That is the description of this attractive plant.

Another rock plant found here is resinous skullcap (*Scutellaria resinosa*)—an unfortunate name for a beautiful wildflower. Semi-shrubby in habit, this member of the mint family has boxwood-like foliage and bears numerous purple flowers over a long period from May into July. We have a shell-pink form in our collections at the Dyck Arboretum of the Plains. Claude Barr, in his book, *Jewels of the Plains*, describes this as a species "of great charm and perfect garden behavior."

The real eye-catcher of the Blue Hills is Fremont's clematis (*Clematis fremontii*; photo, p. 179). A non-vining type, this clematis sends up robust clusters of 6"-12" stems bearing large, thick, leathery leaves. The bonnet-shaped flowers, produced from April into June, have an almost ceramic look. A perennial with three-season interest, Fremont's clematis bears large, attractive clusters of seed through the summer and fall, and the leathery foliage, dried and brown, persists into the winter. This is a species of rocky, limestone prairie.

At the opposite border of the state

in south-central Kansas are the Red Hills, an area of buttes, mesas, canyons, and mixed grass prairie. The name for this region comes from the brick-red color of the local soils. The scenery here is magnificent and the flora is distinctive. A number of plants from the southwestern US reach their northeastern limits in the Red Hills.

One of the very special plants of this region is the Oklahoma phlox (*Phlox oklahomensis*; photo, p. 179). Known only from Kansas, Oklahoma, and one county in Texas, this is a low, somewhat sprawling species. The leaves are narrow and rather stiff. The flowers are borne in loose clusters from late March into May and are quite fragrant. Whites, blues, and pinks can be found. Edgar Wherry noted the horticultural potential of this species in his book, *The Genus Phlox*.

There are several species of golden asters (*Chrysopsis*) in the Great Plains. *Chrysopsis stenophylla* is an especially attractive one, flowering over a long period in the summer, primarily in July. The gray-green foliage, soft to the touch from a covering of silky hairs, contrasts well with the pale gold daisies. Growing to about 12" in height, it is a resident of upland sites in the Red Hills.

Another relative of the previously mentioned Missouri primrose occurs in the Red Hills. The hoary evening primrose (*O. macrocarpa* ssp. *incana*) is similar in most ways to Missouri primrose except for its silvery leaves. This species blooms over a relatively long time in early summer, and, as an additional bonus, its silvery foliage makes it an attrac-

tive plant even when it is not in flower. It is particularly striking against a backdrop of the red soil that characterizes this special part of Kansas.

As the Smoky Hill River makes its way from Colorado across western Kansas, it passes through a region of badlands in Trego, Gove, and Logan Counties. One of the ironies of the plains is that the most delicate wildflowers often occur in the harshest habitats. Such is the case in these badlands.

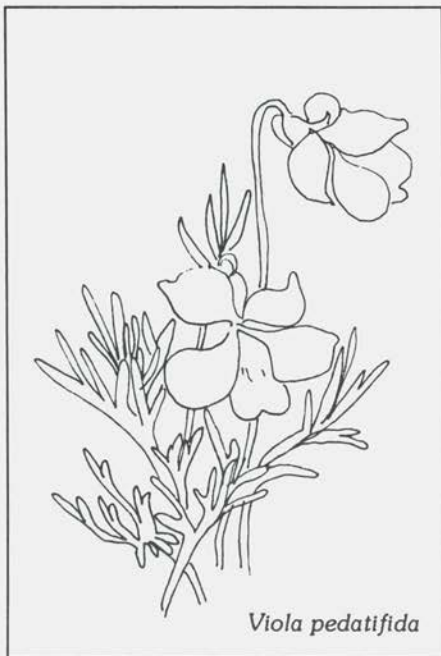
One of the finest plants found in this region is the needle-leaf gilia (*Gilia rigidula*). Its overall habit resembles that of a creeping phlox except for its bright blue flowers with their yellow throats. Blooming in April and May, this species could be a good substitute for *Phlox subulata* in drier home gardens.

The oval-leaf bladderpod (*Lesquerella ovalifolia*) makes a home on the rocky knolls and barren clay soils of this region. This is the most attractive of all of the Great Plains lesquerellas, forming relatively large mounds of round, silvery leaves. The flowers are a nice yellow and are produced from April into June.

"The prime rock aster of the Plains" is the way Claude Barr described Fendler's aster (*Aster fendleri*, photo, p. 179). Growing only 10"-12" tall, this fall-bloomer occurs in rocky areas throughout much of western Kansas. The composite flowers have lavender-blue ray florets and yellow centers. On harsh soils in the badlands this plant takes on a domed shape.

Probably the part of Kansas which people find least interesting is the High Plains. A vast stretch of nearly level

land, this is shortgrass prairie country. Scattered here and there throughout this region, however, are areas of rocky hills, and these are the places to search out the finest wildflowers.



In the very southwest corner of the state, north of the town of Elkhart, the historic Santa Fe Trail passed a prominent landmark called "Point of Rocks." On these rocky bluffs overlooking the Cimarron River, a wide array of rock plants can be found.

Two dwarf prairie clovers occur here, James' dalea (*Dalea jamesii*) and slimleaf prairie clover (*Dalea tenuifolia*). The later is a refined, decumbent version of the larger purple prairie clover (*Dalea [Petalostemon] purpurea*), and lights up the scene with its clusters of bright, rose-purple flowers. James' dalea is a tufted plant with silvery, three-parted leaves and orangish-yellow blossoms.



Easter Daisy

The plume-like teeth of the calyx add to the attractiveness of the plant as it finishes flowering in early summer.

Two daisies of southwest origin also thrive in this semi-arid habitat. The blackfoot daisy (*Melampodium leucanthum*, photo, p. 179) bears white flowers with yellow centers. It grows to 10" tall and flowers over a long season beginning in June and lasting into September. Barr referred to it as "a veritable rock garden jewel." The Rocky Mountain zinnia (*Zinnia grandiflora*) is a shorter, mounded plant, producing golden yellow daisies over a similarly extended period.

A markedly different assemblage of plants is found in the rocky habitats of northwestern Kansas. Here, a person acquainted with the flora of Wyoming's plains and basins would find familiar species. On bluffs above

the Arikaree River north of St. Francis a number of these can be found, including *Arenaria hookeri*, *Astragalus hyalinus*, *A. spatulatus*, *Lesquerella alpina*, and *Paronychia depressa*. The silky orophaca (*Astragalus sericoleucus*, see photos, p. 178), common in southeastern Wyoming and the Nebraska panhandle, occurs on eroding hill-sides in three northwest Kansas counties.

A number of other desirable rock plants are more widely distributed over the High Plains of western Kansas. The

Easter Daisy (*Townsendia exscapa*) starts blooming in March and is setting seed by the time May arrives. A low, tufted plant, its flowering is assurance that spring is coming soon.

Another dwarf composite, the babywhite aster (*Leucelene [Aster] ericoides*), has a very different growth habit than that of the Easter daisy. It grows in colonies of slender stems, generally under 6" in height. The foliage is heath-like and the daisies, produced in early summer, are only one half inch across. The effect is pleasing though, and one wonders about the potential of this plant as a groundcover.

As the name implies, the lavender-leaf evening primrose (*Calylophus [Oenothera] lavandulifolius*) has gray-green foliage reminiscent of garden lavender. This matted, almost shrubby rock plant produces a daily

yield of afternoon-opening flowers from May through June. The deep yellow petals are somewhat angular, giving a square look to the flowers. Barr called this plant, found throughout western Kansas, "a gem of the first water."

Narrowleaf bluets (*Hedyotis nigricans*, photo, p. 180) occur throughout Kansas, but more compact forms can be found in the western part of the state. This attractive, semi-shrubby plant has dark green, linear leaves and blooms over a long stretch of time beginning in May. The small, waxy-looking flowers are produced in crowded panicles. White is the typical color, but pinks are sometimes found.

Blooming from May into July, Nuttall's involulus (*Evolvulus nuttallianus*) is another small, almost-shrub of the prairies and plains. The foliage is linear-oblong and very silvery. In the axils of the leaves are morning glory type flowers a half inch wide and of a pinkish-lavender color.

Many other rock plants from western Kansas could be listed, but hopefully those described provide a glimpse of the wealth of the state's flora. Others include *Arenaria stricta* ssp. *texana*, *Hedeoma drummondii*, numerous *Astragalus* species, *Hymenoxys scaposa*, *Paronychia jamesii*, several species of *Penstemon*, and *Polygala alba*. Descriptions of these can be found by consulting Claude Barr's *Jewels of the Plains*.

For persons wanting to explore the flora of Kansas while travelling through the state, the first rule is to keep off Interstate 70. There are many fine two-lane highways that will take you through more scenic areas.

To see the Blue Hills, follow Highways 18 or 24 through north central Kansas. To take in the Red Hills, travel Highway 160 between Medicine Lodge and Meade. Highway 83 south of Oakley (on Interstate 70) will take you close to the Smoky Hill River badlands.

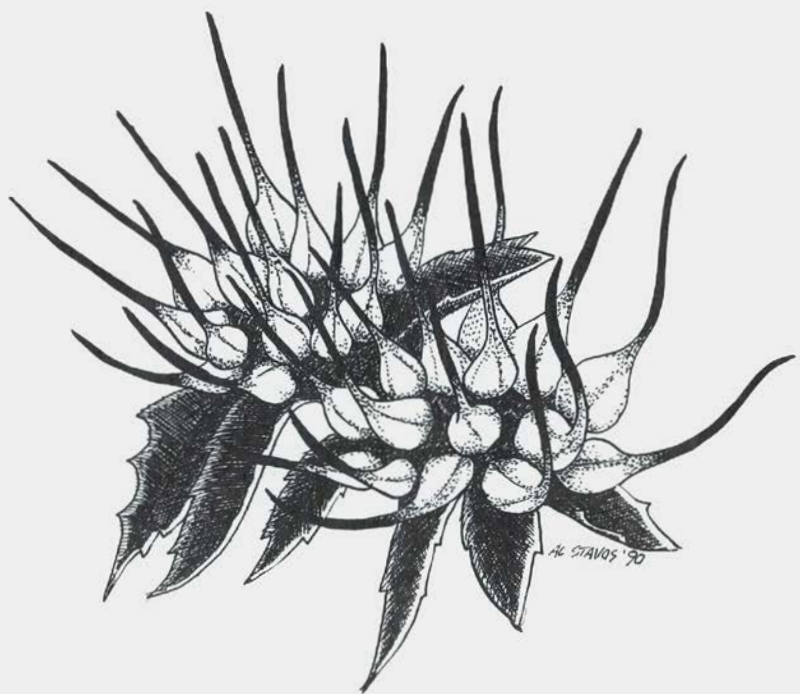
Let me also extend a warm invitation to ARGS members to stop in and visit the Dyck Arboretum of the Plains in Hesston, Kansas. Located about 35 miles north of Wichita, we are a young, developing institution emphasizing in our collections plants that are native to Kansas. Most of the species described in this article can be found in our Prairie Demonstration Garden. Please feel free to write or call for information about the Arboretum or how to route your next trip through Kansas. Perhaps we can get you to linger awhile.

References

- Barr, Claude. *Jewels of the Plains*. University of Minnesota Press: Minneapolis. 1983.
Wherry, Edgar. *The Genus Phlox*. Associates of the Morris Arboretum: Philadelphia. 1955.

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Illustrations for this article are by Margy Lanham taken from *The Enchanted Mesa*, by Url Lanham, published by Url Lanham, Boulder, Colorado, 1974. Used by permission.



Physoplexis comosa

Plant Goals

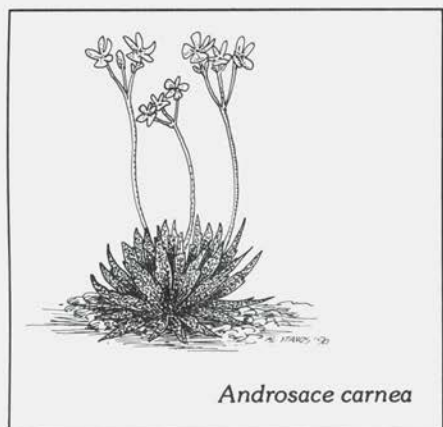
by Geoffrey Charlesworth

This must be recorded before it all becomes a memory, growing in spurious importance like History or diminishing to ignominious irrelevance like stale News. Perhaps some people don't have specific plants as an important aim in their gardening life and are willing to collect plants and plant experiences like tourists collecting Countries with delight and dispatch, each destination chosen because there was a bargain involved. But we all have vague desires of obtaining and growing some particular plant we have read about or seen a picture of. We may have invented our own mystique about a plant, allowing it to represent an ideal that seems in some way unattainable. What happens when these goals are actually reached?

Before we can frame an answer to that question, we have to ask what exactly constitutes reaching a goal? Suppose we yearn to grow *Silene hookeri*, and deliberately set out to do so. There are several routes that the Odyssey could take and several stages in the journey.

We might get a plant from a nursery. This only needs the foresight to order it before it is sold out, to get it through the mails safely, and to pot it up. Alternatively, we could go to Oregon, find a plant with or without a local guide, take a cutting, get it safely home, root the cutting, and pot it up. Or we could visit a friend who grows it and, by charm or guile, proceed as before to the potting stage. Or we could order seed from a seedlist, sow it, grow it, and transplant it.

At this point we have a plant in a pot. Is our goal reached? I think not. Very few of us would be satisfied by merely owning a plant for a week or so. Most would agree on a minimum requirement: that it should *flower*. Some would have their eye on competition rules and want the flower only after the requisite three months have gone by, making the plant eligible to be placed in a show. But most people would want to achieve more laudable results than merely to display a baby potted plant on a show bench.



Androsace carnea

Here are examples of alternative triumphs: The plant should live through a summer in the garden and flower. It should overwinter in the garden. It should live a full year in the garden. It should live long enough to be propagated either by cuttings or seed. It should live two or more years in the garden. It should self-sow in the garden. It should be a permanent denizen of the garden. Or it should live through several pottings-on in the greenhouse, perhaps reaching the stage when it is too big to transplant. It should be the mother plant for a succession of alpine house and show bench offspring.

Alpine house aspirations are not on my agenda, but the pleasures of such goals are self-evident. As far as growing in the garden is concerned, for me every stage counts as a success. When Ulysses reached Circe's island he was nowhere near home, but it must have been a relief to stop rowing for a while, and perhaps take time off to botanize the island. Later the urge to go on would reappear. Sublime gardening is also reached in stages; every stage yields contentment until a need to go further takes over.

Some goals are disposed of by going as far as you need to go in order to feel satisfied that you are doing the right thing by not going any further. You would want to stop asserting your mastery of *Dianthus deltoides* short of filling your entire garden with color forms. Perhaps not true of *Hemerocallis*, but even there, there is probably a point where one says "Enough."

My goals have been in the same general direction for ten years or so, although they are constantly changing to accommodate the self-confidence born of success and the wisdom born of failure. Let's state four early goals tentatively.

Goal 1: To grow all the species and subspecies of *Androsace* in the open garden.

Goal 2: To find the right place for all species of *Primula*.

Goal 3: To recognize every species of *Penstemon*. (ditto *Delphinium*, *Aconitum*, *Paeonia*).

Goal 4: To grow the classic alpines *Eritrichium nanum*, *Physoplexis (Phyteuma) comosa*, *Draba mollissima*, *Jankaea heldreichii*, *Aquilegia jonesii*.

Well, these goals have been modified considerably as time passed. I no longer expect "the open garden" to be hospitable enough to please every plant and certainly not all the androsaces. Some plants will last a few years and that's OK; some will flourish in a container with winter protection—second best but still acceptable; some plants will have to wait until I have the facilities, time, and patience for year 'round alpine house treat-

ment. This is not likely to happen.

Goal 1: By now most of the androsaces fit into little mental boxes: open garden and raised bed (*A. sarmentosa*, *A. lanuginosa* (photo, p. 177), *A. chamaejasme*, *A. villosa*, *A. lactea*, *A. sempervivoides*, etc.); container (*A. mathildae*, *A. ciliata*, *A. carnea*, *A. hausmannii*, *A. taurica*, *A. barbulata*, *A. muscoidea*, etc.); container with alpine house, or at least cold frame, protection (*A. cylindrica*, *A. vandellii*, *A. pubescens*, *A. alpina*, *A. helvetica*, *A. hirtella*, etc.); easy with a little effort (I mean the biennial *A. albana* which is very miserly with its seedlings and has to be sown afresh each year); easy with no trouble at all (annuals such as *A. lactiflora*); and not worth growing (the difference between this category and the last depends on which form of *A. occidentalis*, *A. septentrionalis*, *A. elongata*, etc., you have sowing around). A few are unobtainable (e.g., *A. zambalensis*) or tantalizingly rare (*A. brevis*, *A. bulleyana*, etc.). There is one kind of androsace that is still not in any little box. My experience with large leaf kinds (*A. foliosa*, *A. strigillosa*, *A. rotundifolia*, *A. geraniifolia*) is inconclusive, but I have decided not to care, as they should probably be primulas anyway. Even if not, their effect on me is the same.

The pleasure from growing androsaces has been maximal, and still is, making allowances for the fact that no repeat experience can compare with a first time. Things may get better with repetition but there is no surprise after the first time. Repeating a success confirms our skill (feeding our self-satisfaction). Failures are

always temporary (we can always come up with an adequate explanation and a guarantee of success next time). I can now admire the 12"-diameter mounds of *Androsace vandellii* on the show tables of England without envy, because on the whole Goal 1 has been eliminated. Not by sailing down river into port, but by finding the river opens out into a delta with some branches navigable, some boring, some forbidden.

Goal 2. I have not been very successful at growing primulas. The Vernales and the Cortusoides sections are easy enough in the woodland. Farinosae and Auricula sections are still in an experimental stage, but I think I understand several species by now. Candelabras and Nivales won't stay long without a stream or a well-made bog, and that is still in an unlikely future. I have grown many other species, always for brief periods of time, but long enough to see the varied profiles of this remarkable genus. The only fun has been the journey; the final destination is reserved for gardeners with the right growing conditions. I am reluctant to admit this, but having seen primulas growing in splendor in gardens near running water, I realize that my attempts are objectively a sad failure. This is not a reason to regret the experience of trying to grow them. A poor plant in one's own garden can be a triumph—nobody else need see it. The optimistic conclusion is that the genus *Primula* is big and varied enough for every gardener to grow a few of its members. For this be grateful. Many excellent gardeners are happy enough to succeed with Ver-

nales cultivars or forms of *P. sieboldii*. It seems pointless to be upset because one cannot grow *P. whitei*.

Goal 3: At least penstemons are obtainable. The American Penstemon Society puts out a long list of available seeds every year; ARGS always has 30-50 species in its seed list; and the other clubs and societies, a good number; every state in the west has penstemons growing in every kind of habitat. Also penstemons are growable. Nearly all of them will last through one New England winter and flower the following May, June, or July. Some of them need to make a summer rosette or a side shoot if they are going to last more than one year, but that often happens, and in any case if you know what to expect you won't be disappointed. Besides, you can collect seed and keep the species you want going. Penstemons are fine as long-lived or short-lived perennials, or even as biennials. They are beautiful, interesting, worthwhile plants. The problem is my goal. Shall I confess that I can't always see the difference between some of the scores of species? And even when I can see a difference, I am unable to store and retrieve at will that much information when needed. Not enough for the *instant* identification needed when a visitor wants to know, "which *Penstemon* is that?" So, while I have mastered several species, I no longer anguish over subtle and unmemorable differences. *Penstemon murrayanus*, *P. barbatus*, *P. alamosensis*, *P. kunthii*, *P. eatonii*: all scarlet, all beautiful—when I see you altogether, I know you apart. Shall I know you next year? Would I

know just one of you without the others to compare? Does it matter? Well, if it doesn't, I have lost sight of my goal. If it does, I haven't arrived. Delphiniums and aconitums may be even harder than penstemons. My experience is still in the formative stage.

Perhaps the answer is to take species even more seriously. To descend to Botany. Most of the time we look at a delphinium and see a plant for the border, piercing blue, or subtle violet. Its leaves are all-purpose Ranunculaceae leaves that vary from species to species and are not different in kind from anemones and *Trollius*. We hoped that by growing a dozen species of delphinium, some magical picture would imprint itself on our memory with little arrows pointing out diagnostic differences between the species. Alas, magic is insufficient, and we end up with home-made classifications: the red ones, the short ones, the annuals. I think it is impossible for ordinary gardeners to know all the penstemons and all the delphiniums, at least not all at the same time. Not for me. You could do it if you started at age 13 and made it your life's work. Or you could be satisfied with partial success, recognizing some of the species some of the time, never reaching the goal, forever learning and relearning, like some horticultural Sisyphus.

The fourth goal is the excuse for this article. If and when it is printed, my *Eritrichium nanum* may have perished; hence the urgency. Nobody really believes History. Even News taxes one's credulity. *Eritrichium nanum* has been the impossible

dream, the ultimate criterion, the unfinished business of so many of us. With some trepidation, I want to suggest that one of the reasons for the overall dismal failure to tame *E. nanum* is statistical. Not enough people have had enough seed to experiment on a broad enough scale. From the time we receive three seeds in an enormous envelope, or a pathetic seedling surreptitiously dug from the wild, until the moment of truth when we are forced to admit, "I lost it," we treat them as orphans and invalids. Our hands tremble as we sow the seed. We protect seedlings from dangers real and imagined. We fuss about whether to grow them indoors or out, whether to fertilize, whether to water, whether to spray, whether to remove the soil before planting out, what the growing medium should be, etc. All legitimate fuss, but in this case with no reliable guide to instruct us. One has heard of partial successes involving refrigeration and constant breeze across the plants, but these are two utilities most of us lack in the garden. So I shall outline a little bit of History and throw in a little bit of Method as background for my own News and, as it turns out, Photo Opportunity.

Before 1981, I was too overawed by seedlists to think of ordering anything really rare, believing that such seed should and would be reserved for Good Growers. But that year I threw scruples to the wind and ordered *E. nanum* var. *argenteum* from one of the exchanges. And got it. The names lumped under *Eritrichium nanum* are subspecies or varieties, I am not really sure which. They include *E. aretioides*, *E. elon-*

gatum, *E. jankae*, and *E. argenteum*. Sometimes seed is sent in simply as *E. nanum*. I got *E. argenteum* again in 1982, and, in 1983, *E. aretioides*, *E. argenteum*, and *E. jankae*. All these germinated, but that is as far as I got. In 1984, I managed to get transplants of *E. elongatum* and *E. jankae*, but these died in the open garden. All these seeds were sown in my usual mix of half coarse sand and half commercial soilless mix with a little slow-release fertilizer. They were left exposed to the weather from sowing time until germination and again left outside until ready to transplant. After transplanting they remained outside without any special attention (unless you count drooling). My aspirations almost petered out after raising plants, yet still believing deep down that what everybody said was true: *E. nanum* cannot be tamed. But in 1985, I was again planting *E. argenteum* and *E. nanum*, this time in containers, and the following year *E. jankae* in a raised bed. Many of these plants survived a winter, but not the following summer. In 1987, I raised plants of *E. nanum* from ARGS seed. One of these plants flowered, and I collected seed. In 1988, I had two seedlings from my own plant grown in a raised bed. The mother plant died, and so did the seedlings, but at least they had reached transplant size and died in their beds, not in the pots of infancy.

Meanwhile, Vojtech Holubec had been to the Rockies in the summer of 1987 and collected seed of *E. aretioides*, from Mt. Evans, I believe. He shared his seed with me, and I sowed it that fall. This germinated, and one plant developed rapidly

enough to plant out that summer. A black spot developed in the center late in the fall, and I gave up hope for its survival. The summer had been hot and dry, and I did two things I usually never do. I watered the crevice garden, and I fertilized the *Eritrichium*. This was before winter weather set in. The following spring the black spot was still there, but the plant was expanding, and eventually the blemish was almost invisible and neither hurt the plant's well-being nor its looks. It flowered in May. The flowers were bright blue, on stalks that emerged horizontally from the base—unlike the plants of *Eritrichium* I had seen on Independence Pass and elsewhere, where the flowers covered the top of the bun. Each stalk had several flowers, and the flowering period was quite extended. There were plenty of opportunities for photographs, and it turned out to be the most expensive plant I had ever grown. I was confident that I would be collecting seed and examined the spent bloom every day for weeks. I collected whatever the seed capsules contained. I didn't examine the chaff too carefully, so as not to know if there was really no seed there. I shall sow it this winter with fearful hope. As for cultivation, the first plant to flower was on the summit of a small, artificial hill with a good depth of sand over soilless, sandy compost, over turfy compost. I'm pretty sure the roots never got below the sandy layer. The second plant to flower is still growing in the crevice garden made for me by Josef Halda. Originally, the growing medium was pure gritty sand, but before I planted the *Eritrichium*, I added

some humus and slow-release fertilizer. By the end of the summer another dead patch had formed, this time covering half the plant. Unfortunately, several good gardeners have been shown this plant, and I fear that the gods that punish hubris will do a number on my *Eritrichium*. I don't want to single out any growing method—container, raised bed or crevice garden—as the best way to do it. Everybody finds their own methods in their own garden.

As for *Aquilegia jonesii* (photo p. 192), it is common knowledge that the problem is to make it flower. I had one flower once. It was encouragement enough to try it every year since. *Jankaea* is another story. I don't think I am entitled to try it until I have successfully grown ramondas and haberleas. That is also unfinished business. *Physoplexis comosa* needs another season or two, and *Draba mollissima* has been written off as tender. There are many other "classic alpinines" that are on my list, but these are enough to illustrate my most pressing goals. Of course, I have other goals than to grow individual plants, such as introducing running water into the garden with a waterfall and a Chinese bridge; making cold frames with lids that stay on in winter; building a pit house, a gazebo and a fernery; but they seem secondary to my main goal. That is to grow every plant. Or at least most of them.

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Drawings by Al Stavos.

Learning to Grow Porophyllum Saxifrages

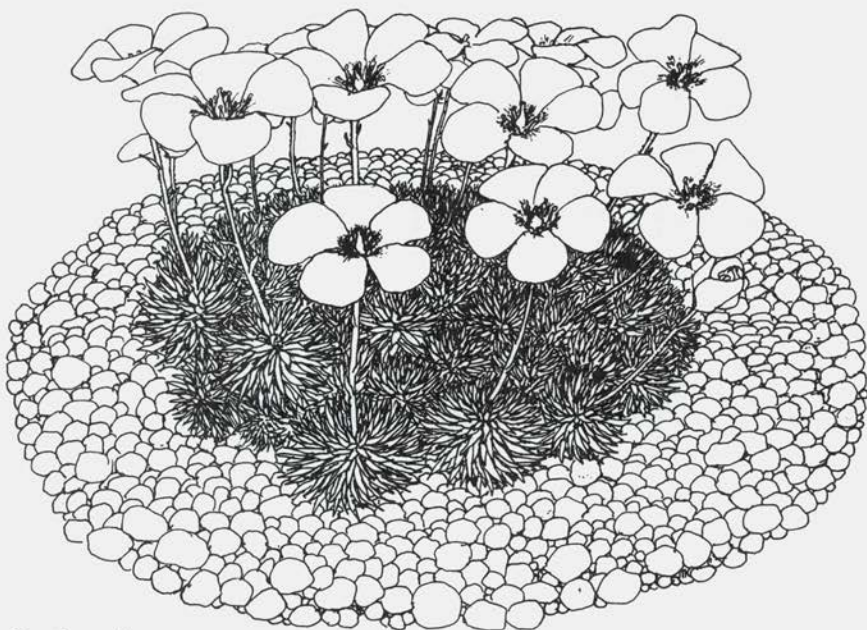
by *Steve Doonan and Phil Pearson* _____

The genus *Saxifraga* has over 300 species, many of which make valuable assets in the rock garden. There are 15 sections in the genus, but the Section Porophyllum is the real backbone of the group. For a long period of time, this group was called Section Kabschia, but the rules of botanical nomenclature dictate the use of the earliest validly published-name—hence the name change. The term porophyllum refers to large pore glands found on the leaves. These pores are visible to the naked eye and in some cases are arranged artistically.

While the appeal of the porophyllum section is frequently attributed to the rather small stature and neat, compact habit of growth of the plants, the flowers are among the showiest of alpine rock plants. These saxifrages are some of the earliest plants to bloom, and, here in Issaquah, Washington, can begin flowering as early as mid-February. In areas with more severe winters, the bloom season starts in late April. The

flowering of the saxifrages can last three months. Cold weather and freezing nights may slow the progress of the flowers, but any short period of mild weather results in flower bud development. This gradual but perceptible bud growth, promising spring, is exciting after the long winter dormant period.

Many rock gardeners are afraid to try the porophyllum saxifrages because so few people have had success with them in the garden. Some think the only way to cultivate them is in pots, requiring an alpine house or covered frames for rain protection. Of course, in their native mountain homes the species require none of this apparatus to grow, flower to perfection, and reproduce. The porophyllum group has been extensively grown in Europe for many years, especially in Britain, where they frequently appear in pots for show bench exhibits. The techniques that growers use for pot culture work with great success, but their pot soil formulation, in combination with



Saxifraga burserana

overhead protection, does not always transfer to the open garden with its frequent excess of winter rain.

At Grand Ridge Nursery, we have experimented with various soil formulas and have observed the results of these experiments. We also grow the porophyllums in pots, but with a highly aerated soil. In this mix, they can tolerate full exposure to nature's precipitation, sometimes as much as 200" of rain a year here. Our experiences have lead us to use an open soil mixture composed of very sharp particles and relatively little organic matter, that in the form of peat. The original porophyllums we acquired were potted in a modified John Innes soil formula and had been grown successfully in a glass-covered house by the late Bob Putnam. Since we did not have an alpine house, the plants

were left outside to the whims of nature. The soil soured with excess moisture, and the plants turned anemic and began to decline. Just as this was happening, we acquired a copy of Winton Harding's Alpine Garden Society publication *Saxifrages*. His cultural suggestion for a soil medium was simply "a well-drained, gritty compost."

Taking a lead from Winton's use of "coarse grit," Phil and I made a trip to a nearby mountain where Phil had seen a road bank composed of such "stuff," while he was on a fishing trip years before. After some difficulty with brush and black flies, we managed to screen out ten gallons of what Phil interpreted as coarse grit. I remembered that our grandmother fed such grit to her chickens to grind food in their gizzards. Most farm

stores that supply feeds carry granite grit, so when we needed more grit we simply ordered a ton from our local store. A sales person probably would not usually sell this much grit over several years, and ours curiously inquired how many turkeys these two new customers were raising!

About this time we also came across an extension bulletin from Oregon State University with information on the need for air space in the growing media of container-grown plants. The bulletin gave an easy method to quantify the amount of air space in various soil formulations, the scientific tool we needed.

The percent air space is easy to measure. Simply tape shut the drainage holes of a pot and measure the amount of water the full pot will hold; record the number of liquid ounces with a kitchen measuring cup. Using the same pot, empty of water, fill the pot with the soil mix to level full, shaking the pot to make sure the soil settles. Slowly add water to the soil-filled pot until water has completely filled the pore spaces. Carefully remove the tape over a pan and let excess water drain for several minutes, then measure the water that has drained out. To get the percent air space of this particular soil mix, divide the amount of water that drained by the total amount of water the empty pot held, and multiply by 100.

Research work by the university had found that even rhododendrons needed at least 18% air space in the soil mix. For the saxifrage soil, we mixed varying amounts of granite grit, sand, and sphagnum peat until we found a mix with 20% air space.

The ratio of ingredients we arrived at is 4 parts #2 granite grit (about 2-3 mm thick), 4 parts washed sand, and 1 part coarse sphagnum peat. Use granite grit and not quartz grit; granite is rich in mineral nutrients, quartz is inert. The sand available in our area has too much clay, silt, and fine sand, so it has to be washed thoroughly on a window fly-screen. Washed sand has a clean look and makes a sharp sound when rubbed between the fingers. If "dirty" sand is used, the mixture will hold too much water.

After a batch of this "new" soil was mixed, several porophyllum saxifrages had their original soil gently removed and were repotted in our own new concoction. One's first impression is that the soil medium is too lean, but plants grown outside in this mix for a season showed convincing results. To prevent the moisture in the medium from wicking water to the surface to evaporate, a 2 cm layer of crushed limestone chips is dressed on the surface, carefully surrounding the saxifrage's main stem. It takes some experience to judge the watering schedule since the moisture content of the soil can't be seen by color because of the mulch, but it is very difficult to overwater with this coarse mix. Remember, the main benefit of the 4:4:1 mix is to prevent waterlogging, especially during the season of heavy rains in outside plantings.

Saxifraga x boydii 'Faldonside' was the first success we had with this group of plants. The plant was yellowed and rather straggly by the time it was placed in the new "4:4:1 *Saxifraga* mix," as this soil combina-

tion was to be called. In less than two weeks, the color changed and the plant commenced to grow. By the end of the summer, the new growth had completely covered over any evidence of the former plant. The same results were experienced with other porophyllum saxifrages, *S.* 'Rosemarie', *S.* x *irvingii* 'Walter Irving', and *S. burserana*. Now, some twenty years later, there are more than 250 porophyllum species and hybrids grown at Grand Ridge. Some specimens were originally just a single rosette, sent from other enthusiasts and from botanic gardens around the world, and today many of the plants have formed domes a foot in diameter that cover themselves each spring with flowers.

The porophyllums are perfectly hardy in our area, where temperatures drop to -2°F in a normal winter. However, late winter cold, with near zero temperatures occurring after growth has commenced, has caused problems for potted plants, especially those saturated with moisture. Friends in Minnesota, in contrast, have most of their cultural problems not from cold, but from the muggy air of summer, with its simultaneous high heat and high humidity. Since porophyllums are true alpiners, this weather will promote fungal attack and death. By growing plants on a northeastern exposure, in a soil mix similar to the 4:4:1 *Saxifraga* mix, success has been greatly improved. A loose, open soil in the garden may need more attention to watering in the summer, but a heavier soil will have less oxygen and make a perfect growing environment for the anaerobic bacteria that attack these plants. The

nice thing about a loose, open, gritty soil mix is that you can never overwater. The soil structure created by the large particle size prevents rain or over-irrigation from becoming a problem. Growers of porophyllums who use heavier soil must be ever cautious not to overwater and to prevent soggy soils that could rot the plants.

The biggest complaint about porophyllums is the problem of sun scalding that causes big brown patches in the middle of the cushion. Often the blame for this scalding is given solely to the midsummer sun, but my experience is that the scald occurs when the plants become too dry for a short period of time. Plants have been grown in full sun here, to 106°F, without burning, as long as watering was attended to. The healthiest plants are grown with an open sky to a northeasterly exposure. This placement gives good light in the coolest part of the day and protection from the hottest summer sun. Porophyllums need good light to have abundant flowers and neat and compact cushions—the attributes that make the plants so appealing. The majority of plants in our collection receive full sun in the summer until noon and then they fall into the shadow cast by either a 50-percent shade screen or by large willow trees.

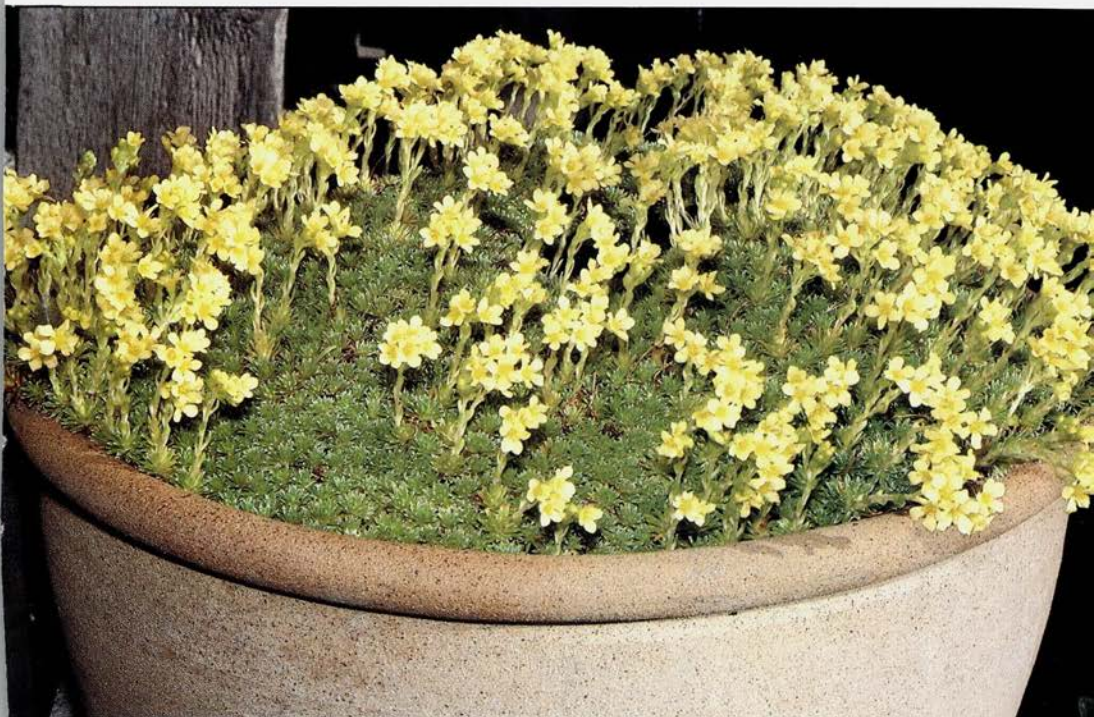
The plants are generally watered vigorously and thoroughly over the whole cushion with no ill effects. An exception to this overall watering is whenever we expect or experience botrytis attacks. One such time would be late spring, when the weather is warm, moist, and overcast while the new foliage is not hardened off sufficiently to resist disease. The use of

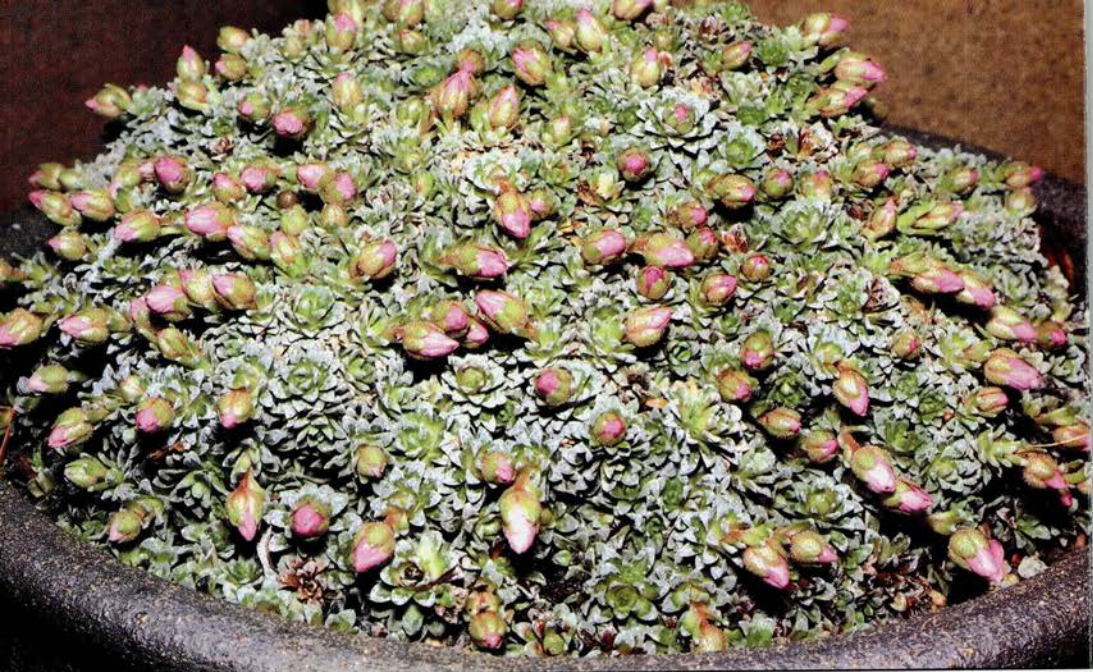


Spring Flowering at Grand Ridge Nursery, Issaquah, Washington (see p. 193)

Saxifraga x apiculata (see p. 208)

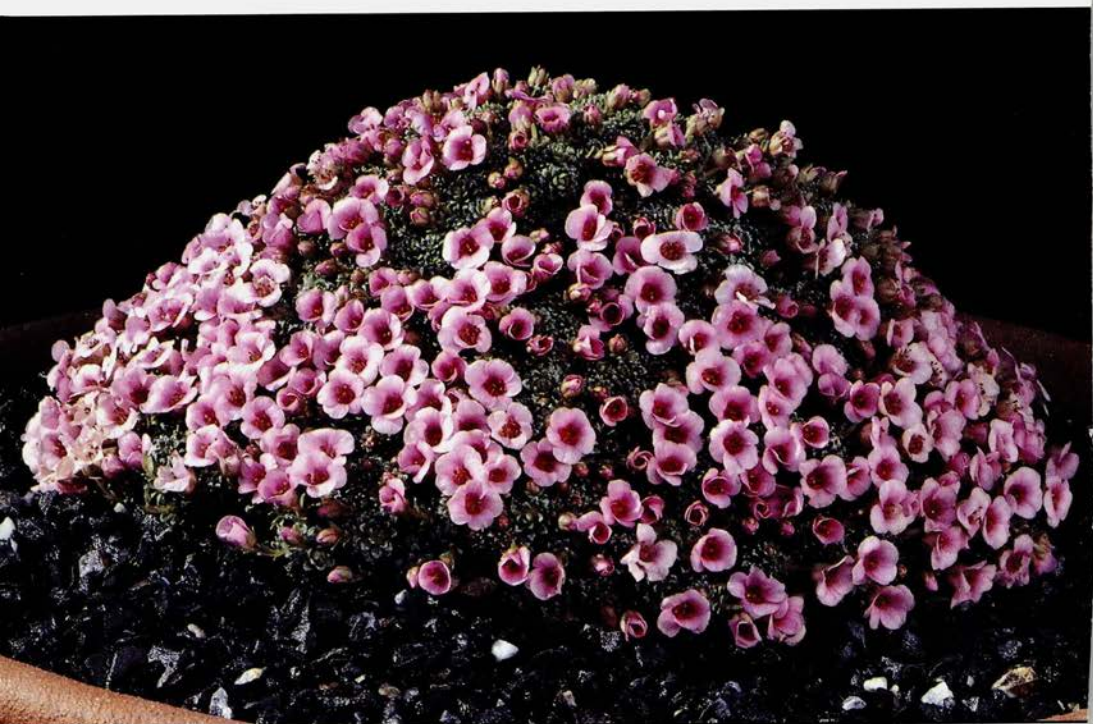
photos by Phil Pearson





Saxifraga x anglica 'Rosemarie' in bud, above, flower, below. (see p. 206)

photos by Phil Pearson

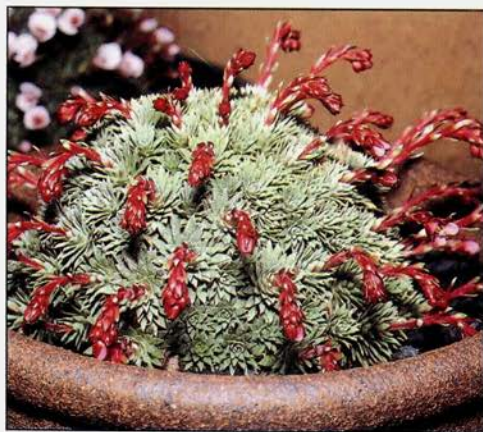




Saxifraga x kellereri 'Suendermannii', in bud



Saxifraga x 'Suendermannii', in flower
(see p. 207)



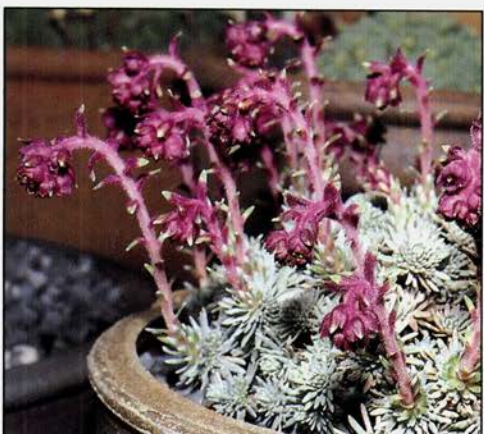
Saxifraga x mariae-theresiae
'Theresia' (see p. 207)



Saxifraga x anglica 'Christine' (see p. 206)



Saxifraga x boydii 'William Boyd' (see p. 206)



Saxifraga sempervivum (see p. 209)



*Saxifraga x
megaseaeiflora*
'Robin Hood'
(see p. 209)

Saxifraga lilacina
In Betty Lowry's
garden.
(see pp. 205, 207)



photos by Phil Pearson



Saxifraga x irvingii
'Mother Queen'
(see p. 205)



Saxifraga x irvingii 'Walter Irving'
In Betty Lowry's garden. (see p. 205)

Phil Pearson



Saxifraga x 'Princess' (see p. 210)



Saxifraga burserana (see pp. 205, 209)



Saxifraga x *arco-valleyi* 'Ophelia' (see p. 208)



Saxifraga x *salmonica* 'Marie Luisa' (see p. 206)
In: the University of British Columbia alpine house.



Saxifraga x *salmonica* 'Melrose' (see p. 206)



Saxifraga burserana 'John Tomlinson' (see p. 210)

Saxifraga
x borisii
'Mona Lisa'
(see p. 208)



Saxifraga
x boydii?
"Albert's Yellow"
(see p. 206)

Saxifraga
x boydii
'Aretiastrum'
(see p. 206)



Phil Pearson



Saxifraga x anglica 'Harlow Car'
In Jim Jermyn's garden. (see p. 206)

Phil Pearson

fungicide (Bravo 500) will prevent any serious problem, if applied in time, so pay attention to the occurrence of these periods of weather. One species in particular, *S. burserana*, has a tendency to be attacked by a rust that can cause patches to die out, so copper spray formulations may be used.

Liquid feeding is recommended just as new growth commences. A formulation of 5-10-10 (nitrogen-phosphorus-potassium) given in one half of the recommended dose several times through the summer will benefit next year's bloom and increase the vigor of the plant, which can live for many years. Porophyllums are not touchy about disturbance. Transplanting is best performed before the buds develop in the spring, just after flowering, or in the very early fall. The dead flowering stems can be removed with a scissors or by slightly rotating the stem between the finger tips.

Propagation can be done nearly anytime, but the best time is in the very early spring. When the flowering buds show activity, cuttings taken as single rosettes may be removed from around the edge of the cushion. The rosette is buried so only a small part of the tip is showing. The old leaves help hold the cutting in the soil medium until roots develop. The cuttings are struck in 4:4:1 *Saxifraga* mix with a north light exposure, and the soil medium kept moist. Saxifrages are early season growers and the cuttings should have roots in about a month. Leave the cuttings in the rooting container until the following spring and transplant then.

Saxifraga x irvingii 'Walter Irving' (photo, p. 201, taken in the garden

of Betty Lowry) is one of the easiest and showiest clones for the beginner with porophyllums. *Saxifraga* 'Walter Irving' is an old hybrid (1909) between *S. burserana* (European) and *S. lilacina* (Himalayan). The foliage looks more like the parent *S. burserana*, with the flower color coming from the *S. lilacina*. The plant will completely cover itself with flowers the size of a dime and is sure to totally entrance anyone who has never seen one before.

For years we knew of this plant as just 'Irvingii'. Then Radvan Horny, and others, of Czechoslovakia, found that confusion reigned with the naming and ordering of the myriad of hybrids that existed and are still being created today. So, in collaboration with Dr. Jiri Sojak of the Department of Botany in Prague, they devised a system of names in accordance with the International Code of Botanical Nomenclature. Since there are several very nice hybrids between *S. burserana* and *S. lilacina*, a grex name was proposed. A grex is a group of plants derived from the hybridization of two or more species and usually represents a quite varied genetic group. It can include many named cultivars. Walter Irving of the Royal Botanic Garden at Kew first made the *S. burserana* and *S. lilacina* cross and was honored by having his name attached to that grex. So all cultivars with these parents have the same grex name, *x irvingii*, and the various cultivars, designated "cv." or with a name enclosed in single quotes, follow the grex name. This gives an order and an awareness of the relationship between the vast number of hybrids grown by specialists. The *S. x*

irvingii grex has 13 or more worthy cultivars. *Saxifraga* 'Jenkinsiae', 'Mother of Pearl', 'Mother Queen' (photo, p. 200) and 'Walter Irving' are some of the best known. These hybrids are all rose to pink and have a similar, familial appearance.

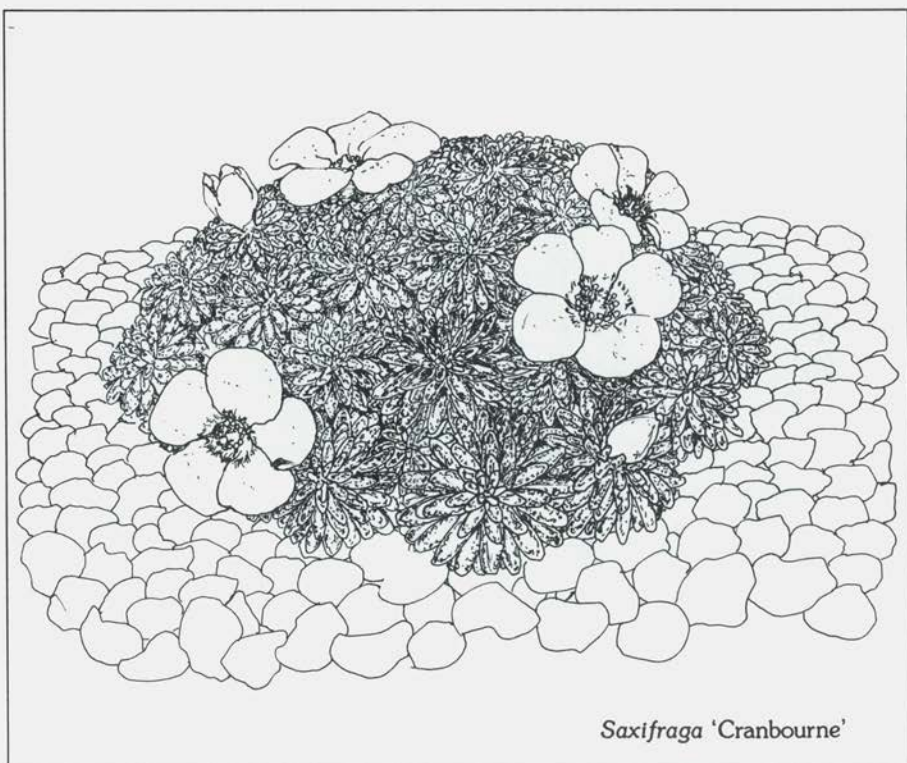
The grex *S. x boydii* is between the species *S. burserana*, a white-flowered plant, and *S. aretioides* (European), which is not a showy species. The mixing of the best qualities of the parents, the easy-growing, large, showy flowers of *S. burserana* and the good yellow color of *S. aretioides*, albeit in a flower of rather insignificant size, have again produced beauty. *Saxifraga x boydii* 'Aretias-trum' (synonyms 'Valerie Finnis' and a host of other names) has medium-colored yellow flowers and is an easy plant to grow (photo, p. 203). 'Faldonside' is another *S. x boydii* of great merit, with a red calyx and stalk preceding the slightly crinkled, yellow petals of good size. Other nice members of this grex are 'Cherry-trees', 'Hindhead Seedling', 'William Boyd' (photo, p. 199), and one we believe is a *S. x boydii* hybrid that we call "Albert's Yellow," for lack of the proper name (photo, p. 203). Before Horny's publication of *Porophyllum Saxifrages* in Czechoslovakia, and John Byam-Grounds' translation into English with additional information pertinent to British and American saxifrage culture, the porophyllum hybrids lacked a good system of classification and were very confusing.

Some excellent white hybrids exist between two white-flowered species, *S. burserana* again, and *S. marginata* (European), a plant of several geographic forms. This hybrid cross

is known as *S. x salmonica*. The cultivar *S. x salmonica* 'Marie Luisa' is very attractive, has bold flowers, and is one of the earliest to bloom (photo, p. 202, growing in the alpine house at University of British Columbia Botanic Garden). *Saxifraga* 'Melrose' (photo, p. 202), another of this grex, is uniquely distinctive. A third hybrid known as *S. 'Joy'* is sometimes erroneously put in *S. x salmonica*, but should properly be called *S. x petraschii* 'Kaspar Maria Sternberg'. The grex *S. x petraschii* is another cross of *S. burserana*, bred with *S. tombeanensis* (European).

The most alluring hybrids may belong to the *S. x anglica* (*S. aretioides x S. lilacina x S. media*) group. My favorite is 'Harlow Car' (photo, p. 204, growing on tufa in Jim Jermyn's Edrom Nursery, Coldingham, Scotland), a probable *S. x anglica*. 'Harlow Car' has the best of all characters—intense deep crimson-red flowers on short stems and a good-looking, tight cushion. 'Christine' is another *S. x anglica* hybrid with a cluster of smaller, cerise flowers (photo, p. 199). *Saxifraga x anglica* 'Winifred', 'Cranbourne', and 'Myra' exhibit good traits, too. 'Rosemarie' (photos, p. 198), one of the first plants we acquired, has proven to be one of our best plants. It never fails to cover itself with deep rose buds that open to a softer pink. The plant originated from Franz Suendermann's Lindau Nursery in Germany and was one of his many fine hybrids.

Another of Suendermann's hybrids is between *S. luteo-viridis* (European) and *S. sempervivum* (Greek; photo, p. 199). Known as the grex *S. x gusmusii*, they belong to what was a

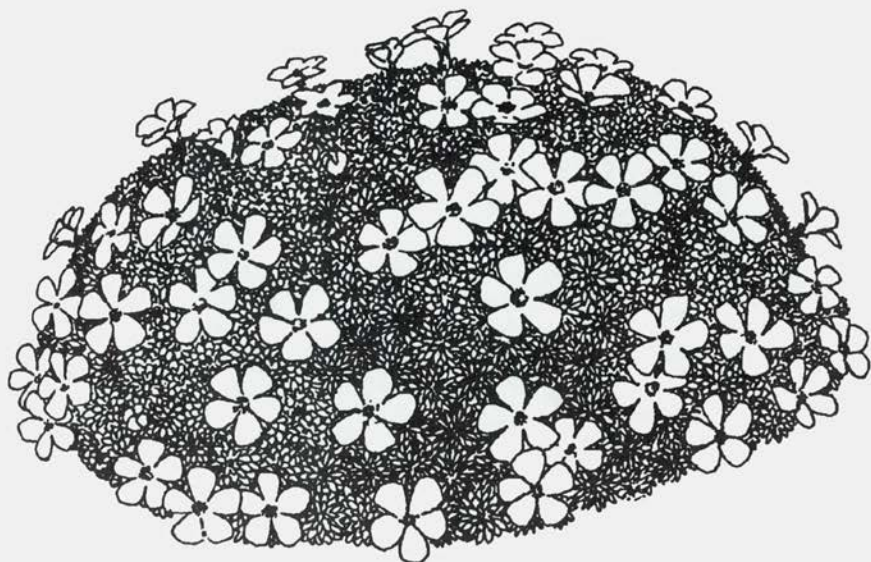


Saxifraga 'Cranbourne'

subset of the porophyllum section called Subsection Engleria. This subsection generally has multiple flowers on nodding stems. The plants hybridize freely with members of the other subsection, which generally bear single, larger, up-facing flowers. The flowers on *S. x gusmusii* are pendant like *S. luteo-viridis*, and have rosy-colored petals like its other parent. A cross between *S. burserana* and *S. stribryni* has produced a group of rosy-colored, up-facing flowers. This grex, known as *S. x kellereri*, is best represented by *Saxifraga x kellereri* 'Johann Kellerer'. 'Johann Kellerer' is another of the very first to bloom and often still has a few flowers when all the other porophyllums are finished

blooming. Others in this grex are 'Kewensis', a compact, bluish-foliaged dome covered with open, cup-shaped, rosy flowers; and 'Sundermannii' (photo, p. 199), with rosy-red flowers that are slightly pendant. Another plant grown mostly for its bright red bud and flower stalk is 'Theresia' (photo, p. 199) from the grex *S. x mariae-theresiae*. This cross is between *S. burserana* and *S. frederici-augusti* (Greek). The open flowers are rather small and not at all attractive compared to most in the porophyllum group.

Saxifraga lilacina, a Himalayan species, is used in crosses to get the rich pinks in hybrids (photo, p. 200, growing in Betty Lowry's garden). Crossed with *S. marginata*, it has



Saxifraga x arco-valleyi

given rise to several beautiful clones in the grex *S. x arco-valleyi*. One especially choice pink is 'Dainty Dame'. An anomaly of the parentage is the very desirable 'Ophelia', which blooms later, with large, white, crinkled petals with bright anthers (photo, p. 202). 'Ophelia' is very slow-growing, but is worth the wait. After many years, it will form a rounded dome with distinctive rosettes, making it beautiful through the whole year. *Saxifraga marginata* is used in a cross with *S. ferdinandi-coburgi*, a yellow, to produce a very floriferous plant know as *S. x borisii* 'Mona Lisa' (photo, p. 203). The medium-sized flowers form heads of soft yellow that face up.

Saxifraga x apiculata (photo, p. 197), resulting from *S. marginata* and *S. sancta*, has produced a vigorous race of hybrids that is usually recommended for the "open" garden. They are fast-growing and form nice sized plants. Their coarseness makes them less appealing than their other brethren. A bud mutation of this normally yellow-flowered grex produced a very nice white called *S. x apiculata* 'Alba'.

Hybridizing *Saxifraga aretioides* and *Saxifraga diapensioides*, two not-so-easy species, has resulted in a good, late-blooming plant that forms a tight, rounded dome of very small foliage; when other porophyllum cuttings have filled their containers,

the *S. x malbyana* 'Primulina' has yet to become a sizeable plant. Our specimen plant is only four inches across after 15 years.

Hybridizers have been making crosses with the idea of creating better and better hybrids. The ultimate in hybridizing leads to a grex with at least four separate parent species. One such grex is *S. x megaseaeflora* from *S. aretioides* x *S. burserana* x *S. lilacina* x *S. media*, obtained by crossing hybrids with hybrids. The lovely 'Robin Hood' (photo, p. 200) is reputed to be in this group. Others, such as 'Josef Capek', are also most attractive, this cultivar having flowers that vary in color from salmon-pink to rosy yellow on the margin of the petal, with the flower changing color as it ages.

Even today hybrids are being made. Winton Harding recently named an exciting new hybrid 'Nancye', for his wife. 'Nancye' is from another grex with four species in its parentage. He made the cross with *S. x anglica* 'Winifred' (*S. aretioides* x *S. lilacina* x *S. media*) and a recently introduced species from Nepal, *Saxifraga cinerea*. *Saxifraga cinerea* has an excellent cluster of white flowers and lime-covered leaf margins, like some of the encrusted saxifrages. 'Nancye' has a very bright pink cluster of flowers with lime-covered leaves. Everyone who sees it makes a favorable comment.

For the alpine purists who spurn hybrids, there are many interesting and beautiful species of porophyllums from Europe, the Caucasus, the Near East, Sino-Himalaya, and Asia. The European ones are probably best

known, with the exception of *S. lilacina* from Kashmir. *Saxifraga ferdinandi-coburgi* from northern Greece and Bulgaria, a warm region, has nice yellow flowers. This species needs a brighter and warmer location to do its best. A particularly fine form known as *S. ferdinandi-coburgi* var. *rhodopea* 'Dracula' will catch your eye in a collection of good yellows. The name 'Dracula' comes from the shape of its spiny leaves that look like—Dracula's teeth! The most spectacular flower bud development belongs to the Greek species known to most of us as *Saxifraga griebachii*, whose name has recently reverted to its first recorded name, *S. frederici-augusti*. The best known variety of this species is probably 'Wisley Variety' with its lime-covered leaf margins and large rosettes. In early spring, it throws up a bright red, curled flower stalk. The stalk lasts for nearly a month, only to open to a less spectacular flower. Closely related is a smaller version, with a purplish bud development, *S. sempervivum*. *Saxifraga sempervivum* is easier to grow and forms a nice bluish cushion. *Saxifraga media* is similar to the two previously mentioned species, but the flowering heads are more attractive when they open. From the central Caucasus of the USSR comes *S. caucasica*, a species with yellow, globular flower heads, that may hold interest only to a collector, although a plant from such far off mountains is sure to add interest to any garden.

Cultivating the species *Saxifraga burserana* (formerly spelled *S. burseriana*) is worthwhile just to see the range of individual variation that can occur in a single species (photo of

general type, p. 202). There are two varieties found throughout the eastern limestone Alps, and it seems that every grower has sought the best form from the wild and introduced it. The cultivar *S. burserana* 'John Tomlinson' (photo, p. 202) forms a nice silvery-colored cushion with large, well-shaped, white flowers.

'Princess' is a distinctive seedling selected by the late H. Lincoln Foster and forms a compact, rounded dome that is very attractive even out of flower. My favorite of the cultivars is 'Crenulata'. It is very dwarf and has tight, fine, needle-like leaves. The flowers are in scale with the plant,

and this cultivar should be used as a hybrid parent where *S. burserana* has successfully been used before. There are two varieties and over 22 cultivar selections of *Saxifraga burserana*, though some of these selections may not merit special attention.

Currently, the great interest the porophyllum section historically held is re-emerging. The recent publication of several helpful books, the formation of specialist study groups, and the desire to preserve historical clones made nearly 100 years ago will keep this most enjoyable and colorful race alive.

References

Harding, W. 1970. *Saxifragas*. The Alpine Garden Society: London, England.

Horny, R., K. M. Webr, and J. Byam-Grounds. Illustr., Eva Zoulova. 1986. *Porophyllum Saxifragas*. Byam-Grounds Publications: Stamford, Lincs.

Koehlein, Fritz. 1985. *Saxifragas and Related Genera*. Translated by David Winstanley. Timber Press: Portland, Oregon.

Webb, D. A., and R. J. Gornall. 1989. *A Manual of Saxifragas*. Timber Press: Portland, Oregon.

Steve Doonan and Phil and Kitty Pearson are co-owners of Grand Ridge Nursery and Pottery in Issaquah, Washington. Steve is a superb grower of plants in pots, specializing in hardy gesneriads, lewisias, and Ericaceae, as well as porophyllum saxifragas. The color photos that illustrate this article were all taken by Phil Pearson. The stoneware pots shown in the photos are manufactured at Grand Ridge by Phil. Unless otherwise indicated the plants pictured were grown at Grand Ridge Nursery. Steve and Phil also delight in making superb selections of native American alpiners and bringing them into cultivation. The nursery does not currently mail order.

Illustrations by Panayoti Kelaidis.

A Secret Structure with Rolling Stones

by *Nicholas Klise*

A rock garden is a structure that nurtures a diversity of small scale plants and displays them to advantage. Since the plants are small, our enjoyment is enhanced by proximity to the eye. A well-executed rock garden raises the plants so that the viewer is not required to bend down nor to genuflect. The essential element in rock garden design is structure. Alas, the avid rock gardener of modest means has always felt that creating a monumental structure required big rocks. Here's an alternate idea: You can roll a monumental structure into position.

The inspiration came from two diverse and unlikely sources: Harold Epstein, a preeminent gardener in Larchmont, New York, and a counter-culture architect in New Mexico, about whom I remember reading 20 years ago. Harold Epstein grows small rhododendrons beautifully on the rock outcrops that are a feature of the lovely, shady garden he and his wife have created. Epstein packs the crevices and basins in the rock with

leaf mold before planting. The architect built houses out of discarded tires, filled with earth and laid up horizontally like big round bricks. He then plastered the undulating surfaces for a thick, adobe-like wall appropriate for the climate of the Southwest.

Many rock gardeners get along without a rock outcrop—or even a rock garden—because they are not fortunate in the way Epstein is. He has a large scale rock structure that affords a dramatic setting for small scale plants. I had a location near my house where I *needed* a rock outcrop. No shrub, nor a tree, nor anything else I could think of would do as well as a massive mound to separate an area where I buck firewood from a Japanese style path with stepping stones placed in a field of moss and *Mitchella repens*. A rock outcrop would be the perfect solution. The problem was that none existed there, so I decided to construct one using a technique similar to that of the architect in New Mexico. The rural road on which I



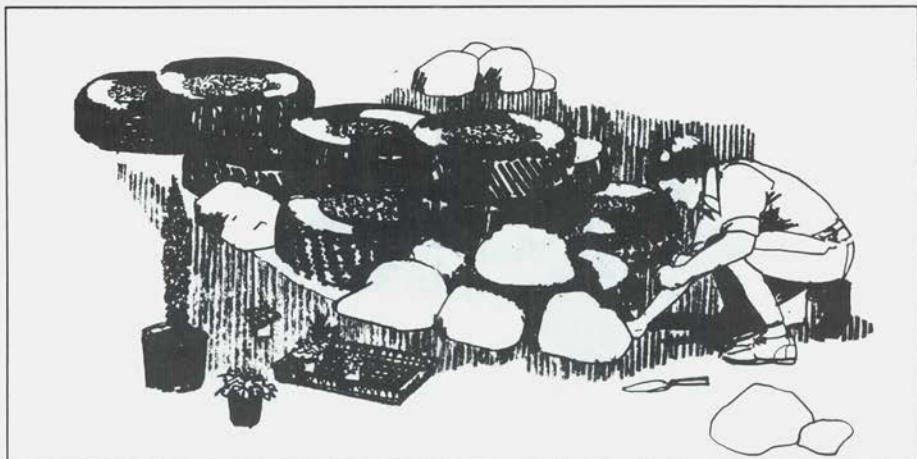
live is a final resting place for the jetsam of civilization: old refrigerators, sofas, and household debris of every description are surreptitiously and unceremoniously put out along the road. Last year someone unloaded a truckload of used tires. I had my choice of a plentiful supply.

I first leveled the construction site. The most noteworthy aspect of a project such as this is that it can be accomplished by one average person. A nice thing about tires is that they can be rolled into position, quite an improvement on rocks. Rolling tires requires no strength, only a realization that tires are filthy. Black grime will get on your hands and clothes. After the first layer was positioned, just laid horizontally on the level subsoil, I started filling each, and the spaces between with buckets of gravel. The tires must be packed by hand and consequently the gravel will need to be moved and positioned in small quantities.

I am fortunate in having an unlimited supply of sand and gravel in the bed of a fair-sized creek running through my property. The creek is

some distance from the construction site. I have learned to carry only what is comfortable for me without any exhaustion, so that the greatest effort involved in this part of the operation was simply the walking back and forth. I've rediscovered what must have been elemental to every pre-twentieth century Jack and Jill: two lighter buckets are easier to carry than a single heavy one that throws one's body off balance. Gravel could be purchased, of course, or another material could be used to fill the tires as long as it has the characteristics of a fast-draining subsoil. The tires have to be filled and packed completely with no big air spaces. Push the fill into the tire cavity around its circumference before filling the middle and packing it down. I used a hose to water down each tire and be assured that it was filled to capacity.

For each succeeding higher course, I used tires with a slightly smaller diameter and was careful to bridge any two lower tires with a higher, smaller one, like laying bricks. I repeated the filling process and positioned more tires on top of these. I



knew what I wanted my rock outcrop to look like, so I just positioned the tires to approximate the shape I was trying to create. The tires are easy to position and reposition before they are filled. My structure had five stories with the foundation comprised of seven tires rising to a penthouse of one tire. When the structure was completed and filled, I could take satisfaction in realizing that I created, bit by bit, an everlasting landscape feature as permanent as the mounds built by ancient American natives. The whole ensemble must have weighed tons!

I knew I was going to grow small rhododendrons on my new mound, so my planting soil was leaf mold. Someday I may build a mound or tire outcrop in a sunny position and use a lean grit for my planting soil. In any case, the planting soil is held in place and planting pockets are created by a surface of natural rock. Here there can be no substitutions: Handsome, native rock must be employed to create the impression that this convolution of the earth's crust is composed of massive monoliths that are duplicates, underground and

unseen, of the broken bits of strata visible between the beautiful, small-scale plants. I went into the woodlot and collected bushels and bushels of chocolate leaf mold. Since the soil in this creek valley is rocky, I collected football-size rocks at the same time, scavenging on hands and knees.

Use rocks for the surface that just tax your strength but do not exceed it. I laid up the surface much like one would lay a stone wall, but using generous amounts of leaf mold behind and around each rock. Unlike a mannered stone wall, the effect I was aiming for was naturalistic and free-form, and, of course, I tried to get all of the strata parallel. I had some rooted cuttings of small rhododendrons and I planted these as I arranged the rock. I hope that someday I will have to judiciously prune the small shrubs to see bits of the rock. I covered over the entire tire structure with rock and leafmold, even over the top, although I left large planting areas on the top.

The mound fulfills its intended purpose, beautifully separating my work area from the Japanese style



path, but one certainly would not need such a good excuse to build a mound. This small rock garden could be created anywhere there is a desire to grow small plants. The total garden picture will be enhanced, however, if its placement has logic. I could imagine a mound in a tiny city garden to create visual depth and increase the square inches of the *piéd-à-terre*. I could imagine a suburban yard where it would seem logical to have a mound paralleling a driveway or creating an enclosed, personal space near the front entry and relieving the monotony of an unbroken expanse of cut grass.

No gardener needs to be told all of the horticultural advantages of growing plants in raised beds, but it is worth pointing out that this well-drained mound can take, and will require, lots of water. The establishment of plants will necessitate careful attention to their water requirements. I position a lawn sprinkler on top of the mound and adjust the flow of water to that of a gentle rain falling on the entire mound. It is possible to build in the sprinkler head, or heads,

by threading a hose through the tire foundation while it is being laid up. The female connecting end of the hose can surface at some convenient, remote location, and, when the mound requires water it is simply a matter of connecting a supply hose and adjusting the flow. The sprinkler heads will be inconspicuous surrounded as they will be by a dazzling array of rare plants.

There is another aspect of this project that appeals to me very much. I, like many gardeners, revere the concepts of conservation, thrift, and husbandry. What better way to implement these sentiments than to utilize a product discarded? Tires, necessary to our lives, become, when their useful lives are over, very ugly and very bothersome. How gratifying to know that this garden mound has a secret, that the exquisite beauty of a rare plant is displayed on a plinth of civilization's leftovers, salvaged, and put into the service of gardening.

Nicholas Klise gardens in rural Brogue, Pennsylvania.

Drawings by the author.

Rock Gardening with Friends

by *Judy Glattstein*

Rock gardening is more than rocks and plants, it is a life style. This fascination with plants of the high mountains, rolling hills, and forests was passed along to me by the members of the American Rock Garden Society through their infectious enthusiasm and generosity. This generosity extends from shared plants to experience, knowledge, and liberal hospitality.

About two decades ago I worked in a feed and grain store. One autumn day a gentleman came into the store to purchase a hundred *Scilla sibirica*. In an attempt to be polite, I said that I often thought these little bulbs were more appealing than the big hybrids—this comment causing me to lose count of the bulbs. “Ah,” said he, “then you will like the American Rock Garden Society!” Little did I know that I was speaking to Larry Hochheimer, then secretary of the organization. In due course, a membership application arrived in the mail. Not knowing what changes this was about to make in my life, I filled out the form and sent it in. After all,

if he had been so kind as to go to the trouble of sending the application to me, the least I could do was to join for a year to see what the society was like. Things have never been the same since.

At the time I did not drive. Getting to meetings was difficult, but occasionally I could cadge a ride. The other members of the Connecticut chapter were very friendly to an unenlightened newcomer. Ed Leimseider told me to come and visit his Westport garden, and he would give me a few plants. I went with a little basket, not wishing to appear too greedy. When I left, after that first visit, a 30-gallon trash bag heavy with plants needed to be boosted into the car. “Try this, take that, this really needs dividing,” and Ed’s flying trowel was providing me with plants I’d never heard of. That visit to Ed’s garden was only the first of many down through the years. He so well communicated to me his enthusiasm for American and Japanese plants that many of them now grow in my

garden. And, as my gardening skills increased, I was able to share some new plants with him.

One thing about the ARGS is that the level of expertise and the quality of plants grown are well above that of the general gardening public. Without any attempt to aggrandize, it is taken for granted that correct scientific Latin nomenclature will be used. "What, using baby talk?" is the harshest criticism I ever received for using a common name.

At about this time the Brooklyn Botanic Garden offered a one-day course on rock gardening, taught by H. Lincoln and Laura Louise Foster. I thought I should take it, to gain some understanding of what it was all these people were enthused about. That was the first time I met two of the grandest people I have ever been privileged to know. At that class I asked several questions for which I now blush. Linc always had the patience to answer questions. If you were interested enough to ask, he assumed you were interested in the answer. With never a slight nor a put-down Linc would gently instruct in such a manner that the information was never forgotten. He gave not merely an answer, but the basis for the answer. The class gave me a foundation for understanding some of the discussion at meetings, about matters that the other members took for granted as common knowledge.

Now remember, I did not drive. One day I was chatting on the telephone with Selma Miriam, and she said, "I have a great job for you, taking care of a private greenhouse. Only trouble is, it is in Westport and you are in Norwalk. And you don't drive." A

couple of hours later I called her back and said, "Don't laugh, but I've signed up for driving lessons." She laughed so hard, she dropped the phone.

With the increased mobility provided by a driver's licence, I began to attend more meetings, more plant sales, and to visit more gardens. I was still rather timid on the road, refusing to drive on superhighways, at night, in congested traffic, in bad weather. My husband Paul reminded me of this after my solo trip back from Raleigh, North Carolina, in 1989, covering about 700 miles on superhighways, at night, etc., etc.

Branching out beyond local meetings, I attended a couple of winter study weekends. And then in 1976, I attended the First Interim International Rock Garden Conference in Seattle and Vancouver. After that there could be no doubt about my addiction to the fancy, to rock gardening. Up in the Olympic and Cascade Ranges, walking on permanent snow in the hot summer sun, seeing elegant alpine plants in their natural setting, I took the bait—hook, line, and sinker. It was more than the scenery and the plants, though; it was the camaraderie of the people on the tours. Strangers when we got on the bus, we were best of friends when we got off. People are territorial and will always choose the same seat, all day, each day. The conversation progresses from a simple greeting, such as "Hello, my name is X, and I'm from Y," to "Do you grow A?" and "Did you see B at the last stop?" Seat mates become acquaintances. The intensity of the experiences shared condense the time frame needed, and friendship ripens.

Back at home, I demanded a bigger garden. In Norwalk we were on one-eighth of an acre, and I had run out of room. So we moved to Wilton, with a full acre of land. That move can certainly be ascribed to the ARGS and its influence on me.

At ARGS conferences, friendships are made that extend beyond the few days of the meetings. As an example, I think of Sandy Snyder of Colorado. When we met I knew I'd found a kindred spirit. I came back again with my husband for an engineering conference, and we stayed on with Sandy and her husband Bill, who took us up into the high mountains, hiking near Aspen. Paul became convinced that life begins over 10,000'. He is still not a plantsman, nor interested in plants, but he loves the alpine habitat.

Then Sandy came to visit me, and we toured gardens in Connecticut. One of the pleasures of having gardening guests, I've decided, is that you get out to see other gardens. All too often I get caught up in the mundane and routine. While it would be nice to take off and go garden-hopping, it can be difficult to justify as a solo adventure. But with house guests, ah, then one is obliged to be a good host and take visitors off to see these gardens. At one time or another, rock gardeners from Colorado, North Carolina, Minnesota, and Pennsylvania, from Scotland, and Japan have stayed *chez* Glattstein. And I have slept on beds, divans, and sofas in many different states. The hospitality of rock gardeners, I think, is such that I could crisscross the nation for a year and stay with kindred spirits all the way, visiting

gardens, talking plants, and never a night in a motel watching MTV and bored to tears.

The sequence from ignorance to knowledge, from annuals to *Arisaema*, has been a path along which I was conducted by helping hands. Many plants in my garden are there through the generosity of others—by seed or division of someone else's treasure. Such plants bring pleasure not only in and of their intrinsic beauty but in the memories they can evoke. I look at *Primula abchasica* from Linc, and I can hear his voice as he told the story of his correspondence with Mrs. Evtushenko of Leningrad Botanic Garden. *Trillium grandiflorum* 'Flore Pleno' (photo, p. 224) blooms, and I remember how it had to stay in John Osborne's cold frame for a year after he gave it to me. It was mine, no question, he was merely loathe to see it go. I look at *Leucojum vernum*, given me by a friend who is not a rock gardener, and I think of the other gardens it now graces.

There is no question in my mind that rock gardening is both personal and personnel. It was the willingness of experienced, knowledgeable members to reach out to the novice that brought me into the rock garden society. It was, and continues to be, the individual fascination with saxicole plants, and the person-to-person sharing of interest and affection. That long ago autumn day was pivotal in my life, and how greatly I have been enriched by that chance meeting.

Judy Glattstein is a free-lance writer, enthusiastic gardener. She lives in Wilton, Connecticut.

The Seed Exchange

The Seed Exchange is one of the basic functions of the American Rock Garden Society. We will begin by accepting that as a rock-bottom tenet. It is popular, it is successful—and therein lies a problem. It has become so successful that it threatens to outgrow the capability of any one chapter to manage it. The time has come when change is inescapable.

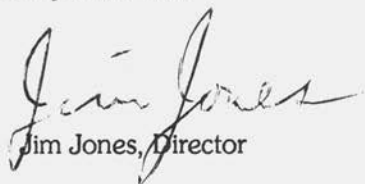
There is one area that immediately suggests itself for improvement. Some 2000 species of seeds that have been contributed are never ordered! That approaches a third of the total listing. Since there is a direct, one-to-one correlation between number of seed contributions and amount of Exchange work required, it is clear that a great burden will be lifted if contributors show greater discernment.

You will note that Guideline 2 specifically states that the seed contributed must be suitable for rock gardens. The Exchange will now go further. Species not deemed to fall into the rock garden category will not be accepted; the contributor will not receive donor credit for them.

Just what are these unacceptable species? Optimally, a list of them would accompany this announcement, and it is hoped that a list can be published in the near future. For the present, as in the past, we will rely on your judgement. Give thought to the scale of the rock garden, and also consider the need for proper and useful identification. Do not send seed of *Aquilegia* species with no further description. At least note that it is blue and low. If you do not exercise judgement, expect disappointment.

In addition, please note the enclosed list of endangered and threatened species and varieties. These will not be accepted for the Exchange.

Other great helps for the Exchange are clear as well as correct labeling and proper cleaning. We know we can count on you for that.



Jim Jones, Director

Seed Exchange Guidelines

1. *Seed will be accepted only until November 1, 1990.* An exception is late-ripening seed, which will be accepted later if an alphabetical listing has been received before that date. Overseas members, please try to mail before October 15.
2. *Send a minimum of 5 different kinds of seed suitable for rock gardens* to meet the requirement to receive donor privileges of 10 free packets and to have your order filled before those of non-donors. We do appreciate any amount of seed, even if you can't meet this quota.
3. *Send clean, dry seed of suitable rock garden plants early.* Do not feel you have to send your whole offering at the same time, at a date close to the deadline.
4. *Use envelopes no larger than 2" by 4" (5cm x 10cm).* One envelope of this size filled with seed is likely to be sufficient for our requirements. As few as five seeds of a variety will be accepted.
5. *Mark each envelope clearly and legibly with the botanical name and, if collected in the wild, the location where collected and the altitude.*
6. *Include an alphabetical listing of the species sent with the seed packets.* Please make every effort to verify the accuracy of the names and to have the list correspond to the actual packets sent. For greatest convenience the listing should be on a standard 8 1/2 " by 11" sheet of paper.
7. *If only the generic name is known, include a brief description such as height and color.* Both generic and specific names should be given where at all possible.
8. *Bind envelopes alphabetically with a rubber band* and place in a mailing envelope along with the alphabetical list.
9. *Be sure your name and address are clearly written on the list and on the outside of the mailing envelope.*

All current members of ARGS will receive a seed list.

Send Seed Early to:

Jim Jones, Director
ARGS Seed Exchange
45 Middle Street
Lexington, MA 02173
USA

Troughs

Hypertufa Update

by *Lawrence B. Thomas*

You can take much of the heartache and roughing-up of hands out of trough-making by discarding the chicken wire armature usually suggested. In a trough-making workshop conducted by Hal Lange (Hudson Valley Chapter), we substituted a polypropylene reinforcing agent called FIBERMESH for the unwieldy wire.

Check lumberyards and cement suppliers in your area for FIBERMESH, or write the manufacturer for the distributor in your area. (FIBERMESH, 4015 Industry Drive, Chattanooga, Tennessee, 37416. Tel.: (615) 892-7243) The product comes in different lengths. We used 1½" length, which we obtained for \$8 per one-and-a-half-pound bag, a quantity sufficient to reinforce one cubic yard of concrete.

Our batch recipe, which makes one trough 12" x 16" x 7", is:

- 1½ ounces FIBERMESH (roughly one handful)
- 2 gallons Portland cement
- 2 gallons perlite
- 2 gallons peat moss, sieved to remove twigs, etc.
- 2 gallons water, approx., added slowly until correct consistency is obtained, about like cottage cheese.

IMPORTANT: Do not experiment by substituting sand or substances such as pulverized, dry leaves for the perlite. It doesn't work, as there isn't sufficient surface area for the polypropylene fibers to bind to. Such additions will weaken rather than strengthen the texture of the mix.

We formed our troughs in greased wooden forms, tamped the mix down well, and let it set up for an hour. Then we took the inner form out and wrapped our troughs in heavy gauge plastic (we used garbage bags) to cure overnight. The following day, we removed the outer forms, patched any rough spots with the same mix, rasped down the sharp edges with a wood rasp, and burned off any protruding fibers with a butane torch.

The mix can be used for free-form troughs or stones as well. One member made her trough using a sand mound as a form. Be creative and use whatever is handiest. Good luck!

Modified from the Manhattan Chapter Newsletter.



Phlox divaricata 'Eco Blue Moon' (see p. 167)

Don Jacobs

Phlox divaricata 'Fuller's White', left, and 'Eco Notchless White', right (see p. 167) Don Jacobs





Phlox divaricata ssp. *laphamii* 'Chattahoochee', left,
and *P. divaricata* 'Eco Regal', right (see p. 166)

Don Jacobs

Phlox amoena hybrid, previously sold as x 'Chattahoochee' (see p. 165)

Pamela Harper





Phlox x pilosa 'Moody Blue',
formerly distributed in error as *P.* 'Chattahoochee' (see p. 166)

Panayoti Kelaidis

Phlox divaricata 'Eco Texas Purple' (see p. 167)

Don Jacobs





Trillium grandiflorum
'Flore Pleno' (see p. 217)

Judy Glattstein



Propagation

Cuttings in Plastic Bags

by *Jerry Cobb Colley*

Propagation is usually at its most intense level in the spring. The flush of growth and the warmer days and nights make this the most practical time for taking cuttings. However, in the fall, before the usual gardening processes come to a screeching halt, we might consider plastic bag propagation. This method eliminates the need for a greenhouse, heating cables, and highly sanitary conditions. One desirable feature of this method is that cuttings can be left in the bag throughout the winter without any tendency to overgrow or suffer from not being potted up. Stem cuttings of many rock plants, alpines, and perennials root easily. Root cuttings (sections of roots perhaps one or two inches long) of almost any plant that forms buds along the roots will strike exceptionally well.

How do we go about it? Any clear bag from the produce department of a grocery store will serve our purpose. Bags stored for sometime in a drawer at home should be inspected for cleanliness, and, if dubious, they can always be washed out with soapy water, dried inside out, and are then ready to use.

Cuttings with leaves that are soft and might rot will benefit from being dipped in a liquid fungicide before being placed in the bag. Trimming the leaves to one-third their length also helps to prevent decay.

If possible, attain barely moist, fluffy, live sphagnum moss from coastal bogs, an excellent medium to use. Simply fluff the moss, put in a two-to-three-inch layer on the bottom of the bag, place several cuttings on this layer, add more moss, and continue layering, alternating cuttings with moss. After using all the cuttings, blow up the bag with your breath and tie it very tightly to keep the balloon effect. The bag should then be placed in a room kept above freezing but below 60°F, in bright but indirect light. Leave the bag until spring, and then open it and pot up the cuttings. Try to place the potted cuttings in an area that is cool and has adequate humidity rather than in a warm, dry place.

Other media that can be used in the bag are coarse, slightly moist perlite, pumice, florist's peat moss, or any sterile medium that can be kept lightly moist. If none of these materials are available, simply place cuttings that are clean in the bag, blow it up, and place it on a flat surface in a cool room with adequate light. Excellent results should be obtained. These cuttings should be potted on as soon as the roots appear, as the available moisture will be used up more quickly without a moist medium present.

Plants that have proven to be ideal for this method of propagation include

erodiums, geraniums, evergreen daphnes, *Epigaea* species, alpine primulas, and penstemons.

The plastic bag method can also be put to another use. Occasionally there are plants that do not successfully make it through the winter in containers or in the ground, due to excessive moisture or undue cold. The combination of these two can be deadly to many choice, rare plants. Take the plant and wash the roots free of all soil, dry with a towel, blotting all the excess moisture from the roots and stems. Place the plant in a plastic bag of adequate size, blow it up, and seal tightly. Place in a 40°—60°F location with medium light and leave until spring. Early on, as soon as danger of heavy frost is past, remove from the bag and re-pot or re-plant .

Revised with permission from an earlier article published in the Siskiyou Chapter Newsletter.

Shows

Tally, Don't Dally!

by James Jones

Plant shows are an important part of ARGs meetings, local or national. They give us a chance to show off plants, look at plants, learn about plants, and talk about plants endlessly. Plant shows are great! Who could possibly say anything against them?

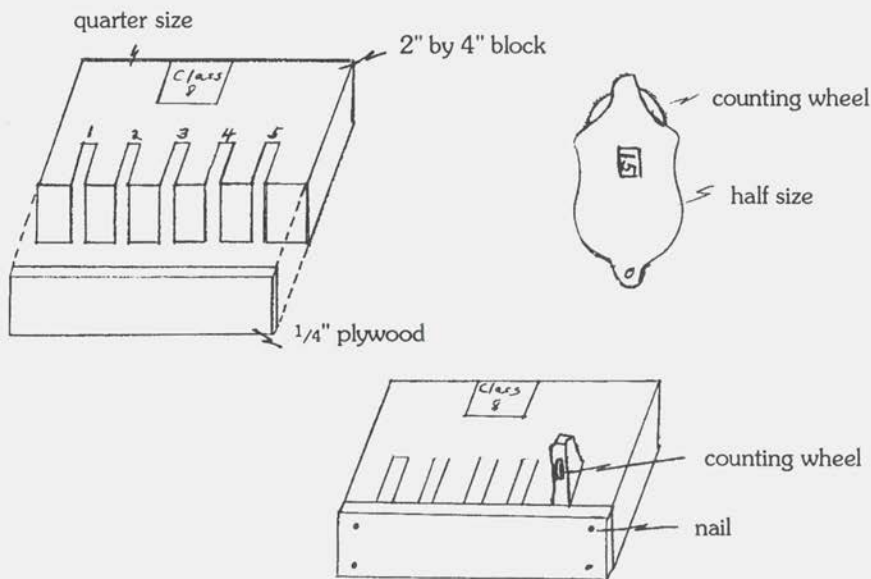
I could, for one, as someone who runs them. For a person in my position, they can mean drudgery, however rewarding. And the biggest, most objectionable drudgery is in the tally.

Typically, each show includes a number of classes, and each class will have from zero to six entries. Each entrant will fill out a card, and each entry will be assigned a class number and an individual number on a slip of paper. Votes are registered by having the members write both these numbers on a slip of paper and pop that in a container. (We have initiated a variant which permits a vote for both first and second place, by depositing two slips for the first choice and one for second. This was my idea, since I continually seemed to come in with second-best plants that under the usual system would have gotten no votes at all. Or maybe one.)

Then the fun begins for the show committee. All those slips have to be counted up, by volunteers who would really rather be hearing the talk. It is true drudgery. The results then have to be gathered together and prepared for presentation, all in an atmosphere that is often that of a three-ring circus. There is a large margin of error, and of frustration.

I have been working out a way to avoid some of this, specifically the count-

ing-up part. The new method has its own cumbersome aspects, but they have to do with the initial set-up and can be dealt with at home, in calmer circumstance. The mechanism is to provide a single mechanical counter for each entry, with an array of counters for each class. Each counter is numbered to correspond to the individual entry; the counter is pressed twice for first, once for second, and there you have it. The tally is ready to be read. No volunteers are needed, the possibility for human error shrinks, and the time required is



reduced ten-fold. In addition, there is none of the worrisome business of slicing up enough paper slips before hand, lugging around pencils, containers, etc.

Nonetheless, it must be recognized that we are talking about a large number of counters. Shows vary in size, but one must always plan for the maximum number of entries likely. This might well mean 12 classes times 5 entries per class, which equals 60 individual plants and an equal number of counters. But that hardly need be a sticking point. Appropriate counters are cheap (\$2-\$3) and small; and counter holders, each holding perhaps five counters to correspond to the plants of a single class, are readily constructed.

My first thought was to use grocery shopping counters, those little plastic things that let the housewife click up the flowing dollars. But between one year and the next the supply totally dried up. I surmise that these devices were victims of inexpensive little electronic calculators. But that was okay. A better-rounded member of the board suggested golf score-keepers, which are even better—smaller and cheaper, and designed (clearly by realists) to count only in one direction. Mounting these was the simplest thing in the world: I sliced five slots of the right width and depth in a section of two-by-four, then nailed on

strips of plywood to cover the bottom and front of the slots, leaving the top open for inserting and removing the counters. The ratchet mechanism that is turned to enter a vote is left exposed, but the tally itself is hidden.

The method has been tested, and it works. In particular, voter acceptance has been good, in the face of something new and different, and show secretary acceptance has been very good. Therefore, pencils, paper, and coffee cans will be a thing of the past (or, more accurately, reserved only in case of overwhelming participation), and a much better time will be had by all.

Books

Cuttings from a Rock Garden: Plant Portraits and Other Essays. H. Lincoln Foster and Laura Louise Foster. Atlantic Monthly Press: New York. 1990. Hardcover, 464 pp., 40 illustrations, 8 color pp. List price \$29.95, available from the ARGS Bookstore at \$23.00.

by Wayne Winterrowd

On my desk is an advance copy of the last writings of Laura Louise and H. Lincoln Foster, *Cuttings from a Rock Garden: Plant Portraits and Other Essays*, edited by Norman Singer, and to be published by Atlantic Monthly Press in July 1990. As long as the host of fine plants the Fosters brought into cultivation and generously disseminated continue to bloom, this book is not their last gift to gardeners. But it is a splendid one, and should grace the shelf of every American rock gardener.

Timmy and Linc, as they were known to their many friends, married in 1949. Timmy's Aunt Do moved out of a beautiful colonial house in Falls Village, Connecticut so that they could move in, and left to them a garden thickly planted with privet and yew. Around the back flowed a splendid old mill race. This stream was to be the nucleus of the garden which became known to gardeners as Millstream. The saga of what followed, the clearing of the privets and yews, the scrabbling out of weed-infested soil to make place for treasures, is best left to Timmy. The first 108 pages of this remarkable book are her writing and recount the creation of Millstream.

No one who has read Timmy's articles in the *Bulletin of the American Rock Garden Society* over the last 25 years will be surprised at what a good writer she was. More than anything else, there emerges from her narrative

what a good, happy marriage was theirs, happy certainly for their garden and for gardeners everywhere, but most happy in itself. One has a powerful sense of two people who adopted a purpose for their lives and went about it passionately together, encouraged not so much by the achievement (which was considerable) as by the act of sharing.

Timmy was, by her own account, "Linc's weeder." But one should not make the mistake of assuming that she was not herself a fine botanist, as her learned essays make clear. Her exquisite line drawings, some 40 sprinkled throughout the book, amply verify this. Most of these drawings have never been published previously, and one is grateful for them all. Botanically accurate in every way, they positively excel in the depiction of the roots of the plants.

The second part of the book is a collection of essays, mostly written by Linc. Called "Plant Portraits," the essays were originally composed for the ARGs bulletin, and have been assembled here. There is magic indeed, when one considers the things they grew, and how they grew them, the knowledge they had, and their words to other gardeners ready to make the attempt at growing. It is Linc's voice that emerges most firmly here, and one thinks he could never have been so happy as when he had grown a plant which was a real botanical conundrum and could trace its identity through as many references as could be stacked on the end of a large library table. Beyond his erudition and his keen—ever so keen—eye for the minutest observation, he could also give way to flights of botanical fancy, as when he speaks of the flowers of asarums: "This secret and dungeon flower, in the chilly spring days, by its ability to raise its temperature, lures into its darkened halls early flylike insects to perform the rites of fertilization as they move from one intoxicating tavern to another, to ensure the mingling of genes from a diversity of individual plants."

The last section of the book is titled "Essays: Reflections on the Gardening Art," and it is here, though one has wished it all along, that one most wants more. There are two beautiful poems, one by Linc and one by Timmy, and a scattering of observations on how to garden, and why to garden, and if you will garden, what to do and not to do.

Laura Louise Foster died in 1988, and H. Lincoln Foster about a year later, in 1989. Both are buried in Falls Village, and there are beautiful words on their stones. But for me, the best epitaph for both is still Timmy's fine and characteristic phrase in her essay—"It was hot dusty work, and most satisfactory."

No mention of this book should end without comment on the many labors of love which have brought it into existence. John Barstow, a near neighbor of the Fosters and an editor at Atlantic Monthly Press, saw it into publication. Dianne Rugh most skillfully prepared the index, in a way which will make it a valuable tool for rock gardeners for many years to come. Panayoti Kelaidis contributed a fine elegiac introduction, remembering the Fosters at their very best. But mostly we must be grateful to Norman Singer, who saw the concept of the book to completion, and who worked with Linc Foster in the last year of his life to be sure that this last fine bouquet of writings would not be lost.

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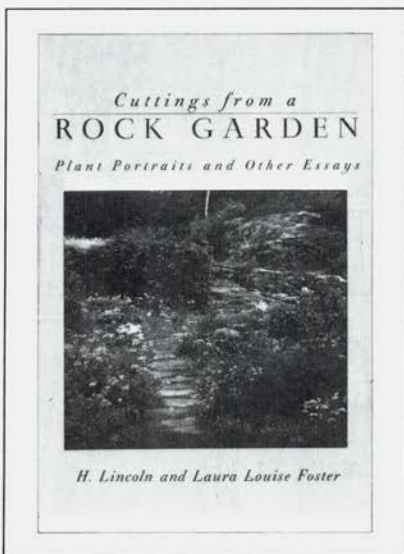


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