

Bulletin of the
American Rock Garden Society



Cover: *Gentiana paradoxa* _____

by Rob Proctor of Denver, Colorado

Bulletin of the American Rock Garden Society

Volume 50 Number 4

Fall 1992

Features

Sorting out the Gentians, by <i>Geoffrey Charlesworth</i>	243
Fritillaries of Central Asia, by <i>Josef Slégl</i>	253
Trillium Rescue, by <i>Don L. Jacobs</i>	261
The Story of <i>Fritillaria</i> 'Martha Roderick', by <i>W.H. de Goede</i>	264
New Home for Rock Plants, by <i>Elisabeth Sheldon</i>	265
Eriogonums: Secret of the Dry Garden, by <i>Irma Gourley</i>	271
Preserving Rock Garden Specimens, by <i>Karen Matthews</i>	275
Spontaneity on the Rocks, by <i>Panayoti Kelaidis</i>	285
The Arctic Harebell, by <i>J.S. DeSanto</i>	291
Hunting for Red <i>Helleborus niger</i> , by <i>Will McLewin</i>	295

Departments

Plant Portrait: <i>Gentiana paradoxa</i>	276
Awards	299
Books	305

Gentiana algida



Sorting out the Gentians

by Geoffrey Charlesworth

There are some genera in which many of the species are considered good alpine plants. *Androsace* is such a genus, and we tend to dismiss the species that are not up to the highest standard as not worth growing—for instance, *A. lactiflora* or *A. albana*. It is a mistake to make such odious comparisons of species within a genus. Instead, we should look at a plant for its own sake, assess its beauty and properties, and ask whether we can use it in our gardens.

A genus with a great variety of species is *Gentiana*. It contains a wide range of architectural form, color intensity, and garden usefulness. Think of *Gentiana tibetica*: every reference describes it as “ugly,” “rubbish,” “not worth growing,” and other epithets too numerous to list. Think of *Gentiana verna*: everybody sighs at the intensely blue darling of early spring. Poor *G. tibetica* doesn't get a chance when compared with *G. verna*, because there is no comparison, and none should be made. *Gentiana verna* is a difficult, capricious plant that is totally unreliable from one year to the next. It wins prizes in shows and accolades from visi-

tors. It is one of the hallmarks of a good grower if a large patch can be produced and maintained year after year, but the despair of most of us, who have only occasionally seen a few small plants in our own gardens and then not always with the astonishing color we associate with the species. So try comparing *G. tibetica* with, for instance, *Trillium luteum*. It may not win this beauty competition either, but there is a fairer comparison to be observed. Both have that faded yellow, old paper look, and both depend on leaves for their garden effect. They fill just about the same niche in a slightly shady area—that is if you start with a nice clump of the trillium. A small garden would probably prefer *Trillium grandiflorum* and *Gentiana scabra*, but an imaginative gardener with enough space can easily accommodate the other two.

When reading Wilkie or Clay or Farrer or Bartlett on gentians, put what they have to say in context, and grow a plant yourself before you make up your mind about its beauty and its usefulness. You may still end up calling *G. tibetica* rubbish or at least not allowing it in your

own garden, but one day you may see it planted where whatever beauty it has is revealed, and you could be forced to concede that you misjudged.

Gentians have been classified by botanists into sections of related species, but because grouping them according to garden use might also be of some value, I am going to proceed with my own classification. You can dig out the standard botanical treatments for yourself by reading the above authors and, of course, the *Harkness Seedlist*. You could also make your own classification; have a lot of fun on a rainy day if you want to try pulling mine apart by re-aligning a few species here and there. I won't limit myself to species I have actually tried to grow; other authorities may not have grown these species either, but their descriptions are fairly convincing, and you can judge for yourself after reading them.

The flower of a gentian is essentially a trumpet, the corolla being a tube that flares out and divides most often into five lobes (fours and sixes are possible). Some gentians have petals fringed at the margins. Between the petals there may be connecting "petals" called *plicae*. These may consist of one tiny point, a double point, or a whole fringe of points—or be nonexistent. If this feature is prominent, it adds richness of form and texture. In some species there are stripings and spottings that are also interesting close-up. At a distance too much artwork tends to diminish the impact. The calyx can also be sculpted with ridges and divisions, but this is not a feature for which you would grow a plant. Sometimes the trumpet does not flare but closes at the end, giving an effect like a balloon. Comparing this with a *Platycodon* in its early stages, we expect this to open, but in the case of the bottle gentians, the flower remains with only a tiny opening for pollinators.

The Best

My first group is the "best" group. Here are the difficult beautiful plants that would probably not last many years outside. These need alpine house treatment to grow well, and if you can't provide this, you have to find exactly the right spot in the garden. Try growing them from seed. You will need many plants to achieve even moderate success with a few. Buying plants is frustrating—and they are not easy to find to begin with.

The *Gentiana verna* types flower in April to May. *Gentiana verna* itself has many geographic races which are sometimes given specific names (photos, pp. 278-279). The best *G. verna* has very fine blue flowers about half the dimensions of the familiar *G. acaulis* and is perhaps not so intense a color even at its best. There are less good blues, too, but none is to be rejected. This species forms ground-hugging mats that can be pulled apart after flowering when they get sufficiently large (the second year maybe). The pieces will have enough root to pot up and ought to be large enough to plant out by September. I have tried this division in a very peaty compost in a plastic pot, and the propagated plants did quite well. In the same mix outdoors, I was less successful. In a sandy soil, *G. acaulis* also flowered but sulked and failed to increase. Mary Bartlett insists that this species is a lime-lover, but I have never given it added lime or grown it on tufa, so you may want to experiment in that direction. The corolla is a moderately long tube sitting in a green-ribbed calyx, its five petals opening to a star with a white center. Some geographical variants are *G. balcanica* (a brilliant, greenish-blue outside, endemic to the Balkan Mountains); *G. pontica* (wider, dark green leaves, large flowers); and *G. sibirica* (tiny). *Gentiana angulosa* or *G. verna* v.

angulosa (= *G. tergestina* or *G. verna* ssp. *tergestina*?, dark blue, photo, p. 278) is a bit larger and taller with lighter blue flowers and longer leaves and wings along the calyx tube. *Gentiana oschtenica*, from the Caucasus, is a yellow-flowered species close to *G. verna* (photo, p. 279). In Czechoslovakia it is grown by a few experts, and it is a real prize winner.

Other species belonging to the aristocratic group of gentians are also worth growing in a container, and they need extreme care. *Gentiana bavarica*, with deep blue trumpets and tiny rosettes of light green, spatulate leaves, grows in wet areas in nature. It has a subspecies *subacaulis*, the dwarf Bavarian gentian, which is a compact form with circular leaves. *Gentiana brachyphylla* is a 2" tight cushion with dumpy leathery leaves; *G. fauratii* (including *G. orbicularis*) is closely related to *G. brachyphylla* with large, deep blue flowers with rounded petals and tiny, oval, spatulate leaves, from the Pyrenees, Alps, Turkey; *G. pumila* (a smaller *G. verna* with narrow, lance-shaped leaves and deep blue trumpets); *G. pumila* var. *delphinensis* has blunt petal lobes and a different calyx; *G. rostanii* is sky blue with narrow, bright green leaves and doesn't form rosettes; and *G. boissieri* is a dwarf *G. septemfida*, 2" tall with bright blue flowers, from Turkey.

Still in the most precious group but flowering later are *G. pyrenaica* and its allies, *G. pyrenaica*, whose range goes as far east as the Balkans, a violet beauty with pleated corolla, looking as though it had ten petals and narrow lanceolate leaves, blooming in May-June; *G. djimilensis*, possibly the eastern form of *G. pyrenaica*, from Armenia, violet flowers, 1" tall; *G. olgae* from Tadjikistan, 6", bluish-violet; and *G. terglouensis*, a miniature version of *G. verna* with finer leaves than *G. bavarica*, forming dense tufts

of tiny rosettes. It wants lime and blooms in July. Its subspecies *schlechteri* forms dense tufts and may be the tiniest of the *verna* group. *Gentiana froelichii*, the Karawanken gentian, bears sky blue flowers in August and is "an aristocratic blue *frigida*" without the streaks on the flowers (see *G. frigida* below, under the non-blue gentians). It is from the Julian Alps.

Gentiana acaulis and Relatives

These are the gentians you think of when you think of gentian blue. Only slightly less beautiful than the *G. verna* group (or slightly more?), they are bigger plants with enormous trumpets and therefore less "alpine-looking," but more showy (photos, p. 281). These are also spring gentians, but in my garden flower a little later. My success is intermittent, so I will content myself with negative advice. Not deep shade, not hot scree, not bog, not too lean a soil. Try the edge of a border with rich soil or the shady side of a rock. If plants heave and rot, improve the drainage. There is a lot of speculation about the proper acidity of the soil. This may be important if you live in a region with alkaline soil, but in our slightly acid soil almost anything grows. You should try *G. acaulis* even if you live in a limestone pocket. Sometimes the plant flourishes but doesn't flower. Divide it by pulling the rosettes apart, pot up and try several locations after the divisions have started growing again. Healthy plants can be divided as often as once a year.

The name *G. acaulis* is used to cover a number of species, subspecies or varieties, all with large trumpets, but from different geographical locations. Look for *G. alpina*, the southern gentian (i.e., from southwest Europe), small, with one flower on a stem, but almost stemless; *G. angustifolia*, with rounded petals of deep to sky blue,

narrow, strap-shaped leaves, and said to need lime; *G. clusii*, with large sky-blue or gentian-blue flowers, with deep green rosettes of stiff, leathery leaves. *G. clusii* variety *clusii* has narrow, pointed leaves and dark blue flowers, and variety *rosea*, flowers violet-rose. But the one plant of *G. clusii* var. *rosea* I have flowered was an insipid, non-descript combination of pink and muddy gray. *Gentiana dinarica*, with no spotting, big flowers, later flowering than *G. acaulis*, from Yugoslavia, is one of the species most likely to bloom well. *Gentiana kochiana*, a low plant and the "standard *acaulis*," has deep blue flowers with green spots inside the trumpets and wants acid soil. The flowers of *G. ligustica* have green spots and petals ending in fine points, and it is said to require lime. *Gentiana occidentalis* has pointed petals and no spotting; *G. clusii* var. *rochellii* has gray, narrow leaves and bigger, dark blue flowers; variety *undulatifolia* has wavy leaves. Both are sometimes presented as species in their own right. All vary in leaf shape, size, and color and in flower size and color, but all form rosettes which make clumpy mats. The foliage is interesting at close quarters but not very distinguished from a distance. It is understandably frustrating when they fail to flower.

I visited a nursery in Ireland and watched in horror as a large black dog first walked on and then stretched out on a large patch of *G. acaulis*. The owner was not only undisturbed by this bit of canine misbehavior but walked on the patch herself, claiming that the pressure improved flowering. However, Ellie Spingarn has a large patch twenty years old that flowers without being trodden on.

Summer Gentians

First is a group of species that form tight mats of leaves or single rosettes

with thick, long, leafy stems sprawling up to a foot or more in all directions, each presenting an octopus of green tentacles. The flowers are in ones, twos, or bunches at the ends of the stems. The colors are nowhere near as good as those of the spring gentians, but are deep blues both rich and dull, on the purplish side, and sometimes striped, or straw yellows and greenish yellows—but I shall group the yellows later. The summer gentians are useful because of their later blooms and because they look good at the edge of woodlands or add interest to a border. They can overwhelm their immediate neighbors, so you have to allow plenty of sprawl room. These are the gentians that Bartlett omits from her delightful book, presumably because she doesn't consider them worth growing in a rock garden. But many of them are quietly beautiful and worth trying. Some names in this group are *G. decumbens* (dark blue, 1-3 terminal flowers, 10" stems from rosettes); *G. olivieri* (blue flowers in terminal umbels, 9"-12" stems from rosettes); *G. gracilipes* (10" stems from rosettes, single flowers in axils, poor color outside, good blue inside); *G. cruciata* (flowers greenish outside and not a strong blue inside, flower clusters in axils and terminal, up to 16" stems from dark green rosettes); *G. phlogifolia* (subspecies of *G. cruciata*, smaller flowers); *G. dahurica* (8"-12" stems, single, dark blue funnels in axils, pale-spotted throat); *G. thassica* (close to *G. dahurica*, flowers solitary); *G. macrophylla* (1', pale blue flowers, late summer); *G. tianshanica* (about a foot high, terminal and axial clusters, purplish-blue flowers—it is probably the most beautiful of this group); *G. fetisowii* (2' erect stems from rosette, deep blue flowers in clusters a bit like *G. decumbens*); *G. kesselringii* (like a whitish *G. decumbens* with a split calyx); *G. waltonii* (larger *G. decum-*

bens), *G. cephalantha* (18", light blue flowers); *G. rigescens* (similar); *G. microdonta* (more slender, flowers a better color).

Much better but in the same league are *G. cachemirica* (photo, p. 283) and *G. loderi* with better blues and better behavior. These are about 8" high from low rosettes with up to three terminal flowers of clear, light blue, striped attractively. *Gentiana grossheimii* is a low, pretty plant from the Caucasus. *Gentiana altaica* has funnel-shaped, deep blue flowers in early summer. *Gentiana septemfida* is a well-known, frequently grown plant with stems about a foot long, deep blue, spotted flowers in terminal clusters, and the *plicae* so finely cut that at a casual glance it looks as though there are hairs growing between the petals. The name comes from this seven-jimbed, fringing effect and has nothing to do with the date of flowering, which is August. Garden forms of *G. septemfida* are 'Doeringiana', 'Hascombensis', f. *olivana*, var. *cordifolia*, ssp. *latifolia*.

Related to *G. septemfida*, and also summer growers that form good mounds of flowers in clumps: *G. freyniana* (like *G. septemfida*, but no fringes and flowers usually solitary); *G. lagodechiana* (often considered a botanical variety of *G. septemfida*, no rosettes, prostrate 15" stems, flowers solitary—i.e. not in clusters—no fringes, deep blue); *G. fischeri* (similar to *G. septemfida*, dark blue flowers with green spots). *Gentiana pneumonanthe*, the marsh gentian, about 12", has funnel-shaped flowers both terminal and axial, deep blue with green striping outside; *G. siphonantha* from China has clusters of purple-blue flowers, 12"; *G. kaufmanniana*, 6-8", is from Asia Minor. *Gentiana paradoxa* is a beautiful Caucasian endemic flowering in late summer. The spring spiral of narrow, ground-hugging leaves elongates verti-

cally into a neat birdcage by August. *Gentiana wutaiensis* from China is described variously as 8" or 20".

There are two taller gentians for damp places or woodland edges: *Gentiana asclepiadea* is 2' with arching stems and deep blue flowers. The white form is just as good. The common name willow gentian comes from the shape of the leaves. *Gentiana trichotoma*, 2', from China, blooms June to July with good flowers, deep blue outside and spotted inside.

North American Gentians

North American gentians with similar garden value include *G. affinis*, about 1' tall, with clusters of blue to streaky flowers in the axils and terminal, looking like a bunch at the end of the stem (photo, p. 280). It grows near wet ground. Similar to *G. affinis* are *G. oregana* (with broader corollas); *G. bigelovii* (purplish stems—intergrades with *G. affinis* in New Mexico and is sometimes lumped with it); *G. parryi* (succulent leaves, can be a compact plant; photo, p. 282). *Gentiana calycosa*, the blue pleated gentian that grows in Logan Pass and is widespread elsewhere, is caespitose with 1' stems and solitary, dark blue terminal flowers (photo, p. 282). *Gentiana bisetia* from wet places on the West Coast is similar. *Gentiana bracteosa* has 12" stems, no rosette, purple-blue funnels and is from the Midwest. *Gentiana platypetala* from Alaska has thick tall stems and brilliant blue flowers. *Gentiana puberulenta* is 2' tall with flowers in terminal clusters. The petals are only blue at the ends and flare out. It comes from the Plains states. More choice than any of these is *G. newberryi* from California, Nevada and Oregon (photo, p. 282). This I have never succeeded in keeping over the winter. It forms 2-4" mats with blue-striped flowers, white inside. From the New Jersey Pine

Barrens and coastal barrens to South Carolina comes *G. autumnalis* (20" with indigo flowers) and its form *porphyrio* with brown spots inside. The former has been grown successfully by Jerry Colley in an artificial bog with heavy feeding. *Gentiana sceptrum* grows in wet places and is anywhere up to 4' tall. It has been called one of the best US gentians, but it needs the right location. *Gentiana menziesii* and *G. orfordii* are either the same or similar. *Gentiana adsurgens* is a Mexican alpine gentian, seed collected by Sally Walker. *Gentiana setigera* (previously confused with *G. plurisetosa*) is said to have the appearance of a robust *G. newberryi* but with black-blue coloring of the flowers and to grow in a tight peaty bog. It is a Californian, probably tender in the Northeast.

Japanese and East Asian Gentians

Later than these and blooming into the fall are Japanese gentians. *Gentiana scabra* has no basal rosette, and the deep blue flowers on racemes at the end of the 12" stems bloom in September, deer permitting. Variety *buengeri* is Japanese. Variety *saxatilis* is a shorter plant (photo, p. 283). *Gentiana sikokiana* is like *G. scabra* with a different calyx. Other Japanese species are *G. jamesii* (red stems, purplish blue flowers from July on); *G. nipponica* (like *G. jamesii* but smaller and a good blue); *G. yakushimensis* (10", solitary blue flowers in August). *G. suendermannii* is a late-blooming hybrid like *G. septemfida*.

Also from Japan and East Asia is *G. triflora*. The plants are over 2' tall (mine stayed about 1' high), the flowers dark blue in small clusters at the top of the stems. The corollas have five or six parts, and the foliage is attractively glaucous. This has a number of forms: f. *montana*, f. *horomuiensis*, v. *japonica* or v. *axillariflora* which may

itself claim *montana* as a form. *Gentiana thunbergii* is an annual or biennial, with 6"-tall stems from rosettes and blue flowers.

Non-blue Gentians

I realize that color is neither of botanical nor horticultural significance, but some people's reaction to non-blue gentians is very strong, so here they are in one group. The word yellow must be understood to be any color from creamy or lemon or straw to almost white, but never a good strong yellow.

Gentiana lutea is very tall, up to 5', with yellow flowers in several whorls along the stem, each whorl supported by a couple of leaves. The Asian equivalent of *G. lutea* is *G. stylophora*, sometimes put into the genus *Megacodon*. *Gentiana gelida* has lemon yellow to white flowers, is 12" tall and related to *G. septemfida*, with dwarf forms as low as 3". Also in this category are: *G. grombczewskii* (16" tall, yellow funnels); *G. alba* (dirty white flowers with green veins, nearly closed); *G. punctata* (2' tall, yellow, purple-spotted flowers in whorls down the stem); *G. flavida* (yellowish blossoms, may be the same as *G. alba*); *G. frigida* (the Styrian gentian, 4", yellowish white flowers with blue stripes and streaks, needs a cool place); *G. algida* (from both Asia and North America, pale yellow to white flowers with blue spots and stripes, blooming at the end of summer, a low plant for a rock garden, may be a subspecies of *G. frigida*; photo, p. 277); *G. walujewii* (dirty white, spotted flowers); *G. maki-noi* (slate-blue flowers with spots, but good blues are also reported, and this could belong with Japanese blues); *G. glauca* (greenish blue flowers, white inside); *G. przewalskii* (bluish-white, streaked flowers); *G. purpurea* (purplish-red flowers with dark purple spots, yellowish throat); and the related

Which Gentians should I Grow?

Naturally, this depends upon what kind of person you are, what your tastes are and what kind of garden and facilities you have.

Gardener 1. You are a "good gardener"—i.e., you like plants and take care of them—but you are not interested in specializing and can't really be bothered to remember the names of too many plants that look alike. Try *G. verna* in various spots until you hit the right one. Keep it going by collecting seed and by division. *Gentiana acaulis*: try to get hold of a clone or species that blooms. If it doesn't, try another location in the garden. Finally, try another clone. Also indispensable are *G. septemfida*, *G. scabra*, *G. asclepiadea* and some species such as *G. parryi* or *G. fischeri*, ending the season with *G. farreri* or a Himalayan hybrid.

Gardener 2. You are a beginner branching out. You want something available, something new, something easy, something blue. Try *G. dinarica*, *G. cachemirica*, *G. septemfida*, and *G. scabra*. The same nurseries don't have the same plants every year, but try Appalachian Wildflowers, Nature's Garden, Colorado Alpines, and Siskiyou Rare Plant.

Gardener 3. You only allow the very best in your small garden, but you have an alpine house, too, and you are willing to grow species from seed. Grow any and all of the *G. verna* group, the *G. acaulis* group, the Himalayans, and the New Zealanders.

Gardener 4. You want to win prizes at shows. Grow *G. oschtenica*, *G. pyrenaica*, *G. froelichii*, *G. bavarica*, and look for Southern Hemisphere gentians not on this list and for the rare Himalayans. Just seeing the name on the label makes judges swoon.

Gardener 5. You have a perennial border and a woodland garden. You want tasteful, good-looking, reliable plants that provide useful foliage and are not temperamental. Color is important, but only as part of your scheme, and it must be unifying, not assertive. Grow *G. lutea* for architecture, *G. asclepiadea* for the edge of a woodland, *G. andrewsii* a little deeper in the woods, *G. septemfida* for the late summer border, *G. scabra* for the fall border, and find a place for *G. triflora* and *G. purpurea*. For a spectacular ground cover blooming late grow a massed planting of *G. farreri*.

Gardener 6. You want the unusual whether or not it is truly decorative. You have seen the attractive gentianellas in the European Alps; these are something to look for (if you can't find them, *Centaureum* is quite a good substitute). You like the vapid creams and yellows of *G. tibetica* and *G. lutea* but don't want all that leafage. Try growing other gentian relatives: *Swertia* and its cousin *Frasera*. Also grow the bottle gentians for their perverse refusal to open. You can spend hours watching the bees struggle to get inside. Grow white forms of *G. acaulis*, *G. verna* and *G. andrewsii*. These are truly beautiful plants, but most people can't forgive them for not being blue.

—Geoffrey Charlesworth

G. burseri (brown-spotted greenish or creamy yellow flowers in showy bundles); *G. villarsii* is considered a subspecies or variety of *G. burseri* with "bright yellow" flowers; *G. pannonica* (brownish purple=soft maroon flowers, heavily spotted, in substantial clusters); *G. dendrologii* (whitish flowers, 14"); *G. straminea* (Asian, with three to five yellow flowers on a stalk); *G. crassicaulis* (greenish white flowers).

And then there are the purer white gentians of New Zealand. These are not hardy in New England but could be tried in an alpine house. The names one is likely to meet in lists are *G. saxosa* (photo, p. 282), *G. bellidifolia*, *G. divisa*, *G. patula*, *G. serotina*. *Gentiana corymbifera* is probably too tall for the alpine house at 18".

Bottle Gentians

These are North American gentians without the flaring petals we normally associate with the genus. You wonder when the flower is going to open until you realize that its charm is the balloon-like flower head. Some bottle gentians can be extraordinarily beautiful especially our local *G. andrewsii* given a rich soil and plenty of light. *Gentiana andrewsii* is about 2' tall with blue bottles aging to purplish-blue, borne at and near the ends of the stems. There is also a magnificent white form of *G. andrewsii*. The ends of the *plicae* are fringy, which distinguishes it from *G. clausa*. *Gentiana clausa* has *plicae* divided two or three times only. *Gentiana austromontana* is said to be even better with deep violet flowers. *G. linearis* has very thin leaves, is 2' tall, with terminal clusters of blue flowers. *G. saponaria*, with leaves like bouncing bet, has purplish, club-shaped flowers that are mostly closed. *G. villosa* (or *G. ochroleuca*) has whitish flowers and is from the Southeast and probably blooms too late for New

England. *Gentiana rubricaulis* is 2' tall, with pale violet, tubular flowers.

Fringed Gentians

These are annual or biennial. They have been segregated to the genus *Gentianopsis* but sometimes still appear as *Gentiana*. The corolla is in four sections. The fringe is on the lobes of the corolla and there are no *plicae* between the lobes as there are in *Gentiana*. *Gentianopsis crinita* is our local fringed gentian. It is a graceful plant up to 3' tall, an annual. The lobes are fringed all the way around. *Gentianopsis procera* is fringed along the sides only. *Gentianopsis detonsa* is 2' and variable blue; it has a variety *elegans*. *Gentianopsis barbata* is similar and taller. *Gentianopsis barbellata* is perennial and fragrant. *Gentianopsis thermalis*, of North America, is a deep blue annual with streaks, probably the same as *G. detonsa*, from Asia and North America (photo, p. 284). The European *Gentianopsis ciliata* is the only other fringed gentian you are likely to find in seed lists. The fringed gentians are not easy to grow and harder to keep but charming plants if you can succeed.

Annual Gentians

These are seldom grown, apparently because they are difficult to keep going. *Gentiana aquatica* (circumboreal, 4" tall; photo, p. 280); *Gentiana concinna* (from New Zealand, white-flowered); *Gentiana nivalis* (widespread in Europe, the Arctic, and North America, slender, 2-6" tall, with bright blue flowers, but untamed); *Gentiana utriculosa* (with a baggy calyx like a *Silene*, widespread, hard to keep); *Gentiana pseudoaquatica*; *Gentiana prostrata* (with small spoon-shaped leaves; photo, p. 280). There are many other annuals that never appear in seed lists, probably for good reason.

Other Biennials

Gentianella differs from *Gentianopsis* because the lobes are in fives rather than fours. The members don't have *plicae* as true gentians do. *Gentianella germanica* is a beautiful red like a *Centaureum* and grows in Switzerland. Others are similar: *G. austriaca*, *G. bulgarica*. *Gentiana moorcroftiana* is a biennial from Kashmir. *Gentianella amarella* (photo, p. 280, =*G. plebeia*) blooms blue or reddish-violet. Its flowers have hairy throats and it grows from basal rosettes. Another *Gentianella*, brought back from Tadjikistan by Josef Halda, *G. turkestanorum* has blue flowers; *Gentianella campestris* flowers are dull violet; *Gentianella columnae* from the Apennines has clusters of large purplish flowers; *Gentianella montana* (= *G. diemensis*) is from Australia.

Himalayan Gentians

These are some of the most desirable plants in the genus. There are many crosses, but very few can be obtained in the US. Nor is seed often available, so you have to be on the lookout and try it whenever you can. Perhaps the most startling color is the turquoise blue of *G. farreri* (photo, p. 277). This forms rosettes from which prostrate stems emerge like a Medusa head. The leaves are in pairs and very slender which distinguishes it from other species. However there are so many offspring of hybrids around, it is not always certain you have the true species. Close imitations are still very beautiful. The flowers are solitary and terminal with a striped exterior. *Gentiana hexaphylla* is also recognizable by the leaves in whorls of six, and the corolla is in six parts. It doesn't form a rosette, and the flowers on 6" stems are blue, spotted with green. *Gentiana sino-ornata* makes mats and loose rosettes with 7" stems and deep

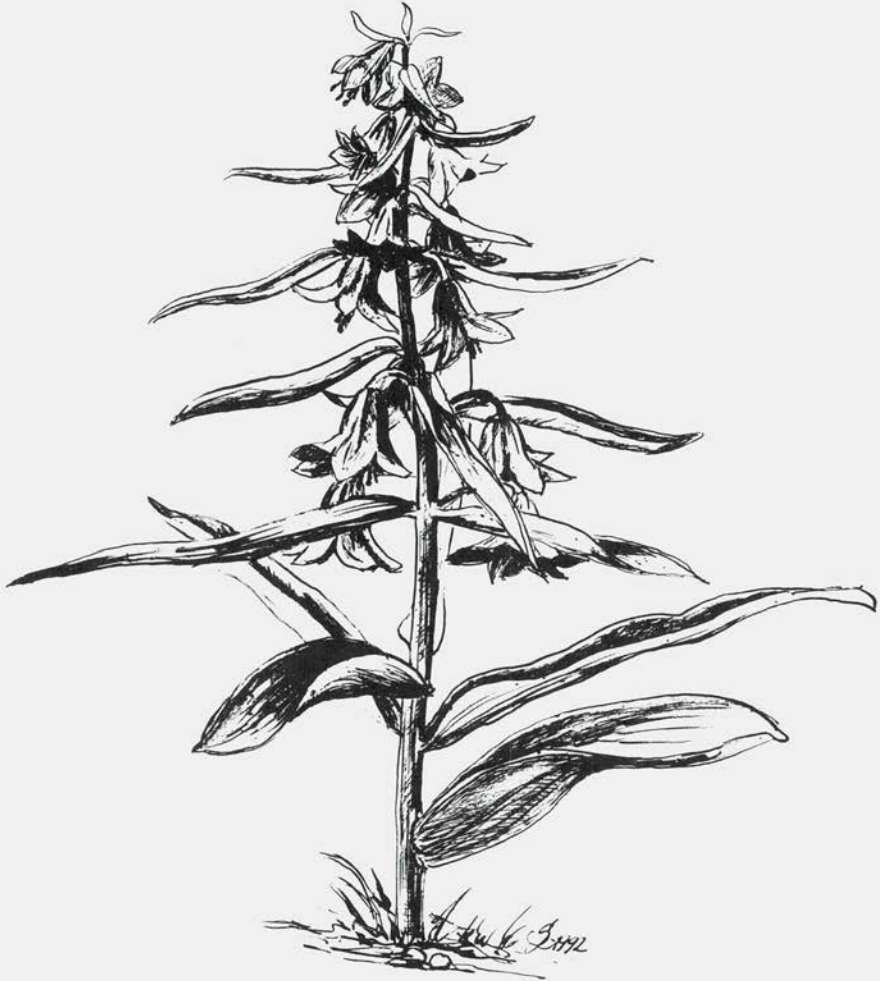
blue, tubular flowers. *Gentiana ornata* is rarer, and the flowers are tubby and pale blue with dark spots. *Gentiana veitchiorum* has royal blue funnels with yellow stripes. The flowers are on 5" stems that sprawl, then turn up at the ends. I have never seen seed of this offered, nor of *G. gilvostrata* (beautiful sea-blue flowers); *G. prolata* (blue-striped purple flowers); *G. lawrencei* (like a weaker *G. farreri*); *G. depressa* (mat-forming, rare, late, with fat bells on short stems).

Many hybrids of Asiatic gentians are occasionally available. Seed from one of these hybrids will not give plants identical to the parents, but it should be worth growing (photo, p. 277). If you do this, abandon the cultivar name (e.g., 'Macauleyi', 'Inverleith', 'Susan Jane'—photo, p. 277) and use an imprecise name such as "Asiatic Hybrids." Otherwise the original names will cease to have much meaning.

There are many other superb Himalayan gentians not yet in cultivation. Not all listed are reliably identified in the seed lists, but all should be tried if they ever appear. *Gentiana kurroo* forms rosettes, and the flowers bloom at the ends of 10" stems. They are blue, spotted with green. There are many plants misnamed *G. kurroo*, so if you don't find yours very pretty, it is probably not genuine. *Gentiana sikkimensis* forms mats. The leaves are in pairs and the flowers in clusters, blue with white throats at the end of 6" stems. *Gentiana stragulata* is larger, the flowers purple outside and blue inside.

Drawing by Cindy Nelson-Nold

Geoffrey Charlesworth gardens in South Sandisfield, Massachusetts. He is the author of *The Opinionated Gardener* and a recipient of the Carlton R. Worth Award for distinguished writing on rock gardening.



Fritillaria sewertzovii

Fritillaries of Central Asia

by Josef Slégl

We see more and more interest in fritillaries among rock gardeners. These plants are a bit extraordinary, most with pendulous flowers of various shades of soft, dull colors. While the European species usually have no more than three flowers per stem, those of Central Asia may have a dozen or even more bell-shaped blossoms. I'd like to write a few words on these unconventional plants that I grow here.

In the pronounced continental climate of Central Asia only well-adapted species can survive. During five months of hot summer there is no rain—and the daily temperature often climbs to 100°F. In the mountain steppe zone we meet only very resistant shrubs such as *Ephedra*, *Zygo-phyllum*, *Atraphaxis*, *Caragana*, and *Rosa*, which at some elevations create shrubby thickets. Of the herbaceous species there are annuals, which have a very short growing period between snow melt and the first heat of early summer, and numerous perennials adapted to a long and dry summer. Many of these have mighty underground reserves such as corms, bulbs, or thick rhizomes, and are summer

dormant. Some species of *Fritillaria* are included in this group.

Korolkovia sewertzovii (syn. *Fritillaria sewertzovii*, photo p. 257) is a slim, narrow plant with a strong, firm, upright stem reaching 45 cm high in the garden. Its leaves are grayish-green, broadly lanceolate, and significantly grooved. The bell-shaped flowers vary in color from yellowish-green through various shades of bronze to dark, reddish-brown and arise on short pedicels in the leaf axils on the upper half of the stems. The uppermost flowers are usually male, as the ovaries do not develop.

I have encountered this plant on the Hissar Ridge (part of the western Pamiroalai) on Mt. Tschimigan at about 2500 m. It grew in coarse, firm granitic scree and talus below the rocky massifs and also in pockets on the rocks, mostly on the south slope. And while some plants were forming seed capsules here, below on the margins of a moraine where the snow had just melted others were just appearing as green shoots. With *Korolkovia* grew several other very lovely and desirable bulbous plants, including the variable *Tulipa*



Fritillaria raddeana

tschimganica in both yellow- and red-flowered specimens, the nearly stemless *Tulipa ferganica* with its two characteristically wavy, undulate leaves and star-shaped yellow flowers, and the tiny *Tulipa nuestruvae*, with narrow, green leaves and several tiny, fully open, pale yellow flowers per stem.

Here I have also seen the tuberous *Gymnospermium albertii* (*Leontice albertii*) of the Berberidaceae, with a crest-shaped inflorescence composed of numerous small, vivid yellow flowers, and the red-flowered *Corydalis ledebouriana* and *C. davurica*.

In the garden *Korolkovia* belongs to the group of plants that performs well. It appreciates some balanced fertilizer during its short growth period. Its stems die down at the end of June usually, and after that the bulbs need to be kept dry. It can tolerate our often moist—or even wet—European summers and autumns fairly well. Nevertheless, I do

protect them and my other bulbs from Central Asia against surplus moisture by covering them with a plate of glass or even by removing them from the soil and storing them in sand until the end of August. *Korolkovia* does not produce any side bulblets (sorry) and seed is set here only very rarely, so this lovely bulb remains relatively rare here.

The following four species discussed belong to the *Rhinopetalum* group, sometimes separated as a genus. This group is confined strictly to

Central Asia; the species have a characteristic more or less conical bulge on the outer side of base of perianth segments opposite the nectaries on the inner side. These conical bulges—often acute—are always significant and eye-catching, even on buds. Another character typical for all the species of the *Rhinopetalum* group is that the lowest pair of leaves are nearly opposite, distinctly different from the other leaves which are scattered along the stems; these two lowest leaves are usually broadly elliptic or ovate, while leaves higher on the stem are much narrower.

Fritillaria stenantha (*Rhinopetalum stenantha*, photo p. 257) has a raceme of pale rose, widely flaring flowers arising from the leaf axils. The leaves are ovate to broadly lanceolate, dull green, and slightly pruinose. The stem is thin and not stiff, so the plants should not be exposed to severe

winds in the garden. Plants do not usually exceed 25 cm in height. The bulb itself is quite winter hardy, but it starts to bloom very early and the vegetative parts can be easily damaged by frost in the fluctuating temperatures of early spring. It requires protection against moisture in summer and some baking at that time is also beneficial. In the wild it is often to be seen on very steep slopes in soils mostly composed of fine grit. I have seen it near Tashkent in Uzbekistan in a valley named Ak-Tash where it grew accompanied by *Tulipa greggii* and *T. kaufmanniana*. Adequate seed is usually produced, and in good conditions the seedlings can bear their first flowers in three years.

Fritillaria ariana (*Rhinopetalum arianum*) is closely related to the previous species. It too is about 25 cm tall and can produce up to a dozen pale rose, nodding, widely flared flowers with darker stripes on the tepals. It is more a drought-loving species; I have seen it on the margin of the Kara Kum desert in Turkmenia. It needs very careful treatment and a good dry baking in summer.

Fritillaria gibbosa (*Rhinopetalum gibbosum*) comes from the Kopet Dagh Mountains on the border between Turkmenia and Iran. It has wide open, white flowers, tinged rose. This species is still rare in

cultivation. It must have some heat and a dry period in the summer if it is to form flower buds for the next year.

Fritillaria bucharica (*Rhinopetalum bucharicum*, photo p. 257) is also 20-25 cm tall. It bears up to ten milky white, narrowly campanulate flowers on the upper part of its often weak stem; it is perhaps the easiest species of the group to cultivate. I have seen it in the wild in Tadjikistan, in the Romit Valley east of Dushanbe on Chormozak Pass above the Nurek River. Of this group, this species is



Fritillaria eduardii

most often offered in seed exchanges.

None of the species of the *Rhinopetalum* group sets side bulbils, so we have to propagate them from seeds. These germinate during the cool weather of early spring after autumnal sowing.

Fritillaria eduardii (sometimes listed as *Petilium eduardii*, photo p. 257) is akin to this group and very closely related to the commonly grown *F. imperialis*, but the large bulbs of *F. eduardii* lack the characteristic smell of *F. imperialis*, which causes mice and moles to leave it out of their diet. It inhabits the Tadjikistan mountain valleys and there prefers northern slopes richly supplied with water from melting snows above. But in the neighborhood of mountain villages it is nearly extinct because the local people eat the bulbs boiled. In the Far East *Fritillaria camtschatcensis* is similarly used as an everyday food, and in some parts of China, *Amana edulis*.

Fritillaria eduardii is not a difficult plant in the garden, having only modest requirements, and is quite hardy under our conditions. It has tall stems densely leafy with whorled, lanceolate, vivid green leaves and an umbel of pendulous flowers varying from brick-red to darker tones—even yellow-flowered specimens occur. We have encountered all these flower colors in the wild. As *F. eduardii* inhabits places with relatively rich soil, it appreciates an occasional application of a balanced fertilizer in the garden.

Fritillaria raddeana was the first fritillary to come into cultivation from this vast area. It is a robust plant but a bit smaller than *F. imperialis*, only up to 70 cm high. It has a rich inflorescence composed of 20-30 pale greenish-yellow flowers, which are widely campanulate. It has the same require-

ments as *F. imperialis* in the garden. Its bulbs do not produce offsets, so it can only be propagated by seed. However, it usually takes seven years from seed to flowering plants, and this is one reason why this lovely solitary plant is still so rarely offered. Its home is the mountains of Kopet Dagh, where it grows on both the Turkmen and Iranian sides of the divide.

Generally fritillaries grow well from seed, especially when seed is sown immediately after being collected. In an open raised bed, pot, or tray, the seed should not be covered by more than 5 mm of coarse soil or grit. Older seed that has been stored dry usually will germinate after a second year. Germination is epigeal: the first year only a single cotyledon with the seed coat on its upper end appears. The second year the first true leaves develop. It is beneficial not to disturb the tiny bulbils earlier than two years after sowing. It is necessary to be very careful when transplanting, as the tiny bulbils have only a very thin cuticle and are very sensitive to any mechanical injuries. They also dry out easily. Raising fritillaries from seed is always interesting work but requires a lot of patience.

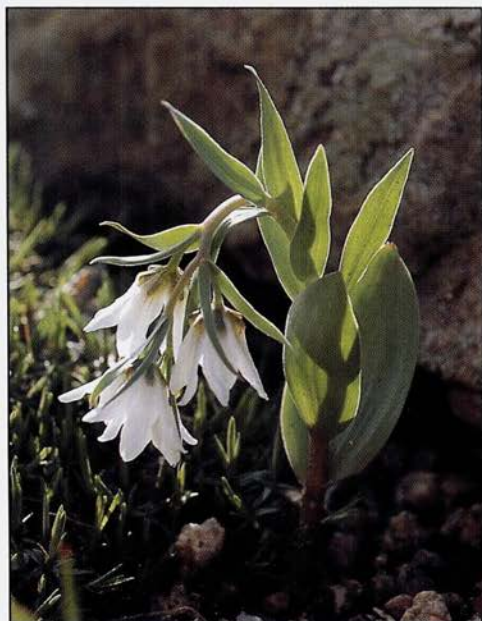
Drawings by Libor Slatiska

Josef Slégl gardens in Decin, Czechoslovakia, above the Elbe River in northern Bohemia. He grows fruit, vegetables and flowers. His main interests are bulbs, woodland plants, and ferns. He is currently president of the Decin rock garden club, Primula. He wishes to thank Vaclav Plestil for valuable help in completing this article.



Fritillaria stenanthera (p. 254)

Josef Slégl



Fritillaria bucharica (p. 255)

Panayoti Kelaidis

Fritillaria eduardii (p. 256)

Josef Slégl



Fritillaria sewertzovii (p. 253)

Josef Slégl





Fritillaria 'Martha Roderick' (p. 264)

photos by Brent Heath





Trillium underwoodii, seven regenerated sprouts one year after decapitation.
Three-year-old seedling. (story, pp. 261-263)

Trillium underwoodii, cut October 1990, photo June 1992. Seven young tubers ready to remove.
Will flower February, 1994. photos by Don Jacobs





Trillium cuneatum 'Eco Marbled Lime', 'Eco Purple Shadows', 'Eco Silver Tiara' (p. 262)

photos by Don Jacobs

Trillium cuneatum 'Eco Dappled Lemon'
(p. 262)



Natural propagation in *Trillium pusillum*,
left, *Trillium lancifolium*, right (p. 261)



Rape or Rescue?

Trilliums from the Wild

by *Don L. Jacobs*

Dear gardeners: I am a plant collector, and I would like to share my exploits with you. I have pillaged many pristine habitats. In a recent case, I came away with the most outstanding variants of *Trillium cuneatum* I have encountered in recent time, and this from a lush habitat only 30 minutes from my home. I could certainly have collected hundreds of specimens, but I was under great pressure, so I hurriedly selected only the most distinctive individuals to be propagated here at Eco-Gardens in the piedmont of Georgia. I was both exhilarated and depressed. Close behind me came the noisy, terrorizing bulldozers; another shopping center is under way. This time, all will not be lost, but what price "Progress"?

So, I now have these choice specimens. What to do with them? Wouldn't you like to see them? grow them? I can hand pollinate each, and one or two years later will have new seedlings. In another three to four years I will have flowering plants that should resemble the self-pollinated selections, but exhibit some variation. To maintain the full character of the collected individuals they must be vegetatively propagated.

Much has been written about the propagation of trilliums. Most procedures have been unnecessarily complicated. Some smaller species (*T. pusillum*, *T. lancifolium*; photo, p. 260) are freely rhizomatous and offer no propagating problems. Most larger trilliums produce gradually enlarging tuberous rhizomes that, in time, produce additional crowns. In these species, fresh roots are produced each spring just behind the terminal bud. To propagate, simply lift the plant in summer as the foliage ripens. Wash away the soil, and with a sharp knife, decapitate the crown near the base of the current season's roots. The crown is now ready to replant with a handful of sphagnum moss in contact with the wound. The mostly rootless base should be planted about 2" deep in a propagating bed with peat covering the cut end. The following spring (or second spring) two to seven young shoots usually arise from the headless base. They may be lifted and separated as their foliage ripens and will flower a year or two later (photos, pp. 259-260).

Where named trillium cultivars are offered for distribution, there is a virtual

guarantee of garden propagation, but of course, such plants will demand higher prices than plants collected directly from nature. The great variability of wild populations can hardly be overstated. The growing of wild plants by species name only can be very deceiving. A gardener must assume that a plant species with a wide geographic range also has a wide physiological variability. The performance of one representative of a species in a particular garden may afford little indication of how relatives from other sites will grow in that garden; or how the individual might perform in distant gardens. Many spring wild flowers from northern sites perform poorly in southeastern gardens. They often emerge from the ground long after their southern kin have flowered and may fail to flower entirely. They often grow weaker with time. This may result from inadequate winter chill resulting in no initiation of flower buds, and from exhaustion of food reserves during the prolonged warm season. Often the reverse migration meets with better results. Examples of plants that have demonstrated this phenomenon include *Viola pedata*, *Hepatica acutiloba*, *Erythronium* spp., and *Cypripedium* spp. Selections of each of these species from Minnesota and Pennsylvania have waned or failed to flower at Eco-Gardens. Conversely, reports of outstanding performance of Georgia piedmont natives have come from Washington, British Columbia, Minnesota, Ontario and upper New York. The specific southern cultivars involved in testing are Violet 'Eco Artist's Palette', *Hepatica* 'Eco White Giant', *Erythronium umbilicatum* 'Eco White Beard', and *Habenaria blephariglottis* var. *integrilabia*.

While species occupying large territories are variable physiologically, even a limited local population is often highly

variable morphologically. Such was the case in the *Trillium cuneatum* community recently bulldozed. The following types were selected for naming and propagation (photos, p.260):

'Eco Marbled Lime'—lime-green flowers on rich lime- and purple-marbled foliage.

'Eco Purple Shadows'—normal maroon-purple flowers on sharply contrasting purple-green and bright silver-green-marbled foliage.

'Eco Dappled Lemon'—broad yellow petals on broad, multitone, marbled leaves.

'Eco Silver Tiara'—normal purple flowers on uniform silver-green leaves.

'Eco Midnight'—normal purple flowers on very dark purple-green leaves with few or no light markings.

Intermediates between these attractive forms occur scattered in most large colonies. The majority of individuals encountered have medium green leaves with purple-green marbling. This pattern becomes more subdued as the season progresses, and in some plants, little marbling is evident. Leaf shape varies between individuals and with age. Large, old plants tend to have broader, overlapping leaves, but some clones always exhibit nearly round leaves, and others retain more tapered, pointed leaves. Most plants have some shade of maroon-purple flowers.

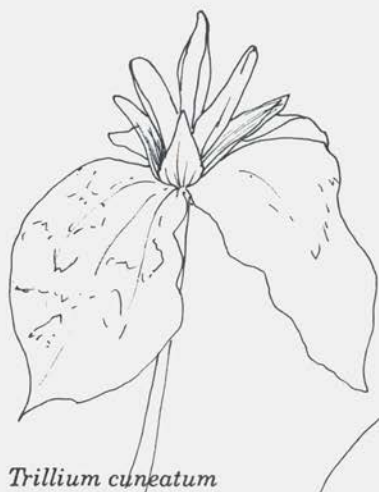
About 17 species of *Trillium* with stalkless flowers have been described from North America east of the Rockies. Virtually all but two of these species (*Trillium luteum* and *T. discolor*) include individuals with purplish flowers. Likewise, virtually all include some yellow- or greenish-flowered individuals. Furthermore, most species have been lumped under *T. sessile* (as named by Linnaeus in 1753) at some time. *Trilli-*

um sessile is, however, a distinctly recognizable entity with an extensive range from Virginia and Pennsylvania west across Missouri to eastern Kansas. Only *T. recurvatum*, ranging from Louisiana to Wisconsin, and *T. cuneatum*, occurring from central North Carolina across the Southeast to the Louisiana border and western Kentucky, have comparable ranges. Garden-worthy selections of most species are possible, but few find their way into our gardens.

Drawings by Panayoti Kelaidis

Don Jacobs is an ecologist by training and owns and operates Eco Gardens, a nursery near Decatur, Georgia specializing in choice native and exotic plants. He is a frequent contributor to this publication.

Collecting rare plants carries with it a considerable responsibility. Choice specimens turning to hay or compost in the garden benefit no one. But when propagated and distributed, selections from wild populations take on new value. A group of visitors proudly clutching new plants as they leave the garden is a satisfying reward for the propagator. Even more gratifying is meeting one's plant introductions thriving in far-flung gardens.



Trillium cuneatum



Trillium luteum

The Story of *Fritillaria biflora* 'Martha Roderick' by W. H. de Goede

On one of my trips through California in 1985, I received two very small bulbs of *Fritillaria roderickii* (*F. grayana*) from Wayne Roderick. He asked me to try growing these because, although he had been growing them for several years, each year they became smaller. I knew this *Fritillaria* from a picture in Martin Rix's book, but at that time I had not yet seen it in flower. Wayne told me that what he had given me was a much better form than that pictured in Rix's book, and it would be good for me to build up a stock of it.

The same year we put these bulbs into micropropagation, and after three years of experimentation, the first plant came into flower. Indeed, it was a superior form. Both in flower and as a plant, I think it is one of the best fritillaries both for the garden and for pots.

This *Fritillaria* has three to five flowers on a stem 20-25 cm high and dark green leaves held in a rosette just above the ground. The collar of the flower is dark brown with a white blotch at the top of each petal (photo p. 258). It is a very attractive plant. I have grown it in my open garden for four years now, and it flowers very well every year.

When I showed seven plants of *Fritillaria roderickii* in 1990 at the Alpine Garden Society conference in Birmingham, Wayne Roderick, who was there, told me that the name was no longer *Fritillaria roderickii*. Roger Macfarlane had determined that this was not a separate species, but a form of *Fritillaria biflora*. I, and many other members, couldn't agree that this was merely a form of *F. biflora*, since we grow both plants and they are entirely different from each other. Therefore, our jury decided, with Wayne's approval, to give this form a cultivar name in honor of Wayne's mother. The same week at the Spring Flower Show in London, *Fritillaria biflora* 'Martha Roderick' was shown by the firm Jacques Amand and received an Award of Merit. In the meantime, we got the breeding rights for this plant in the Netherlands, and we can now offer it in good quantities. Jacques Amand LTD, 115 Clamp Hill, Stanmore, is the firm selling it for us in the United Kingdom. The Daffodil Mart, Rt. 3, Box 794, Gloucester, VA 23061 is the firm handing this plant in the USA.

New Home for Rock Plants

by *Elisabeth Sheldon*

Some years ago, when our large old elm tree died and had to be cut down, I had what I thought was the brilliant idea of building a stone wall around the 3'-tall stump—a retaining wall, backfilled with earth, that would serve as a home for rock plants. I gathered flat rocks and built the wall, a layer at a time, pounding a special mix of gritty soil in behind the rocks and spreading a 1" layer of it between each course. I planted as I went, laying small plants in the soil pockets where rocks came together. On top I put lavender and a few other small shrubs that like sharp drainage.

As far as the plants were concerned the construction was a great success—they loved it. The *Dianthus*, lavender, trailing campanulas, pasqueflowers, and their companions thrive and seeded themselves into not only all the available crevices between the rocks, but even into the woody pieces of stump that protruded at the top. They seemed to need no nourishment at all—only the sun, wind, and perfect drainage. All summer long the stump wall was glorified with plants billowing and burgeoning away, looking strong and cheerful. I

told myself it was a fitting memorial to the elm we had loved and lost. But even from the beginning I had a faint suspicion that a round rock garden in the middle of the lawn was—corny. And although I struggled against the impression, it reminded me insistently of those fake wishing wells people put in their gardens. This was sort of a furry wishing well.

On October 1, two years ago, the fall that I went out of the perennial business, I went down the driveway and enthusiastically bashed down my Ridge House Garden sign. Then I loped back to the garden, still armed with my tools of destruction, and began to dismantle the round wall. It took weeks to remove the rocks, salvage some of the plants, cart away the fill and debris, and finally get rid of what remained of the elm stump. After I had done all I could do with mattock and ax, it still looked like something from the Badlands of North Dakota. Finally I had to call in a chap to grind up the remains with a machine, after which I filled in the declivity and planted grass. What a relief, then, to have a clean sweep of lawn, both when I was mowing and when I wasn't!

This removal of the wishing well was, however, a double project: at the same time that one habitat for rock plants was being destroyed, another was being created. It had always been a fault in the design of this garden that there was no separation, either physical or spiritual, between the parking area and the garden. It occurred to me that I could put up a fence and then, against the fence, build a long, stone raised bed, similar to one that I had built earlier elsewhere, and plant it with saxatile subjects for which I seemed never to have enough room. My husband installed a post-and-rail fence, which I stained gray and planted with vines to make it look less like part of a corral. To construct the bed I used stones and fill from the round wall but had to find many more stones and mix much more soil, since the new bed is 33' long, almost 4' wide, and a little over 2' high.

The first raised bed I had planted higgledy-piggledy, simply chucking in plants as I acquired them, wherever I could find an empty spot, but the second one I carefully planned so that colors and shapes would be repeated and nothing would look irrelevant. Comparing the two beds now, I'm persuaded that the latter strategy is the way it should be done. This, the second summer for the new raised bed, finds it at that happy point when almost every bit of space is filled with budding or flowering plants that have not yet begun to encroach on their neighbors—they are merely encountering one another, each draping a tentative tendril over the other or, in the case of the dome-shaped subjects, puffing up their little mounds and moving, ever-so-slowly closer. Since I didn't make the plants, may I not feel free to say that, at this moment, the bed looks quite perfect? What I attempted to do was to repeat, on either side, the most imposing individuals at approximately the

same distance from the center, so that the largest masses of blue, white, gray, or pink would balance, while the smaller plants could be more or less whimsically placed.

At either end there is a *Saponaria*—or rather there is a whole one at the east end and half of one at the west, the western one having met with some mysterious mishap during the winter. Never mind, even half a *Saponaria* is enough to adequately present a foam of pink. Moving towards the center, there are low masses of the gray rock yarrows, geraniums (*G. dalmaticum*, 'Ballerina' and 'Biokovo'), an absolutely superb campanula called 'Birch Hybrid' (a form of *C. portenschlagiana*?) with deep, vibrant blue-violet, elongated bells. Here and there are early pale yellow dwarf iris, the delicate little citron-yellow poppy, *Papaver fauriei*, single and double *Silene alpestris* and the dramatic *Arenaria montana*, whose large, bright white flowers are such a pleasant shock when they appear on the fragile, thready plant.

There's one spread of a fine-cut silvery potentilla (perhaps *P. nevadensis*) whose sulphur blossoms are close in color to those of the *Papaver fauriei*. Aubrieta, pink and purple, and starry, gray-lilac *Campanula garganica*. A couple of nifty silver hedgehogs called *Astragalus angustifolius*—much too regal a name for such a jolly plant. There are two hanging curtains of pink creeping baby's-breath and one silver, intricately designed centaurea, *Centaurea simplicicaulis*. One of the 'Birch Hybrid' campanulas has sent a traveling branch down through the soil to emerge as a garland of upright violet bells from between the gray rocks below. Above, the smooth, flat, candy-pink, five-petalled blossoms of *Geranium dalmaticum* combine with the campanula to make a picture that is almost too pretty.

Which are better, I ask myself, the flowers of the single or of the double *Silene alpestris*? The single ones look like small watch wheels, with little cogs all around the outside, except that they are cut, almost to the center, into five sections. The doubles are charming, having three or four rows of petals, and they do bloom longer. The white that they produce in early summer is furnished later in the season by an 8" American aster called 'Niobe'.

Anyone who goes in for both rock and gray-leaved plants will sooner or later start collecting the rock yarrows. The only problem with them is sorting them out—and keeping them sorted out. I have two kinds in the raised bed that look identical to me—mats of slender, very finely toothed

1.5" downy leaves growing in close-packed tufts. The only difference between them is that one plant is a lot grayer than the other. I believe them to be *Achillea ageratifolia* var. *serbica*. Perhaps one of them is simply a better form? *Achillea clavennae* has 3.5" pinnatifid leaves—that is, they are lobed halfway to the spine. It looks like a fluffy gray chrysanthemum. The leaves of *Achillea kellereri* are cut to the midrib as if it were a silver-white fern. It's a real beauty, with pointed leaves that are 7" long, if you count the petiole, or leaf stem, but not much more than a quarter of an inch wide. These plants all produce chalky-white daisies, either on separate stalks or in yarrowy



corymbs, holding them above foliage, which ranges in height from 2-6".

I think it was from Rocknoll Nursery that I got a veronica whose foliage rises to no more than 1 1/2". This is not a creeper but a clump-forming plant that carries its flowers in tubby, 2-3", lavender-blue spikes that are starred with tiny white anthers. There must be a hundred spikes on each plant. This veronica was sold simply as *V. 'Amethyst Gem'*, but it is probably a form of *V. spicata*.

Across a mat of foliage of the pink pussytoes is a *Geranium 'Ballerina'*, whose blossoms (lilac, veined with wine-red) are hanging beguilingly over a clump of that best of all sedums,



Sedum cauticola, the gray of whose rosettes is suffused with purplish-rose tints. If I had combined the two plants on purpose I'd be proud.

What I did do on purpose—or inadvertently, I should say—was to put that classy *Arabis ferdinandi-coburgi* 'Variegata', with its glossy cream and green leaves, right next to the white and green variegated aubrieta, the result being that they cancel each other out. One of them will have to find a new perch.

Penstemon hirsutus var. *pygmaeus* next to *Veronica* 'Waterperry' isn't bad, although the penstemon's pinky-lavender, tubular blossoms are only a bit deeper in color than those of the veronica. I had thought, by the way, that the creeping 'Waterperry' wouldn't live through the winter here, so potted some up last fall to bring indoors. When spring came, the mother plant outdoors looked less peaked than the indoor ones. Early in the spring this veronica has deep red-purple tones in its shiny round leaves. When the quarter-inch flowers first open they are a definite lavender, making a rich combination with the leaves. Later in the

summer the leaves become greener and the flowers paler. Right now, in June, they are milky white with fine purple lines on their upper petals. The new pairs of leaves and the tips of the old ones are stained dark red.

Crammed into corners are two Japanese succulents that are not classed with sedums and sempervivums but strongly resemble them—a chartreuse one called *Orostachys aggregata* and a gray one (much the prettier of the two) called *O. furusei* (*O. iwawange*). For most of the year they are simply fat little roses hugging the ground, but when they get ready to bloom—or their equivalent thereof—they rise in conical turrets that remind me of nothing so much as the temples of Ankor Wat.

Have you seen the Greek scabiosa that goes under the name of either *Scabiosa pteroccephala* or *Pteroccephalus parnassi* (*P. perennis*)? You've probably been growing it for years, while I just discovered it last year. It seems such luck when a Mediterranean plant will put up with -20°F! And when it's a charmer like this, we're doubly grateful. It forms mats of crisp,

scalloped, gray leaves, that would certainly suffice even without its shaggy, pale pink summer flowers. Actually, the leaves are of two types, one set a smooth oval on long stems, while the others are compound, having one large oval at the end, then opposite ovals, getting smaller as they go towards the base of the stem. Very decorative, especially in frosted gray-green. It seems to be easy to please, given full sun and gritty soil, and gradually creeps outward, industriously making new divisions that can be scooped up and planted elsewhere.

Of campanulas there are at least seven different species or cultivars in the bed. Two plants of *C. turbinata* 'Pallida' (*C. carpatica* 'Turbinata Pallida') are next to a penstemon, their light, lavender-gray, flat blossoms picking up that same color in the penstemon. One of the best qualities of this campanula is that, while it has the same rounded growth habit as the plain *C. carpatica*, unlike other selections of *C. carpatica*, it does not grow so large that it flops open when it blooms.

Campanula 'Blue Gown' is a trailing clump of crimped and ruffled, dark green leaves, decorated with open, blue-violet, white-throated bells, while *C. planiflora* sits stolidly on its gritty bed, pressing its hard, dense, green leaves close to the 4" stem. The most unlikely purple cups have appeared on this pygmy, seeming much too large for the rest of the plant. (I have some *C. planiflora* plants with white bells, as well.) Linc Foster said that this campanula has a distressing tendency to die off the second or third year, unless divided—or—it may begin to grow tall and turn into *C. persicifolia*! He thought *C. planiflora* looked like "a Mendelian recessive form of this Peach-leaved Bluebell, not always consistently produced from seed." That may explain why, from a packet of seed exchange

seeds I planted, I got some plants that look like the ordinary border *Campanula persicifolia* and some of these queer, dark, leathery green dwarfs. I was wondering what was going on.

Aside from a strange, close-packed little hump called *Arenaria tetraquetra*, whose name, so far, appears to be more interesting than the plant itself, only one other subject deserves mention and that is *Bellis caerulea*, which must be the world's smallest daisy. The third-of-an-inch flowers are white, yellow-centered, held 3" above the round, flat mat of tiny spoon-shaped leaves on long petioles. The books say the plant should be divided every year. Mine made many babies last summer, which I potted and took inside for the winter. However, the mother plant, undivided, is still performing famously in this its second year.

In this new bed there are only two kinds of dianthus, the first a small, very tight, gray bun that makes quarter-inch pink flowers at the proper time. I've lost track of its name, unfortunately, but it is almost sure to be a species since its self-sown offspring are all exactly like the parent. The other is *Dianthus crinitus*—a bristly, green, 6-8" hemisphere that resembles a sea urchin. When it decides to flower it sends straight out from the hemisphere in all directions 1' wiry stems that explode at the ends into minuscule white spiders releasing a strong scent of gardenias. Amazing. How is it that a rock plant can produce the same fragrance as that of a jungle flower? There are always these surprises.

Photos by the author.

Elisabeth Sheldon gardens in upstate New York. She celebrates her garden in many publications and has published a book, *A Proper Garden: On Perennials in the Border*, describing her experiences.

Eriogonum umbellatum and Its Relatives

Eriogonum umbellatum

Canada to Mexico, Great Plains to the Pacific. Great variability from mat to more than a foot high, fls. yellow, sometimes with red or orange, blooms May and June.

E. umbellatum ssp. *subalpinum*

Creamy white variant, flowers turn fawn or pink, blooms June, July.

E. siskiyouense

Highly local mat with flower stems 3-4" tall; northern California. Lvs. green, glabrate, less than 3/8" long. Fls. yellow with red.

E. heracleoides

Twiggy shrub up to a foot tall with narrow, gray, pointed leaves and creamy flower clusters in June. From the interior Northwest.

E. compositum

Leaves to 4" long; huge, glowing primrose yellow or ivory white inflorescences June-July; up to 2' tall; N. Rockies to California.

E. ursinum

Highly local coastal Californian with white, cream or rosy flowers on stems to 14" tall. Variety *nervulosum* to 2.5" tall.

E. jamesii

Fawn or primrose yellow flowers; fl. stems 1' tall, blooms after *umbellatum* group in July, August. Buns to 4" tall, 10" across. S. Rockies.

E. flavum

Cream or yellow fls. June-July, buns 5" across, 3" high; Middle Rockies.

E. flavum var. *xanthum*

Cushions to 12" wide, 6" high, fls. chartreuse with red highlights on bun in May-June, lvs. light green; high alpine, Central Colorado.

E. androsaceum

Alpine, Northern Rockies. Flowers pale yellow, becoming red, on stems to 3"; lvs. narrow.

Eriogonums: Secret of the Dry Garden

by Irma Gourley

Eriogonums could well prove a great boon to gardeners battling water shortages. Increasingly, water is being rationed, so lawns wither, shrubs languish, and alpine barely survive—but eriogonums just patiently await the next rain, all the while blooming and presenting an ornamental appearance. So highly do I value the members of this genus that there are now more than twelve kinds of *Eriogonum* growing on my rock garden terraces.

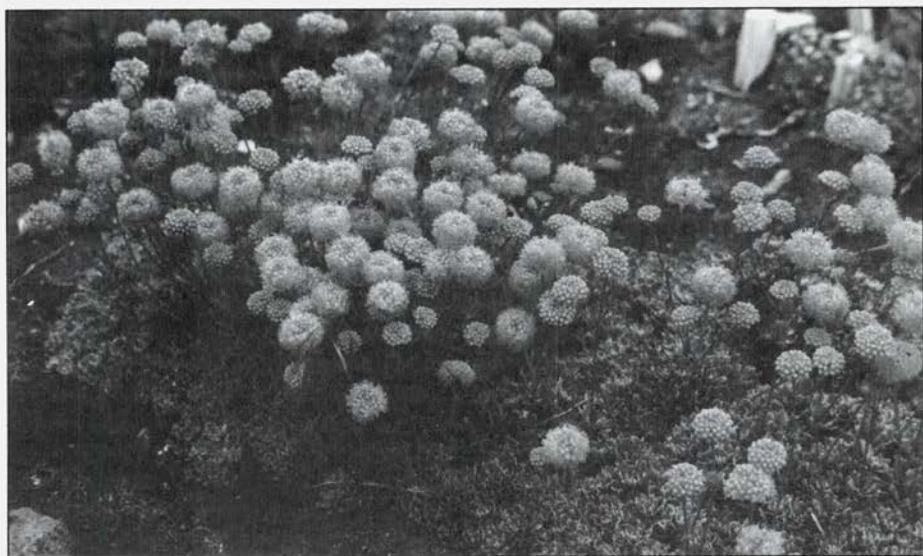
After unsuccessfully transplanting a few eriogonums from our pasture to the garden, I decided to try nursery-grown plants; accordingly I ordered three plants of *Eriogonum jamesii*. All were flourishing nicely when we moved to the place I now live in Hermiston, Oregon. With some misgivings I transplanted them to our new garden; all three survived and grew much larger the following year, even producing a few flowers.

Eriogonum jamesii is an easy doer and a good plant for the rock garden. It does not exceed 12" in height including the tallest flower stems. The foliage itself is only inches tall, and the plant

slowly increases in width. How can one describe an eriogonum leaf? The color varies with the season or the temperature, and so does the shape. Sometimes the leaves are open and flat, sometimes curled inward showing the white-haired underside, or sometimes standing on edge or straight up. Basically the oval leaf is gray-green touched with brown-red or copper, often quite brilliant.

Numerous fluffy flower clusters are held very upright—no lopping, leaning, or flopping, but firm, upright stems. The creamy yellow color is easy to place in the garden. This is the earliest of my eriogonums to bloom. They begin with the tall bearded iris in May and continue a long time, for the flowers are everlasting. However, in age they are a dull, dead-leaf brown. Several years I allowed the matured flowers to remain, hoping for self-sown seedlings, but as I never found any, I now trim off the seed heads when they reach that stage of life.

Eriogonum jamesii can be divided (one authority has written that all eriogonums should be moved or divided exactly on March 21). The roots are



Eriogonum umbellatum, congested form

wiry and have few fibers, but most of the divisions will grow and make more beautiful plants than the ones left untouched. Parts of old plants may die out, disfiguring the cushions.

The plant is very hardy, surviving both heat and cold. It withstands drought but also accepts water in generous amounts without getting lush or spindly. It does not seem to be bothered by insects or disease. I am sure it requires perfect drainage. It was my first successful eriogonum and I would recommend it for the beginner.

Since then over the years I have acquired more varieties of *Eriogonum*. The few I ordered from nurseries are named. I have grown many more from seed, but unfortunately, the labels have a way of getting lost or mixed, so I do not know the names of all I grow.

Eriogonum umbellatum is sometimes called wild buckwheat, or sulfur flower, probably because of the yellow flower color, although that character varies among the subspecies. Some-

times these common names are applied to other species as well.

My second nursery-grown *Eriogonum* was a very small-leaved, congested form of *Eriogonum umbellatum*, from Siskiyou Rare Plant Nursery in Medford, Oregon. It is extremely tight-growing, covering rock or uneven ground in a solid mat. The leaves are gray in summer, turning to purple in winter. This, and a larger form of *E. umbellatum* that I have, each produce round balls of flowers much more brilliant than those *E. jamesii*, showing some orange, even reddish tints. The stems are very short and upright. The budding flower clusters have a quaint appearance as they develop, sticking up out of the foliage like something artificial. As the plant gets older, it produces more and more round balls of flowers. Mine were at least five years old before they bloomed freely.

I have successfully divided this variety, too. Some divisions succumb but at least half soon grow into healthy mats. *Eriogonum umbellatum* does not harmonize with other plants as well as

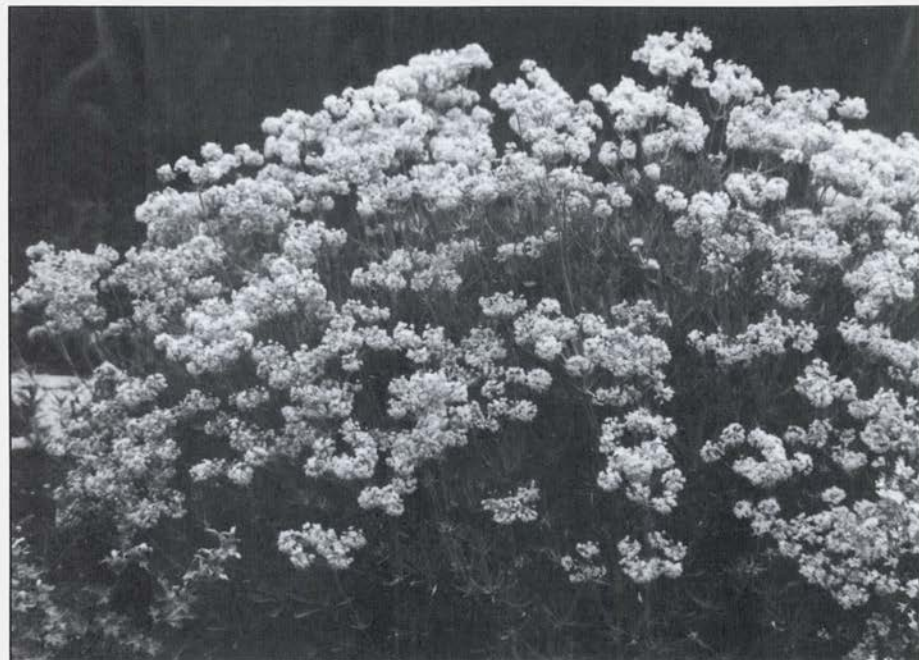
E. jamesii. I have thought it would look very appropriate among some of the choicer sedums, such as *Sedum spathulifolium* 'Purpureum', *S. dasyphyllum* *riffense*, *S. hispanicum* (purple form). Also, it could team up with a penstemon, such as *P. pinifolius* (red), *P. linarioides* (pale blue), or *P. hallii* (deep, bright blue). Some *Aethionema grandiflorum* have seeded themselves amongst the *Eriogonum*, but I don't like them there. Something doesn't quite harmonize—the pink color of the stonecress and the chartreuse yellow of the eriogonum are somehow not quite meant for each other.

The larger form of *Eriogonum umbellatum*, from Forest Farms Nursery in Eugene, Oregon, presents a vastly different appearance from the tiny-leaved species. The leaves are much larger, and a different shape, and the plants spread out from the center in a sort of runner fashion, not rooting at

present, but bearing flat rosettes of leaves at intervals, prostrate, in a loose mat. Other plants like to invade this foliage mass. The flower stems are taller than in the congested form, leaning in various directions, bearing the same round flower balls, which are the only point of resemblance between these two forms of *Eriogonum umbellatum*. It blooms somewhat later than the small one. The flowers are long-lasting in the usual manner, but these, too, age to a dull brown.

I have made no attempt to propagate this plant—it looks indivisible. It seems less appropriate as a rock garden plant than the congested form, although it is not really so large as to be disqualified. I think it is the tall flower stems leaning untidily in all directions. However, it would look very much at home among large, randomly placed rocks. Both varieties have proved quite hardy and tolerant of various conditions.

Eriogonum species, transplanted from wild



My favorite eriogonum is one that I grew from seed, but I can't decide what it is. The leaves are similar in size to those of *E. jamesii*, but grayer, and it seems to be shrubbier. It was at least four years old before it bloomed. Then it produced only one flower cluster, with the same fluffy appearance as the heads of *E. jamesii*. These flowers progress through attractive color changes before becoming the usual



dull brown. My plant now blooms heavily and is a truly beautiful sight as it carries the eriogonum season into the heat of summer. It has not grown to a foot across in eight years. So far it hasn't shown any tendency to get dead patches of foliage. I have tried to divide it, and some of the divisions are taking hold, even blooming again. This variety blends well with many other plants, including blue flax, which harmonizes beautifully with most eriogonums, in color, culture, and bloom season.

Eriogonum wrightii I also grew from seed. It is even smaller in leaf than the congested form of *E. umbellatum*. The leaf is very pale ash-gray, and the flowers have airy clusters of flowers like baby's-breath instead of ball-shaped inflorescences. They are a pinkish color, borne on stems that seem tall for such a tiny plant. They lean a bit. The mat increases in size, but I don't believe it is as hardy as the others mentioned here, nor does it tolerate water as well. It is valuable for its fall bloom. The flow-

er clusters are unsightly if left on the plant after they dry up.

At present the best source of eriogonums is to grow them from seed. However, this is very uncertain of success. The ones I would most like to grow, such as *Eriogonum ovalifolium* and *E. sphaerocephalum* don't come up. Trial and error are necessary to find the best varieties for one's own garden. Most kinds listed by nurseries are worth a try.

Photos by the author

Chart by Panayoti and Gwen Kelaidis

Irma Gourley gardens in Hermiston, Oregon.

Preserving Rock Garden Specimens

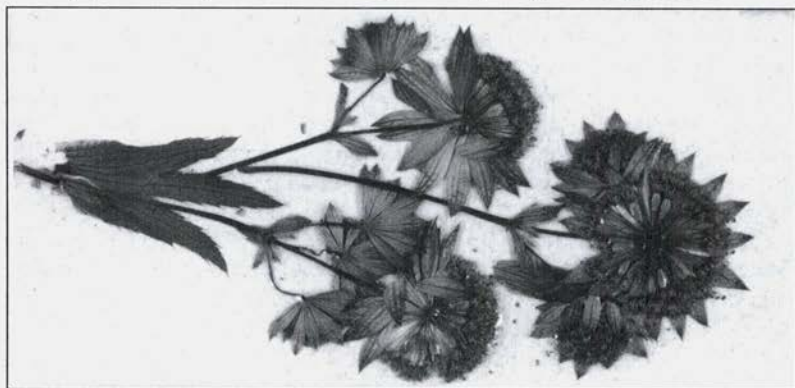
by *Karen Matthews*

Most of us keep some sort of record of our rock gardening efforts. Journals, photographs, and slides are probably most common. Another way is to press and preserve selected plant specimens. This technique has the advantage that pressed flowers and leaves retain their exact size and form. Specimens can be preserved on 3" x 5" cards covered with clear contact paper and kept in a file for easy reference. It is easier for many of us to differentiate similar species by comparing actual specimens rather than referring to written descriptions. And, if you're trying to identify a plant, you can simply bring the specimen to show your gardening friends.

Pressing plants is not difficult. Bring a couple of reference books with you when you go out to the garden to see what is in bloom. Pick one or two flowers at their peak and a couple of leaves. Insert these in your book on the page that identifies the species. Back in the house you will want to move the specimens to a book that you won't be using for several weeks. Be sure to put a slip of paper identifying the plant with each specimen. Do not put more than plant on a page unless you are positive you can distinguish them from one another.

Allow the specimens to dry for six to eight weeks. Then remove the dried plants and arrange each on the plain side of a 3" x 5" card. Leave at least half an inch between the plant material and the edge of the card. Cut a piece of clear contact paper slightly larger than the card. Remove the backing from the contact paper and cover the entire card, sealing the dry plant material in place. Record the name of the plant, date collected, information about growing conditions, and any other data you wish to retain on the lined side of the card. You may also want to cover the lined side of the card to keep it clean and dry, but this is not necessary.

If you press extra flowers, you can also make bookmarks, note cards, coasters, place mats, or other small gifts for your gardening friends.



from *Flower Connection* by Joan Schwarz

Plant Portrait

Gentiana paradoxa

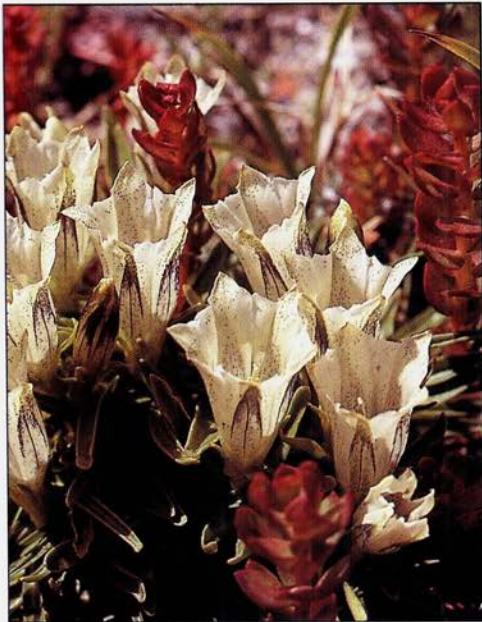
If some terrible catastrophe were to befall your garden, and you had time to rescue only a handful of plants, you might pick the ones you couldn't easily replace, like double trilliums, or those with some sentimental association. I would probably include *Gentiana paradoxa* on my short list, for this sprightly gentian has earned my love and my respect.

I first discovered this plant on the pages of the *Red Book* of endangered plants of the former Soviet Union. These depicted a grassy-leaved gentian (suggesting an alliance to the *Frigida* group of eastern Asia) growing from a taproot (like the *Pneumonanthe* group found all over the Northern Hemisphere). Of course, I didn't really expect to run across this plant—it is, after all, restricted to only a few streamsides in the Caucasus. You can imagine my surprise one September day when Marty Jones of Colorado Alpines brought a fine specimen of this gentian in a pot to a meeting of the Rocky Mountain Chapter and asked me what I knew about it. It only had a few flowers and two or three stems 10" tall, but the grassy leaves and fantastically lacy plicae were even lovelier than I'd imagined. Marty had grown it from seed he'd obtained from a rock garden society seed exchange—one more reminder of riches I myself overlook in the mad scramble to return seed requests.

Like so many rare plants in nature, this distinctive gentian is utterly adaptable to garden conditions. Since a single plant produces thousands of seeds annually within a few years of planting, I suspect it will soon become a garden stalwart. How sad that so many nurseries are growing chary of propagating plants inflicted with the incubus of rarity, since once a plant like this enters cultivation, any pressure on wild populations by horticulturists is removed. *Gentiana paradoxa* grows in a sunny patch near *Kirengeshoma palmata* and other woodlanders at Denver Botanic Gardens, in a peat bed alongside *Scleranthus uniflorus* and heathers in another garden, and alongside Himalayan androsaces and *Bolax* at the base of a scree bed at our home. I would be hard pressed to say which conditions suit the plant best—it looks and blooms well under all these conditions. It seems to grow as quickly and easily from seed as its close relative *Gentiana septemfida* and comes into bloom just as its cousin finishes, making a fine bridge to the autumnal Asiatics.

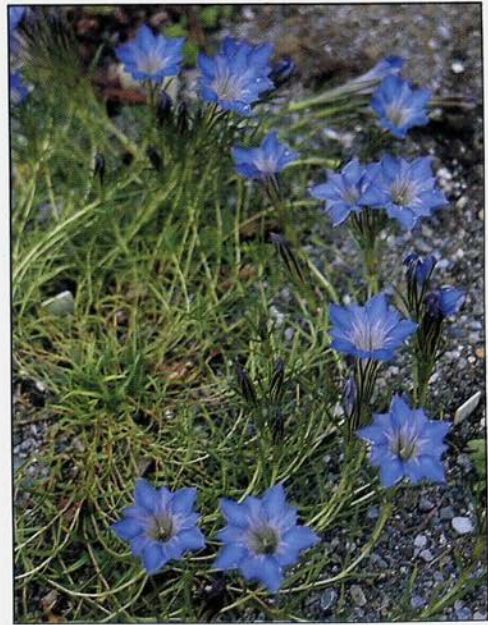
To me gentians suggest prismatic windows leading to a truer, bluer world, and this recent, elegant introduction is proving to be a permanent and indispensable part of my gardens. Nowadays it's on every seedlist and in more and more nursery catalogs. Don't leave your home without it.

—Panayoti Kelaidis



Gentiana algida (p. 250)

Ned Lowry



Gentiana farreri (p. 251)

Geoffrey Charlesworth

Gentiana, Asiatic hybrids
(p. 251)

Panayoti Kelaidis



Gentiana ex 'Susan Jane' (p. 251)

Ned Lowry





Gentiana verna (pp. 243-244)

Panayoti Kelaidis

Gentiana verna var. *angulosa* (p. 245)

Ned Lowry





Gentiana verna var. *oschtenica* (p. 245)

Ned Lowry

Gentiana verna (pp. 243-245)

Ann Bartlett





Gentiana aquatica (p. 250)

Lorraine Yeatts



Gentiana affinis (p. 247)

Ned Lowry

Gentianella amarella (p. 251)

Lousie Roloff

Gentiana prostrata (p. 250)

Lorraine Yeatts





Gentiana acaulis (p. 245-246)

Ned Lowry

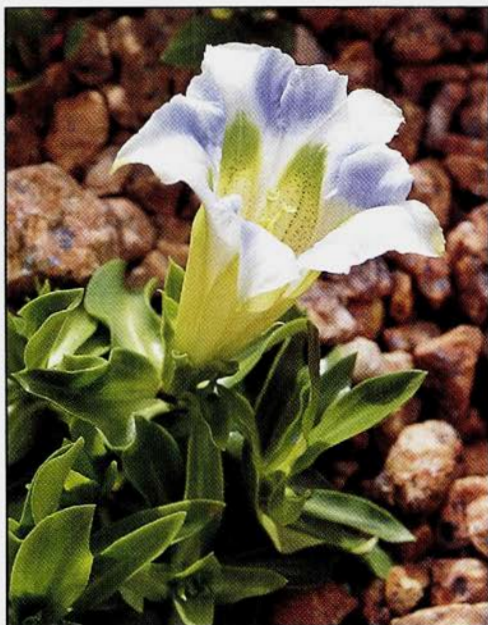
Gentiana dinarica (p. 246)

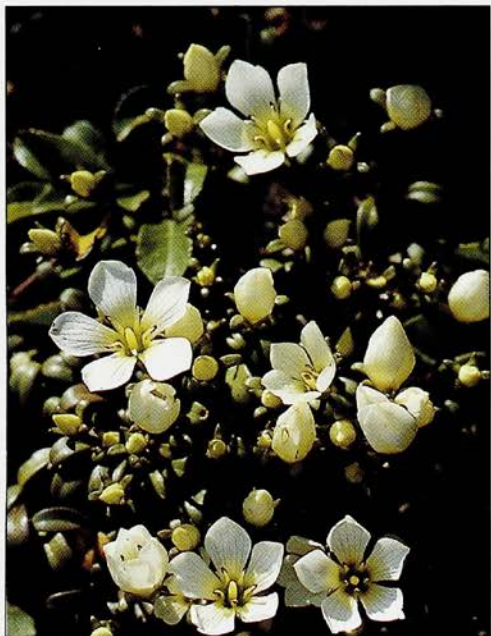
Marnie Flook



Gentiana acaulis, white

Dick Bartlett





Gentiana saxosa (p. 250) Panayoti Kelaidis



Gentiana parryi (p. 247) Louise Roloff

Gentiana newberryi (p. 247) Panayoti Kelaidis



Gentiana calycosa (p. 247) Ned Lowry





Gentiana scabra var. *saxatilis* (p. 248)

Ned Lowry

Gentiana cf. *cachemirica* (p. 247)

Panayoti Kelaidis





Gentianopsis thermalis, in South Park, Colorado (p. 250)

Louise Roloff

Gentianopsis thermalis, on Boreas Pass, Colorado

Dick Bartlett



Spontaneity on the Rocks

by Panayoti Kelaidis

I would not recommend the job of curator of a large rock garden at a public garden to anyone who is too fastidious. Even mineralogists and paleontologists complain about the fragility of their collections—which survive millions or billions of years without their attentions. But there is something particularly futile, pitiful, and maybe even masochistic about people who choose to gather plants from the world's high, cold places, grow them in hot greenhouses, plant them out in little pots or meagerly mixed soils, and subject them to lowland sun and endless added months of growing season, desperately hoping they'll live long enough so that the expensive label overshadowing them doesn't become a precocious tombstone. We herd our little alpiners like so many vegetable sheep onto this or that slope, trying to keep them in a more or less orderly grouping around some label so that passersby can snigger at their peculiar names.

Occasionally a colony of plants will deign to live a few years in the places you put them. More often, several promptly die in strategic spots so that

your planting is immediately marred. The blue gentian and pink primrose brilliantly combined bloom a month apart. The *Silene hookeri* you were sure was rightly named turns once again into *Silene armeria* or suchlike. And after a hard earned trip you come back to find another planting shaded under the deathly canopy of burdock or some dreadful pestilence you yourself had introduced the year before when you were sampling the ornamental potential of Solanaceae, knotweeds, or a reputedly attractive *Taraxacum*.

When you begin to despair of ever growing plants the way you'd like to, they begin to grow without your intervention. When I first came to the Rock Alpine Garden in 1980 the garden consisted of nearly 1000 tons of monumental boulders neatly woven together with a carpet of annual grasses and weeds. The weeds were tilled, replaced by countless minuscule plantlets fresh from greenhouses. They surprised everyone by actually growing. So did the seed of the aforementioned weeds and grasses (I was chary of the effect of pre-emergents on choice alpiners and didn't use them, but I was perhaps too

cautious). I doubt that I will ever forget the army of humorists who kept inquiring in those early years about our Arlington Mouse Cemetery and asked us if we really thought we'd live to see the plants mature. We and the alpinists had the last laugh, for in the freshly tilled soils, with intense sun and abundant moisture, even the tiniest alpinists seemed to explode. There were fantastic displays of color less than a year from the time the first plants were put in.

But those boulders were big! We planted conifers and shrubs next to them, cotoneasters and trailers à la Kew to "soften" them and couldn't wait for bigger alpinists or perennials to help cover them. The shrubs and trees take time to establish in our harsh climate, so next I tried the expedient of planting plants directly into gaps on the face of rocks, or even mounding soil on top and planting upon them. One plant of *Aubrieta scardica* did last a few years, although it never thrived. In our severe continental climate, the only plants I can wholeheartedly recommend to plant on top of rocks are the endless permutations of the genus *Sempervivum*. We were fortunate to have a large collection of these that had been grown in flats of clay loam for several years prior to my arrival. I interject the words "clay loam" intentionally—because even a *Sempervivum* requires sustenance—and soil that is too porous will dry out too quickly. Clay retains moisture and nutrients better than virtually any other soil matrix.

I planted a few hens-and-chicks directly in shallow pockets on the faces of some of the larger rocks, and they established quickly and took on even deeper and lovelier foliage tints in such exposed positions. One particularly successful planting features large masses of the cobweb houseleek planted atop monumental limestone boulders just opposite the Alpine House. This

was intended as a sort of low-key tribute to the unearthly *Mammillaria* rockery in the desert garden at the Huntington Botanical Garden. But there are limits to the numbers of sempervivums one really needs even in a large, institutional garden.

The real magic of the boulders didn't become apparent for several years. Accidentally at first, and then with a little encouragement, more and more plants from the surrounding gardens seemed to leap onto the rocks and grow there! I am perpetually amazed at the variety of plants that appear spontaneously on the boulders of the Rock Alpine Garden. They range from trees such as river birch (*Betula fontinalis*), red cedars (*Juniperus scopulorum*) or even pine seedlings (*Pinus nigra*) through the gamut of shrubs to some of the choicest alpinists in the garden that prefer life in a crevice to that in the open soil nearby. The quality that unites the spontaneous chasmophytes (cliff dwellers) in this garden is their utterly graceful bearing: they aren't just smaller than their peers in open soil, they also have a pleasing irregularity that reminds one of modern ballet or seaside pines—the gentle listing of centrifugal motion.

When botanists or gardeners think of chasmophytes they think of plants like *Kelseya* or *Petrophytum* from the American West that one finds growing only in tiny crevices—never in scree or open soil. We find that many plants that are obligatory cliff plants in nature can adapt to open soil in our semi-arid climate. We grow *Petrophytum* and a host of rock-dwelling Mediterranean chasmophytes without giving them crevices. Contrariwise, I am genuinely mystified by the mechanism that permits plants that usually grow in rich loam or woodland soils to grow in a tiny crevice in the Rock Alpine Garden.

To begin with, there are plants that

actually came with the rocks to the garden. A half dozen species were flourishing on the rocks in this garden before any plants were accessioned: one giant limestone boulder included a whole garden of choice natives: a healthy tuft of *Phlox bryoides* and quite a few plants of *Hymenoxys acaulis* ssp. *acaulis*, and a husky plant of *Aletes acaulis*. These are still there, a dozen years later, hardly changed and fresh as ever. Another giant limestone boulder was crowned with a gnarled, bonsaied specimen of *Cercocarpus montanus* which has surely not grown more than a centimeter or two in the past twelve years. The giant granitic boulder in the waterfall at the focal point of the garden contained the most successful fellow traveler: a cluster of *Solidago missouriensis*. Visitors from the eastern seaboard are not impressed with yet another goldenrod, but for much of August and September dramatic wands of gold splayed against the rock make a beautiful, whimsical statement. And here and there throughout the garden the progeny of this plant have quite an impact of their own—all of it self-sown, accidental, effortless.

Over the years a dozen or more species of Campanulaceae have graced the rocks throughout this garden. My special favorites are the endless variations of symmetrically rosetted, monocarpic Balkan campanulas. At one point or another *Campanula andrewsiana*, *C. formanekiana*, *C. incurva*, *C. lyrata*, *C. orphanidea*, *C. versicolor*, and *C. rupestris* (photo p. 303) have all appeared in tiny crevices, where their

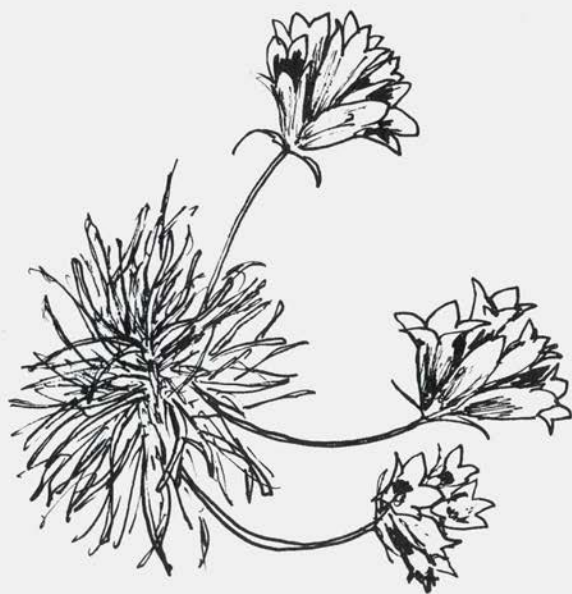
silvery starfish rosettes may take three or more years to finally bloom. Their rosettes are so attractive that I am delighted at this delay—especially since bloom usually means the plant will die.

Nowhere is the art of rock gardening brought more clearly into focus than with *Campanula cochlearifolia*: I naturalized the blue and white forms on a steep scree, where they formed yard-wide masses of bloom for several years, lasting into the hottest part of summer when there is a desperate need for color in rock gardens. Seedlings meanwhile appeared spontaneously on a few giant boulders nearby. Time and again I



Campanula versicolor

see visitors admiring a delicate tuft of this plant gracing the rock, while they walk quickly past the massive planting on the slope: in alpinism less is often more. I have gradually replaced the campanula where it was massed on the slope with other larger species. The



Edraianthus graminifolius

fairy thimbles continue to thread their way through the rock.

The genus *Edraianthus* is a particularly successful story throughout the Rock Alpine Garden: the original plantings a decade or more ago have shown gratifying permanence, and self-sown seedlings invariably find discreet and attractive places to appear. More and more *Edraianthus* have germinated in the crevices of the giant limestone boulders where they are stunning in sapphire bloom and their grassy evergreen tufts are especially welcome in winter (photo p. 303).

I was thrilled, but not surprised, to find my first self-sown silver saxifrage appearing in a tiny crevice—although it died out after a few years. This encouraged me to scatter more seed directly on to rocks. Now, after many years and much deliberate cramming of seeds into crevices, I can say that direct sowing of seed on solid rock cannot be expected

to produce many results in our sunny, dry climate. Plants do it better without our help.

Not only do self-sown seedlings live much longer in a crevice, their growth is more compact, and their fewer, smaller flowers show up much better and more gracefully than they do when grown on rich open ground. Let me take pains to distinguish the compact charm of chasmo-phytes from the overblown, floral-flesh appeal of the dreadful, blob-like annuals you so often see in seed catalogs, public parks, and many American botanical gardens. Modern annuals are bred to be

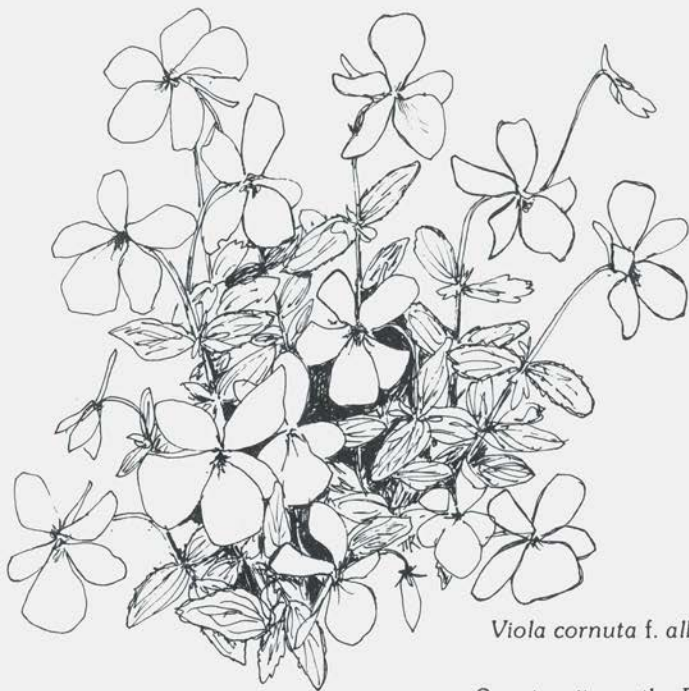
compact= squat and fat. Their foliage is of no concern, as their role is to cover themselves with bright colors and sexual splendor— rather like the Little Old Lady Who Lived In A Shoe, they have so many flowers they don't know what to do. The compactness of alpinism includes the foliage and the form of the entire plant. It is always graceful and, although filled with whimsy, austerity is present, too. Plants growing in crevices have an aesthete's beauty.

Columbines have surprised me over the years by showing up on the rocks: they reveal their wild hearts by growing as robustly from a rock as they do in open soil. *Aquilegia vulgaris* only sported a few blossoms in this situation, but *A. shockleyi* produced a bouquet (photo p. 302), and *Aquilegia saximontana* looked as tiny and delicate as it does on its native tundra rather than forming the giant bushlets it so often does in scree.

The brilliant firepink (*Silene virginica*) of eastern woodlands can grow 2' tall in pampered cultivation. On the rocks, however, it maintained a perfect alpine's habit. *Spiraea japonica* looks irresistible in a pot, but can grow a yard wide in a few years in a garden. Its seedlings stayed just the right size on sheer rock, however. *Gentiana andrewsii* can likewise approach a yard tall in rich soil and shade but makes a perfect specimen in a rock. Our unsolicited chasmophytes are not always rare or choice species: *Dianthus deltoides* surprised me once by forming a perfect picture on a rock. I've eliminated *Scabiosa lucida* throughout the garden—it is so rampant. But who can dispatch a perfect Victorian nosegay of blue scabious perched innocently on a rock? It's still there. I've always regretted the impermanence of Persian candytufts (*Aethionema grandiflorum*; photo, p. 303) in gardens: most plants persist only three or four years. The longest

lived and trimmest specimen I have ever grown comes out of solid rock.

I feel a little sorry for impulsive people who deadhead their plants so thoroughly and promptly that self-sown seedlings rarely happen for them. In an acre garden—even with an amazing cadre of knowledgeable and energetic volunteers—it is virtually impossible to deadhead with thoroughness and promptitude. In the garden's first years, with expanses of fertile, open soil, certain plants naturalized with such vigor that I was genuinely chagrined: *Silene keiskei* var. *minor* carpeted a peat bed with a solid mat of rose pink that nevertheless threatened a primrose or two—so I took it out. Next door, *Viola cornuta* var. *alba* romped far and wide, with a myriad white butterflies hovering over the yard-square expanse all summer. This too was transplanted to a harsher spot. A year or two later I realized how much I missed their endless season of vivid color. Young plants from the



Viola cornuta f. *alba*

same stock now refuse to do much more than survive and produce a few feeble flowers in the very same spots where they were once rampageous weeds.

Every garden has its special *Index Expurgatorium* of plants that spread so widely from seed or stolon that they must be removed: usually a violet, a *Euphorbia* perhaps, or sometimes a plant as choice as a cyclamen or primrose can spread with sufficient vigor to merit its exile from a portion of the garden. At Denver Botanic Gardens *Viola palmata* is our resident black beast. So too are *Linaria alpina*, *Campanula alliarifolia*, and *Symphyanthra hoffmanii*, all plants that were unwittingly introduced and will probably never be totally eliminated from the garden. I have grown more and more fond of the last-named plant (photo, p. 302)—a particularly robust and long blooming biennial that is considered endangered in its native Balkan home. The first year rosettes are so easily uprooted that it is easy to eliminate the great majority of these plants the first year, leaving the strategically decorative rosettes to grow larger and larger, producing a sheaf of bloom over 2' long and often more across, with long, white trumpets that blast into bloom through much of the hot summer. Most every year a rosette or two of this taxon germinates on top of a limestone boulder, and the chasmophytic development is so petite and graceful that any alpinist would love to see it in her garden. That is, until she notices its giant sibling quietly ripening several billion oversexed seeds nearby in the open garden.

Hardly a week goes by without my noticing some new unexpected petrophile. These cliff dwellers seem to have a personality of their own, and I cherish their willfulness and spontaneity. What other art but gardening would

celebrate such creativity on the part of its creations? Can you imagine what a painter would feel if his pigments took on a life of their own and chose to wander randomly around his canvas? Imagine a landscape architect, who has trouble enough with willfulness on the part of contractors and customers, if his template changed at its own will.

As I examine the gnarled bushlets that persist in the rocks year in and year out, through Colorado's fierce, arctic winters and blasting hot summers, I can hardly help but chuckle: how we struggle to amend and fertilize our soils, preserve their tilth and mulch them. How we compare soil mixes and pH, how we worry if they are too wet, whether they drain too much or too little? Do they have nematodes or beneficial microbes? Meanwhile, more and more flowers jump ship, as it were, laughing at us from the wholesome, soil-less perch of solid rock.

Panayoti Kelaidis gardens in Denver, Colorado. His special interests include acantholimonas, campanulas, hardy South African succulents, labiates, penstemons, western North American natives—and rock garden plants in general. While he deliberately grows many plants from seed and is a major consumer of nursery-grown plants, he delights in the serendipity of the self-sown. Drawings by the author.



Aquilegia vulgaris

The Arctic Harebell

by J.S. DeSanto

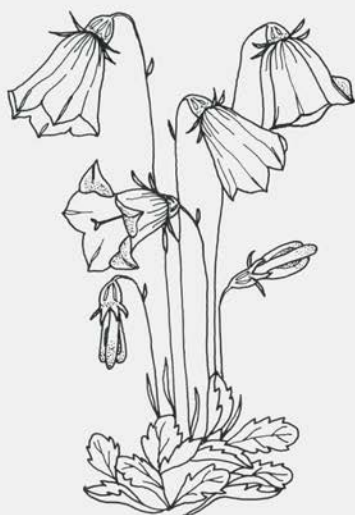
Among campanulas for the rock garden, *Campanula portenschlagiana*, *C. waldsteiniana*, *C. piperi*, and *C. raineri* are a few of the many aristocrats. *Campanula rotundifolia*, the humble harebell that grows in Europe, Asia, Alaska, across Canada, and through much of the United States, does not share in this reputation. Some gardeners exclude the species and even the genus on principle, since harebells have a propensity to spread and multiply at the expense of more desirable plants. But harebells are worthy of attention and occasionally a form appears in the garden or is found in nature that rivals any campanula. Will Ingwersen wrote of how he "treasures" a campanula "for which I have never discovered a name." He was given it by a gardener friend, who also had no name for it. It was, wrote Ingwersen, "rather like a very dwarf, large-flowered form of *C. rotundifolia*—which is probably just what it is."

Most botanists describe the species as "highly variable" or "very diverse." Nicholas Polunin in *Circumpolar Arctic Flora* goes a little further and calls *C. rotundifolia* "an atrocious poly-

morph of which numerous segregates have been proposed." He mentions a number of related taxa but acknowledges only *C. rotundifolia*. Eric Hultén described the new species, *C. latisepala*, from Alaska but admitted that it forms "hybrid swarms" with *C. rotundifolia*. He later concluded that different authors reach different conclusions with this "extremely complicated complex...as usually in cases of intraspecific polyploidy." The Canadian botanist H. J. Scoggan, quoting T. W. Böcher, wrote that *C. rotundifolia* is "perhaps the most intricate polyploid complex we know." In *The Flora of Canada*, Scoggan lists 22 taxa within *Campanula rotundifolia*, including variety *arctica* Lange. Modern Canadian floras tend to follow Scoggan, at least in part, while taxonomic treatment in the western United States is usually more conservative.

In *Vascular Plants of the Pacific Northwest*, *C. sacajaweanae*, a synonym of *C. rotundifolia*, is mentioned as a "widely distributed dwarf alpine form which may prove to be a distinct ecotype." It was collected in 1937 in the Wallowa Mountains of Oregon.

William A. Weber of Colorado writes that "the alpine race [of *C. rotundifolia*] is low, with very large solitary fls.: these may represent ssp. *groenlandica*."



A *Flora of Waterton Lakes National Park* reports a dwarf alpine harebell from the park that "retains its small size under cultivation." The reference is to variety *arctica*, mentioned in at least two other Alberta texts. No Montana floras acknowledge varieties of *C. rotundifolia*.

In a recent and by far the most comprehensive word on the subject, Stanwyn G. Shetler comes to the conclusion that "all Nearctic harebells belong to one species, *Campanula rotundifolia* L., broadly interpreted." He goes on to designate the *Rotundifolia* (or Harebell) Alliance, synonymous with the *Heterophylla* subsection of the genus. Within this alliance, he establishes four races: the Alaskan Race, the Arctic Race, the Eastern Race, and the Cordilleran Race. The races have no formal taxonomic ranking and serve only, it may be said, to mark morphological stops along a path of continuous variation. Harebells of the northern Rockies could be assigned to either the Alaskan Race or

the Cordilleran Race and all transitions between the two occur.

A reasonable taxonomic conclusion—at least in the northern Rockies (the southern Rockies of Canada)—suggests there is a distinct dwarf harebell. Perhaps it is best described as an ecotype, a form selected for the alpine environment and usually isolated from other populations of *C. rotundifolia*, though interfertile with them. *Campanula rotundifolia* var. *arctica*, originally named from a Greenland collection of 1867, is as appropriate a name as any other available in the area.

Among gardeners, Reginald Farrer long ago recognized the confusion in the complicated species. He lists 23 species, subspecies, and varieties in the "huge aggregate...depending on some slight differentiation that the change from one side of the hill to the other would probably wipe away." H. Lincoln Foster summarized the situation from the standpoint of the modern rock gardener. "The individuality of most of these subspecies [of *C. rotundifolia*]," he wrote, "becomes canceled out when they are grown in the garden and permitted to mingle their characters in a miscegenetic progeny... the variations are endless."

Populations of dwarf alpine harebells have been observed in southern Alberta, southern British Columbia, and northern Montana. At a typical location, 7500' up on the south-facing slope of Mt. Grant in the Great Bear Wilderness of Montana, there were hundreds of plants. Most were moncephalous, though a few had as many as seven flowers per stem. Height ranged from two to five inches. At anthesis, most plants still had the round basal leaves that are usually withered at flowering in low-elevation populations.

Dwarfs from high elevations in northern Montana and southern Alberta maintain their short stature when cultivated at 4800' (photo, p. 304).

Native harebells are abundant in and near the garden and robust individuals reach a height of 2' and more, bearing many flowers per stem. After five years, however, no mixing has yet been noticed; a "miscegenetic progeny" has not yet appeared. Pollination in the two forms does not overlap in the garden, as the cultivated alpine forms bloom earlier than their low elevation relatives. A distinct disadvantage of the low-growing form is its accessibility to small rodents such as chipmunks and mice. *Campanula* buds of all species are apparently choice fodder and those that rise only a few inches above the ground are at just the right height. One or two chipmunks can mow hundreds of buds in a few hours, but new buds will often develop on many plants.

Shetler comments that "tall lowland forms with many small flowers and the short arctic-montane forms with few large flowers persist more or less in cultivation." Ploidy is probably a factor as European experiments indicate that diploids change little under cultivation while tetraploids tend to blend as differences disappear when grown together.

If selected dwarf forms of *C. rotundifolia* are reproductively isolated from their taller and more floriferous relatives, their offspring will retain the alpine characteristics of compact, monocephalous growth form. Vegetative spread is slow. Whatever we chose to call them, dwarf *Campanula rotundifolia* can be a welcome addition to any rock garden.

References

- Farrer, Reginald. 1919. *The English Rock Garden*. Vol. I. Reprint, 1980. Theophrastus: Sakonnet.
- Foster, H. Lincoln. 1968. *Rock Gardening*. Reprint, 1983. Timber Press: Portland.
- Hitchcock, C. Leo, et al. 1959. *Vascular Plants of the Pacific Northwest*, Part 4. University of Washington Press: Seattle and London.
- Hultén, E. H. 1968. *Flora of Alaska and Neighboring Territories*. Stanford University Press: Stanford.
- . 1971. *The Circumpolar Plants*. II. Almqvist & Wiksell: Stockholm.
- Ingwerson, Will. 1983. *Alpine and Rock Plants*. J. M. Dent & Sons: London.
- Kuijt, Job. 1982. *A Flora of Waterton Lakes National Park*. University of Alberta Press: Edmonton.
- Polunin, Nicholas. 1959. *Circumpolar Arctic Flora*. Clarendon Press: Oxford.
- Scoggan, H. J. 1979. *The Flora of Canada*, Part 4. National Museum of Canada: Ottawa.
- Shetler, Stanwyn G. 1982. *Variation and Evolution of the Nearctic Harebells (Campanula subsect. Heterophylla)*. Phanerogamarum Monographiae Tomus XI. J. Cramer: Vaduz.
- Weber, William A. 1987. *Colorado Flora: Western Slope*. Colorado Associated University Press: Boulder.

Drawing by Linda Evans

Jerry DeSanto is retired from the National Park Service. He spends his summers in the mountains of the western US and Canada and raises native alpine plants at his home in southwestern Alberta.



Veteratrū nigrū .

*Elcborus Niger
verus Theophrasti*

Helleborus niger
from *Florilegium renovatum et auctum*
Johann Theodor de Bry

1641

courtesy of Helen C. Fowler Library, Denver Botanic Gardens

Hunting for Red *Helleborus niger*

by Will McLewin

Early in 1991 I received a letter from Norman Albone. He had been on holiday in Yugoslavia and photographed a plant of *Helleborus niger* with bright red-pink flowers. On learning that I visit Yugoslavia regularly to study and collect the hellebores there, he thought I would be interested. After seeing the photographs I was indeed excited and very curious.

It is not uncommon for flowers of *Helleborus niger* to turn red, or at least somewhat pink, after fertilization. When the flower is fertilized, the stamens ripen and fall away, and the seed-carrying carpels begin to swell. In some plants pink coloring develops in the tepals, presumably due to post-fertilization hormonal changes. While this coloring is a desirable feature, it is not something one would go to Yugoslavia to see. But was the observed color present from the time the flower bud appeared? If so, these plants were remarkable—possibly very remarkable.

Further correspondence provided me with a fairly precise location for the "red" *Helleborus niger* in Slovenija. Botanists and hellebore fanciers with whom I discussed the possibilities were

united in the view that the plants would turn out to be merely the ordinary white *Helleborus niger*, albeit a form which turned pink after the stamens were shed. Yet I was still at a loss to understand why, when the coloring was so pronounced, this form was not well known and in cultivation.

I left for Yugoslavia a few days before Easter. My interest in Yugoslavian hellebores does not center around *Helleborus niger*. Questions about the identity, intermingling, and distribution of other Yugoslavian species (*Helleborus torquatus*, *H. atrorubens* and forms of *H. multifidus*) seem to me more interesting and more pressing. Once arrived in Ljubljana, my first purpose was to ask Slovene botanists about the distribution of *Helleborus atrorubens*, but I did inquire about "red" *H. niger*. The botanical experts knew of the population in question and regarded the plants as unexceptional. They were more concerned about the location of *Helleborus macranthus*, because they rejected the accepted view that it grew in Slovenija. The resulting debate pushed the question of "red" *H. niger* lower down my list of priorities. I left

Ljubljana intending to concentrate on *H. atrorubens* and *H. torquatus*.

✓
✓
✓
Quack vehicle surgery, a freak blizzard, and convoys of army vehicles contrived to make my tour of Southern Croatia, Hercegovina, Montenegro, and Serbia frustratingly brief. Sightings of *H. torquatus* (photo, p. 301), *H. odorus*, *H. multifidus* ssp. *multifidus*, and *H. multifidus* ssp. *hercegovinus* were exciting as always, but I had no time for detailed exploration. Road blocks by army and police were no more of a problem than on previous visits. Those conducted by "volunteer militia" (apparently anyone who could find a colored armband and a rifle and who fancied obstructing traffic) were more worrying. These irregulars appeared excitable, fierce, and unpredictable.

On my way back north, I was able to find the distinctive northern form of *H. torquatus*—smaller flowers than the Montenegrin versions, dark, dull purple outside, bright yellow-green inside, with striking dark veins. Signs of military activity had greatly increased.

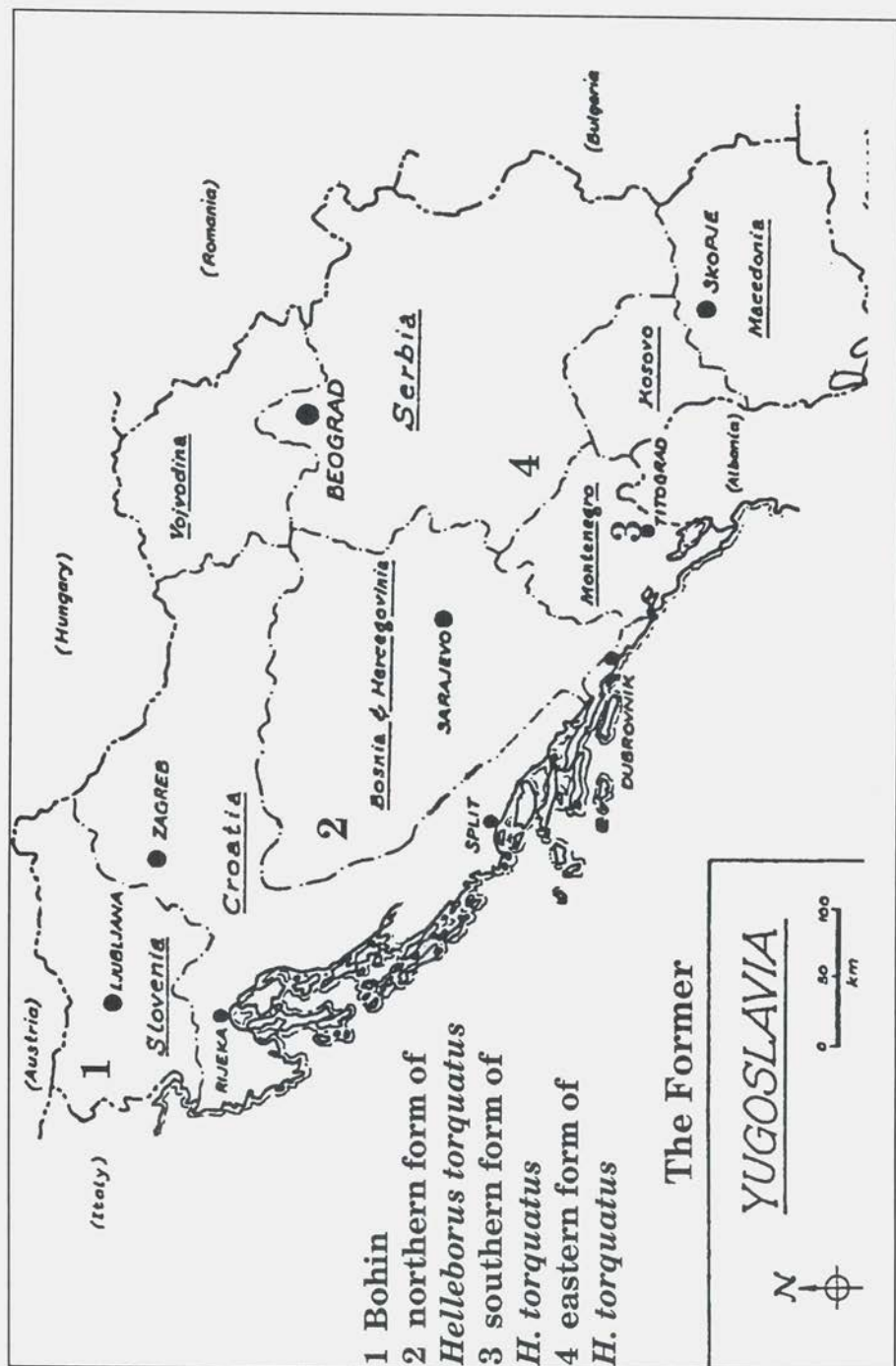
Back in Ljubljana my interest in red *H. niger* was rekindled by photographs of distinctly red-pink flowers with stamens complete and carpels barely developed. Then a photograph of *Helleborus atrorubens* with even-colored maroon flowers inspired another hasty visit to eastern Slovenija and a frustrating day meandering about on lanes and tracks. I also investigated the mollifying effects on Slovene dogs of chocolate biscuits—an item of equipment I had previously found useful with boldly inquisitive Montenegrin children. Had I not had the finding of a particular flower color in mind, I would have been well pleased, since I discovered several populations of *H. atrorubens* previously unknown to me. As is often the case with wild hellebores, the differences between the plants of these populations

and those better known to me were subtle and hard to be precise about. There was considerable variation of leaf form and flower color, but less sign of *H. odorus* influence. In some exciting cases there were greenish flowers with a radial band of dull, purplish-red on each tepal. I remembered seeing a similar flower of *H. torquatus* a few days earlier. This reminded me of a half-baked idea I had discussed with Tone Wraber, a Slovene ecological botanist. Could the plants we know as *H. torquatus* and *H. atrorubens* both have resulted from the influence of some unknown dark-flowered plant on previously green populations? Both apparently exist only in mixed green-purple colonies.

The largest town in that area, Novo Mesto, has since been the scene of fierce conflict. I was tempted to nip back there with some orange tape and notices saying "hellebore reserve, no warfare here please." Unfortunately, whichever language was used, Slovene or Serbo-Croat, would only have been a provocation to the other faction.

After this unplanned bit of exploration for *H. atrorubens*, I had just one day left to devote to the question of red *H. niger*. It was a wonderful, bright, sunny day, the first of that whole trip. I had met the director of the Triglav National Park at my informal lecture on hellebores and received permission to collect plants in this area where unauthorized collecting is expressly forbidden. These were propitious signs.

At Bohin the road ran through mixed woodland at the edge of a lake. *Helleborus niger* was plentiful and conspicuous—superb plants newly in flower, pure white with no traces of pink, let alone red. I walked round the far side of the lake where the trees were thinner. Along with *Primula* and *Hepatica* I began to find *H. niger* with pink flowers. An hour or so later and



several hundred meters higher, I was on an undulating, grassy, south-facing plateau, with varied clumps of scrubby vegetation and rocky limestone outcrops. There were hundreds of *H. niger* plants with flowers ranging from pure white through clear pink to deep pinkish red (photo, p. 301).

Was this a mixed colony of *H. niger*, some white, some pale pink, and some red? Or was it a uniform colony of plants whose flowers all open white and then age red? At first the answer was far from clear. Did all the pink and red flowers have developed carpels? No!—or at least, not really. Young, barely opened flowers that were distinctly pink were not difficult to find. But almost all really deep pink flowers had shed their stamens—or they were damaged in some way. (Injury apparently also causes hormonal changes that lead to coloring.) On plants where all the flowers were white, all flowers were young and the plants were usually in shade. These extreme examples of flower color provided the crucial clues.

I concluded that these plants were ordinary white-flowered *H. niger*, but a population where the extent of post-fertilization reddening was extraordinary. Once a single flower on a plant is fertilized, the hormonal change apparently affects all the flowers on the plant to a significant extent, so that on some many-flowered plants the young flowers were distinctly pink before they had begun to shed stamens and before the carpels had begun to swell.

I was surprised to find myself not disappointed, but secretly pleased with this conclusion. Novelty out of character with the characteristics of the true wild species are presented by some horticulturalists as improvements. The value of such plants is a matter for subjective judgment, and what is a Holy Grail to one is an offensively unnatural novelty to another. Botanically, this

population of "red" *H. niger* is probably just a minor variant. Horticulturally, however, the plants seem to be significant. The best have long-stemmed, well-shaped, pure white flowers that change to spectacular shades of dark, pinkish-red. Norman Albone did well to recognize their potential

Subtle color effects of hellebore flowers are often affected by growing conditions and microclimate, and sometimes are disappointing. It remains to be seen how well this strain of *H. niger* performs in cultivation. 'Sunset' seems a suitable name for this group of plants. Those that we make available, like all our species hellebores, will be propagated directly from the wild plants by division or from wild-collected seed. I hope this name will not be used indiscriminately for cultivated seedlings, their seedlings, and so on. The name 'Potters Wheel', which once applied to a particular group of selected plants is now, in most cases, meaningless or worse, since it has been applied to hybridized seedlings of the original plants and to propagated plants of misidentified parents.

As with all the best adventures, as one mystery is solved, another appears. A friend in North Italy has sent me an ordinary picture postcard featuring a flower of *H. niger*—distinctly spotted!

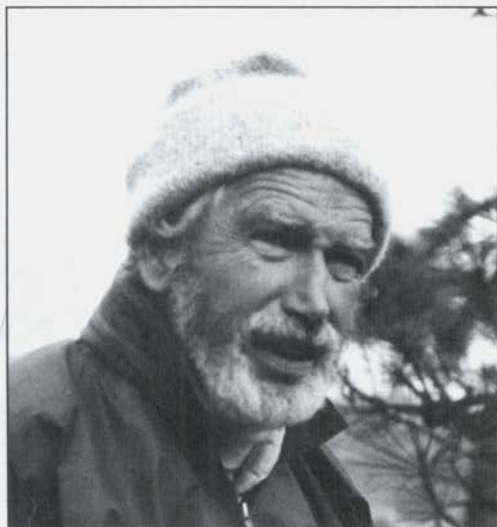
Will McLewin is proprietor of Phedar Nursery, specializing in hellebore breeding and selection. Its goals are to reach an understanding of the complex taxonomy of species hellebores, concentrating on the Yugoslavian species, and to develop improved garden hybrids. Other special interests are *Paeonia*, *Erythronium*, and *Dodecatheon*. For brief notes and an extensive list of hellebore seed to be mailed fresh in summer, send \$2 in bills and an addressed envelope or label to Phedar Nursery, Bunkers Hill, Romiley, Stockport, SK6 3DS, United Kingdom.

Awards

Marvin Black Award

B. LeRoy Davidson

When the Northwestern Chapter proposed the Marvin Black Award, we envisioned it as a Pied Piper award for someone who inspired others to learn and reach their potential in the world of plants. This Marvin did, by writing, organizing study weekends and field trips, and initiating foreign travel. If you had Marvin for a friend you had no spare time.



Roy Davidson certainly fits this mold. He originated study weekends on the West Coast by inviting John Watson to the first one in Issaquah, Washington. He has been active in all our subsequent study weekends, either as an organizer, speaker, or creator of displays. The success of the International Rock Garden Plant Conference in Seattle in 1976 owes much to Roy; he organized the session "Unique Edaphic Situations," and was active behind the scenes in countless ways, such as hosting visitors to the conference and helping with publications. He is also a loyal attendee of meetings around the USA and in Britain. No matter if registration is filled, Roy will go anyway, and, like magic, be received with open arms. Now there is a Pied Piper!

Roy is well known in many parts of the world for his writing and plant research. His studies of *Lewisia*, *Penstemon*, and *Iris* have given a framework to these genera. He was one of the first to champion dryland plants—a new vogue in drought plagued Seattle.

Not only is Roy's garden always open to anyone who wishes to come and learn, but he has led innumerable field trips to see plants growing in the wild—complete with rattlesnakes for ambiance. So intense is his interest on these trips that he forgets about eating as he is followed by a hungry crew of rock gardeners.

As one who has benefited from all of Roy's generous sharing of his time and knowledge, I can say that it has been a privilege to know and learn from him and to present him with the Marvin Black Award.

—Pat Bender

Award of Merit

Robert L. Means

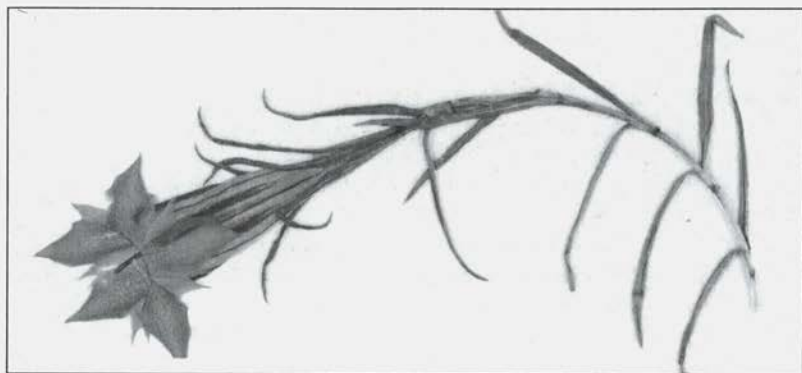
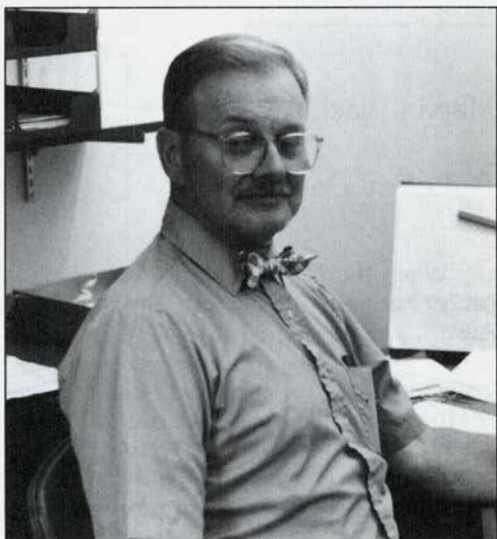
It is a privilege to nominate Robert L. Means to receive the Award of Merit, an honor long deserved by a man who has served in many capacities to create and maintain desirable and admirable qualities in the American Rock Garden Society.

His leadership helped strengthen and unify the organization when he served as vice-president and then president during the years 1978 to 1984. He was never content merely to preside over meetings. He went much further to participate as a concerned layman in many activities which required time, skill, personality, and devotion.

My first personal acquaintance with Bob was during the First Interim International Rock Garden Plant Conference in Seattle in 1976. Even then I was impressed with his sincere interest in learning from the speakers, from the gardens he visited, and from the people from near and far who were involved in the actual operation of the society.

He put all of this preparation to good use as he continued to solve financial problems and to push for innovative and beneficial changes in our society. We have all benefited from Bob's technical skills as he used them to take the kinks out of some bothersome mechanical problems of our huge organization. It is most fitting that he, a true benefactor of the American Rock Garden Society, receive the Award of Merit.

—Frances Roberson





Helleborus niger, population with deep pink forms (pp. 295-298)

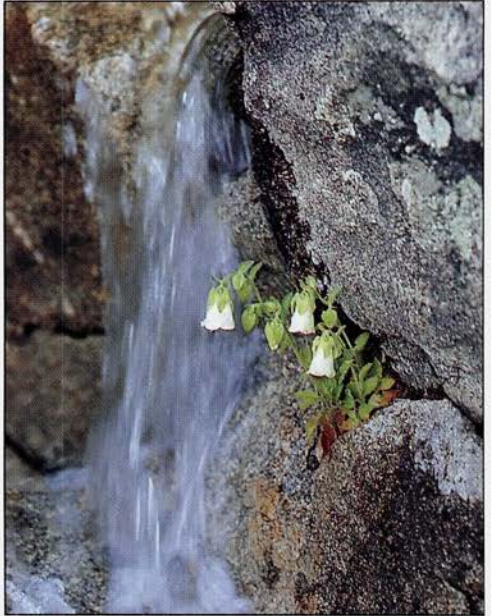
Helleborus torquatus

photos by Will McLewin





Dianthus amurensis



Symphyandra hofmannii (p. 290)

Aquilegia shockleyi (p. 289)

Sandy Snyder



Onosma echioides





Edraianthus graminifolius (p. 288)



Eriogonum ovalifolium

photos by Panayoti Kelaidis

Aethionema grandiflorum (p. 289)

Campanula rupestris (p. 287)





Campanula rotundifolia var. *arctica* (pp. 291-293)

photos by J. S. DeSant



Books

Growing and Propagating Showy Native Woody Plants, by Richard E. Bir. Drawings by Karen Palmer. 1992. The University of North Carolina Press: Chapel Hill, London. 7 3/8" x 10.25", 192 pp., maps, color photos, drawings. \$29.95, 18.95. Clothbound, ISBN 0-8078-2027-X, paperback, ISBN 0-8078-4366-0.

The purpose of this book is quite worthy but not at all ambitious. Its stated long term objectives are to gain more attention for about 100 trees and shrubs native to the area from the Atlantic Ocean to the peak of the Appalachian Mountains and between southern Georgia and very southern Pennsylvania and New Jersey and to provide very practical advice on how to propagate them from the wild. It makes a special effort to keep all information as simple as possible so as to maximize its usefulness to novice gardeners. The plants were selected for their underused ornamental potential by the author, Richard E. Bir, an experienced horticultural specialist with Cooperative Extension out of North Carolina State University and also clearly an enthusiastic and observant gardener.

This book should achieve its limited goal. But judging from a quick look, avid members of ARGS with diverse interests might feel dismay that this is not an encyclopedia on Eastern native woody plants and, intentionally, it does not discuss the more challenging means of propagation, grafting, and tissue culture. Yet what this book sets out to do, it does very well. Moreover, it is bulging with common sense observations about culture that should please most any gardener. The propagation sections, general and specific, are right on target. The book also contains interesting suggestions for use of these plants in the landscape. I sincerely doubt that any reader will come away disappointed.

—Jim Cross

Alliums, The Ornamental Onions, by Dilys Davies. 1992. Publ. in association with the Hardy Plant Society. Timber Press : Portland, Oregon. 6 1/4 x 9 1/4", 168 pp., 48 color photos, 45 line drawings. Hardbound. ISBN 0-88192-224-2. \$29.95 plus shipping.

Published in England by B.T. Batsford Ltd and in North America by Timber Press, Inc., this long-awaited account of the genus *Allium* is one in a series of books devoted to single plant genera, an ongoing project sponsored by The Hardy Plant Society. The book jacket correctly summarizes this new publication as "a reference guide to a representative cross-section of the genus *Allium*." Less accurate is some of the promotional literature that touts the book as a "monograph," a dubious claim when only approximately 200 species out of an estimated 700 *Allium* species are given brief, non-taxonomic coverage. Treating this large genus of bulbous plants is a tall order, so I was pleasantly pleased with Dr. Davies' efforts.

This book will no doubt become a standard reference for anyone interested in growing ornamental onions.

One gets the impression, however, that this book is not the author's own creation and is instead driven by format mandated by either the publisher or its sponsor. There are numerous chapters of varying merit on topics ranging from "Folklore and Medicine" to "Plant Introduction and Collections." For the most part, the synoptic chapters are too brief to offer comprehensive understanding of the topic at hand and at times seem less than coherent. It is hoped that the inclusion of onion recipes does not set a precedent for the horticultural treatment of other edible genera such as *Thymus* and *Origanum*. The basic criticism of the book remains that it is simply too short and the topics and plant descriptions too brief. On the other hand, the information that is presented is sound and well researched. This book is therefore heartily recommended as a primer for anyone interested in growing alliums or bulbous plants.

The book format looks nice, with crisp, legible text and a generous assortment of color photographs and line drawings. The photographs are generally good, and particularly stunning are portraits of *A. kharputense* and *A. polyastrum*. The line drawings are rather simplistic, but give the "flavor" of the species depicted. The Table of Contents, listing of Color Plates and Figures, Glossary, General Index, and Index of Species add to the usefulness of the book.

The single most vital feature within the text is the attention given to reference listings. There is a separate chapter entitled "Survey of Allium Bibliography." Some chapters end with a listing of references for additional reading. More importantly, every species description ends with a "Sources" section, specifically identifying which references contain photos or drawings of the species at hand. If a reader has special interest in one species, it is a simple matter to know where to search. Sadly, there is no mention of "A Revision of the Genus *Allium* L. (Liliaceae) in Africa" by Wilde-Duyfjes, an important and comprehensive treatment on the genus as it occurs in North Africa, Europe, and the Middle East.

There are a couple of oddities within the book. Some synonyms are listed separately as if valid species themselves within the main body of the text, which is redundant. The inclusion of dimensions in both metric and English is commended, but I find that the height range given for a few species appears inaccurate.

Taxonomically, little new territory is covered, although what is presented for the most part abides by current botanical thinking and clears up some of the commonly misidentified species. Many interesting and uncommon species are given coverage for which bulb aficionados will be grateful. The author imparts a feeling of affection and intimacy for the plants she has grown for many years, and an excitement for those species not yet generally obtainable. Dr. Davies evidently did not have information on the magnificent new hybrid named 'Globemaster' listed as a hybrid between *A. stiptitatum* and *A. giganteum*, although she expresses her suspicion that *A. christophii* is one of the true parents. Indeed she is correct, as this incredible sterile hybrid results from a cross between *A. macleanii* and *A. christophii* made by Mr. Jan Bijl of Holland, a professional bulb hybridizer and grower. The only other significant inaccuracy is the inclusion of a photograph and description of a plant called 'The Pearl', with the suggestion it is an *Allium neapolitanum* hybrid. The plant in question is *A. ramosum* and is one of several plants erroneously distributed as fancy-named allium hybrids by a now defunct and infamous nursery in Massachusetts.

The rock gardener will find considerable interest with this book. There are many interesting species eminently suited to growing in the rock garden, while others are prime candidates for wildflower and meadow gardens. The value of alliums in providing color continuously through spring, summer, and fall is well documented in this important new publication. In a genus rife with nomenclatural confusion, and as Dr. Davies puts it "[with] synonyms as thick as bulbils all around," the reader is advised to obtain a copy of this book, with which garden-grown plants may be identified or their names validated. It is heartily recommended for anyone wishing to know more about the genus. Most importantly, it stands as the only generally available horticultural work covering this long-neglected genus.

—Mark McDonough

A Patchwork Garden, by Sydney Eddison. Henry Holt & Company. 1992. \$12.95, paperbound.

Like Gaul, books about gardens and gardening can be divided into three parts. First there are the strictly informative works that few of us can live without, from tomes such as *Hortus III* to specialized little books like the recent *Gardeners' Latin* by Bill Neal. These myriad reference books ground us in the hard-core intimacies that take too many lifetimes to discover solely by means of dig, discard, and try again.

Prominent in the middle territory are the glossy picture books, anathema to some, compelling to others, but which in any case share their shifting borders with near neighbors on every side. In a wholly distinct bailiwick, however, the third domain, we find books about gardening that can be read for their own sake, for the pleasure of passing time in their congenial company—such delights as *Onward and Upward in the Garden* by Katherine S. White, or *Green Thoughts* by Eleanor Perényi, to cite too few.

These are not the sort of works that I would normally pick up to find out why the clematis collapsed or the azaleas failed to bloom. When relaxing with such collections of gardening essays I don't feel constrained to keep a pencil handy, though it helps, allowing spontaneous underlining or marginal notations. (I often discover forgotten notes and comments when I return to such books, adjuring myself to "Try this!" or "Order these!", but rarely do these commands come to much. When I'm actually planning changes, if my vague musings can be dignified as planning, or ordering plants, I forget what Louise Wilder said about colored foliage or Perényi about the value of evergreens.)

Like most people, I imagine, I read these books because they are on a topic I love. They offer a chance to step into the writer's garden, the opportunity to listen to tales of success and failure, pleasures and perils that are in some way similar to my own. Information may indeed be mined, but their attraction has more to do with style and ambiance than instruction.

A Patchwork Garden, recently reissued in soft cover, is a happy occupant of the charmed territory inhabited by books treasured for the way in which they transmit the experience of gardening. Its author, Sydney Eddison, shares her ongoing romance with her Connecticut acres, and she introduces us to the many friends who have contributed their plants, labor, or spirit to the gradual evolution of her

ambitious garden. You may glean ideas about happy plant combinations from her pages or warnings about swimming pools too hastily commissioned or paths too narrow for standard wheelbarrows, but the heart of *A Patchwork Garden* lies in its endearing portraits of Eddison's supportive gardening friends who taught, encouraged, inspired—and gave her innumerable treasures.

A member of ARGS who doesn't own a single alpine, she is "one of those gardeners that alpine enthusiasts refer to, a little condescendingly, as 'border people'." She admits the charge: "I am an unregenerate border person. I like big easy-going plants that show up from a distance...I even like plants with variegated foliage, though admittedly they have to be handled with care. I am interested in garden pictures and in design or form or whatever it is that makes for order and harmony."

Notwithstanding, her chapters on the Fosters and Millstream as well as one called "Rock Gardeners; A Breed Apart" are warm and grateful evocations—"no other affiliation has been as rewarding as my unlikely association with the alpine enthusiasts." Rock gardeners will find reading about her patchwork garden equally rewarding. Read it when it's too cold and dark to venture outdoors and you'll feel as though your visit to Eddison's garden on a pleasant summer day has given you a chance to share your mutual passion—gardening—in the most fruitful way.

—Cecile Shapiro

Growing Alpines in Raised Beds, Troughs and Tufa, by Duncan Lowe. 1991. B.T. Batsford Ltd.:London. Distributed by Trafalgar Square, North Pomfret, VT 05053. Hardcover. 136 pp. ISBN 0 7134 7018 6.

The Alpine Garden Society has embarked upon an ambitious series of handbooks to provide novice rock gardeners with up-to-date information on the many facets of our rapidly evolving art. This "Rock Gardener's Library" already includes five volumes, with more apparently waiting in the wings.

I remember reading once that the great Spanish philosopher Miguel de Unamuno taught first year Ancient Greek in his classes by opening *The Iliad* by Homer, in the original version, and simply starting to read. Many rock gardeners similarly begin (and end) their careers in the pages of Farrer's *English Rock Garden*—our Homeric equivalent. But most of us would benefit from a little pampering.

If you are just being initiated into the arcane vocabulary of "scree", "gravel mulches," and all the other technical terminology of our art, I can imagine no better guide than Duncan Lowe. His book takes a gentlemanly tone to describe both technical details of just what an alpine is and basics of how to meet the challenge of bringing a bit of alp to your suburban home.

The book might well have been called *Alpines in Small Spaces* or even *Alpines in Raised Beds*, since Lowe concentrates on the limited garden areas common to urban and suburban spaces. Some parts of the world still have an abundance of boulders available at reasonable rates, but in the largest metropolitan areas rock gardeners must often content themselves with smaller rocks and smaller areas in which to put them. Lowe describes and richly illustrates variations on the

raised bed, how to build and place one, and, above all, the soil mixes to use and the ways to grow choice, tiny jewels. Lowe is famous for growing alpines to perfection in his own garden. This is the kind of information not easily found in a single place. The ratios employed in his soil mixes would dessicate succulents in a Colorado garden, but Lowe does take pains throughout his book to stress that there are no pat answers or foolproof recipes. Local conditions influence success or failure to a great extent, and you must temper his recommendations with your local knowledge.

I am disappointed that Lowe fails to mention the simple expedient of Fibermesh, first used and publicized by Ernie Whitford in Colorado Springs, for use in trough construction. One no longer needs to create complicated wire-mesh reinforcement. A handful of Fibermesh in the mix, and voilà! The trough can be shaped over around anything.

The plant lists are somewhat arbitrary and European in their orientation: why are some plants ideal for tufa and not for an intimate raised bed or a trough? The photographs in the book are very attractive, and Lowe's own line drawings are crisp and elegant. They truly illustrate the different features he discusses throughout the books. Even sophisticated rock gardeners are apt to learn something from this slim but substantive contribution.

—Panayoti Kelaidis



ARGS Coming Events

Eastern Study Weekend

OBSESSION

January 29-31, 1993

Hilton Gateway, Newark, New Jersey

Presented by the Watnong Chapter of the American Rock Garden Society. Speakers include Geoffrey Charlesworth, Norman Singer, James Waddick, Mark McDonough, Barry Yinger, Edith Eddleman, Richard Weaver, Nancy Goodwin, Howard Pfeiffer, and Gwen Kelaidis. See brochure for more information.

Western Study Weekend

ALPINE AND ROCK GARDEN PLANTS OF SOUTH AMERICA:

New Discoveries and Old Friends

February 26-28, 1993

Villa Hotel, San Mateo, California

Elly Bade, Registrar (510) 644-1656

Presented by the Western Chapter of the American Rock Garden Society. Speakers include John Andrews, David Hale, Sean Hogan, Josef Halda, Alberto Castillo, and Robert Ornduff. See brochure for more.

ALPLAINS

FREE 1993 SEED LIST

32315 Pine Crest Court, Kiowa, CO 80117, U.S.A.

Alpine plants growing on the Plains of Colorado

is available in December, 1992 (overseas customers: 2 IRCs appreciated). Featuring many choice wild and nursery-collected alpine and rock garden varieties. Easy to challenging, we provide germination instructions for: *Aethionema, Allium, Aquilegia, Arenaria, Astragalus, Callirhoe, Campanula, Claytonia, Collomia, Draba, Dracocephalum, Eriogonum, Eritrichium, Gilia, Kelseya uniflora, Michauxia, Monardella, Penstemon, Phlox, Polemonium, Nepeta, Salvia, Scutellaria, Silene, Shoshonea pulvinata* and many more!



The Rock Garden Club

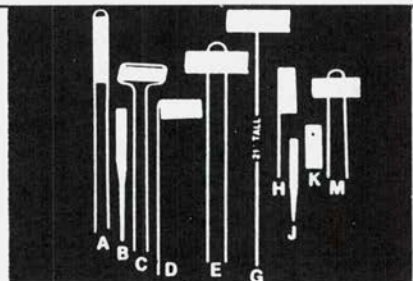
Prague, Czechoslovakia

We invite all rock gardeners and alpine plant lovers from abroad to join our more than 1200 local members. After 40 years behind the Iron Curtain, our skilled seed collectors and experienced alpine growers look forward to increased contact with our friends from foreign countries.

Our activities include a seed exchange of 1700 items; *Skalnicky*, a quarterly journal including many line drawings; plant shows in Prague; rock garden visits and holiday expeditions to mountains of SE Europe and Asia; membership directory; library and slide library; lectures.

Membership dues US\$15 or DM 25

Inquiries for 1992 to Hon. Secretary Mrs. Eva Hájková, Mimonská 12/639, 190 00 Prague 9, CZECHOSLOVAKIA.



THE PERMANENT METAL LABEL

A- Hairpin Style Markers	30 for \$11.60
B- Plant or Shrub Labels	100 for \$7.80
C- Cap Style Markers	30 for \$11.95
D- Swinging Style Markers	30 for \$10.20
E- Rose Markers	30 for \$10.95
F- Tall Display Markers	30 for \$14.45
G- Tall Single Staff Markers	30 for \$11.95
H- Flag Style Markers	30 for \$10.15
J- Small Plant Labels	100 for \$7.40
K- Tie-on Labels	100 for \$12.30
M- Miniature Markers	30 for \$9.40

PAW PAW EVERLAST LABEL COMPANY

PO Box 93-E, Paw Paw, MI 49079-0093
Quantity Prices Available
Prices Include Prepaid Postage

New Zealand

Special Tour January 1993

MITCHELL ODYSSEYS

P.O. Box 61482 Denver, CO 80206

800-359-5912

**EUROSEEDS
MOJMÍR PAVELKA**

RARE WILD COLLECTED SEEDS
from Turkey, Greece, Balkans and the Eastern Alps.
Some items from Central Asia and Siberia and
selected garden seeds also available. Prices of
seeds 1.00 - 4.00 \$ per packet. Please send 2.00 \$
(in bills only) for October catalogue to

EUROSEEDS
P.O. BOX 95
741 01 NOVÝ JICÍN
CZECHOSLOVAKIA



Kirk Fieseler
Owner

1950 Laporte Ave.
Fort Collins
Colorado 80521

Laporte Avenue Nursery

Rocky Mountain Alpines, Western High Plains
Plants, and Rock Garden Plants.
Catalog \$1.00 refundable with order.



Hypertufa Troughs
*Handcrafted with the look
of weathered stone*

Mail Order - U.S. Only

For Further Information
Send SASE

KAREN HARRIS
200 East Genesee St.
Fayetteville, NY 13066

**SANGUINARIA CANADENSIS
MULTIPLEX (DOUBLE BLOODROOT)**

Blooming-Age Rhizomes
Available in Early September
PLANT DEALERS ONLY



CHARLES F. ANDROS
BOULDER WALL GARDENS
McLEAN ROAD
WALPOLE, NH 03608-0165

Phone (603) 756-9056
(April 15 - November 15)

**NATIVE
PERENNIALS**

For Woods, Meadows or
Backyard Borders

Send \$2.00 for our 48-page
catalog or visit us at our
mountain nursery

Our barn is filled
with plants and
helpful information.

Open Mid-May thru
Labor Day
Daily 10-4 Sun. 12-4
or by appointment

Brookside Wildflowers

Located Outside Blowing Rock
On Shulls Mill Rd. Near Hound Ears
704-963-5548. Route 3 Box 740-R, Boone, NC 28607



CHEHALIS RARE PLANT NURSERY
2568 Jackson Hwy., Chehalis, WA 98532
Herb Dickson, Prop.

After 30 years of selecting and breeding,
I have developed an improved strain of
Garden Auricula with a complete palette of
color.

Garden Auricula

Mixed, Yellow, Blue, White
Brown, Red, Petite Hybrids

Picotée - a new flower form with only
an outer fringe of color

Exhibition Alpine

All the above \$2.00 per packet of 75 seeds

Primula Florindae \$1.00 per packet

Mixed Candelabra \$1.00 per packet

Hand pollinated Show Auricula

Red Self, Yellow Self, Green Edge
.10 cents per seed, any amount

Hand Pollinated Double Auricula Mix

.25 cents per seed

50 cents postage & handling in U.S. & Canada

Other foreign orders \$1.00 postage & handling
Washington residents add 7.5% sales tax

MINIMUM ORDERS \$5.00



SISKIYOU RARE PLANT NURSERY

An ever growing collection of over 1,000 varieties of Alpines, Ferns, Dwarf Conifers, Northwest Natives (as *Lewisia cotyledon*, pictured), and other hardy plants for the Woodland and Rock Garden. For our Annual Mail Order Catalog and Fall Supplement send \$2.00 refundable.

Dept 1, 2825 Cummings Road, Medford, Oregon 97501

Visitors Welcome by Appointment - Phone (503) 772-6846

SHIPPING TO U.S. and CANADA ONLY

A Distinguished Collection

Over 1500 hard to find
and useful varieties

ROSLYN NURSERY

211 BURRS LANE, DEPT R
DIX HILLS, N.Y. 11746

Descriptive mail order catalog
\$3.00



TIME TESTED HOSTAS
including **VARIETIES**
suitable for
ROCK GARDENS

*Fresh Hosta seeds available
from January 1 to June 1.*

Homestead Division

9448 Mayfield Road, Chesterland, OH 44026
Catalog \$1.00 deductible from order.

RICE CREEK GARDENS, Inc.

OUR PLANTS REALLY GROW!

- Rock Garden plants
- Unusual Perennials
- Hardy Rhododendrons
- Canadian Shrub Roses
- Wildflowers
- Shade Plants
- Dwarf Conifers
- Vines



11506 Hwy. 65
Blaine, MN
55434

(612) 754-8090

Catalog \$2.00

We also build
unique landscapes.

DWARF & RARE CONIFERS
ALPINE & ROCK GARDEN PERENNIALS
PLANTS FOR BONSAI

Catalog: \$4.00 refundable on first order



PORTERHOWSE FARMS

41370 S.E. Thomas Rd.
Sandy, Oregon 97055

Telephone/FAX (503) 668-5834



Mt. Tahoma Nursery

Rick Lupp (206) 847-9827
Alpines, Washington State Natives, Species Primulas,
Troughs & Trough Plants
Custom Propagating

Nurseries Open Weekends and by Appointment
Mail Order: U.S. & Canadian Only
Send \$1.00 For List 28111-112th Avenue E., Graham, Washington 98338

THE PRIMROSE PATH

R.D. 2 Box 110 Scottdale, PA 15683

Primula veris



Choice and unusual perennials, alpines, woodland plants, all nursery-propagated.
Specializing in new hybrids and selections from our breeding program, species
Primulas and Phlox, native wildflowers, western plants adaptable to the East.
Mail-order Catalog \$1.50 (412) 887-6756

THE CUMMINS GARDEN

DWARF RHODODENDRONS Yes, We Ship!
DECIDUOUS AZALEAS Catalog \$2.00
DWARF EVERGREENS
COMPANION PLANTS (Refundable With Order)

Phone (908) 536-2591
22 Robertsville Road Marlboro, NJ 07746

THE ALPINE GARDEN SOCIETY

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

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

Among the many other benefits of the Society, its uniquely comprehensive seed list alone is worth more than the modest subscription of \$32.00 US. For Overseas Members Apply to:

The Secretary, The Alpine Garden Society
AGS Centre, Avon Bank, Pershore, Worcestershire WR10 3JP, England

ROCK PLANTS

For over 20 years we have specialized in dwarf Rhododendrons, Azaleas and dwarf conifers. We also have one of New England's largest selections of rare specialty Alpines, perfect for the trough or rock garden.

Free 120-page catalog when you visit us.

To send for catalog, include \$3.00

Oliver
NURSERIES, INC.

1159 Bronson Road, Fairfield, CT. 06430
(203) 259-5609 (Sorry we do not mail order.)



Calochortus Fritillaria

Other Western Native Bulbs

C.H. Baccus
900 Boynton Ave.
San Jose, CA 95117
(408)244-2923

SASE For July mail order list. Spring container and Fall dormant bulbs sold by appointment only.

茶
花
林



CAMELLIA
FOREST
NURSERY

Hardy Camellia
Dwarf Conifers
Rare Asian Trees
and Shrubs

Catalog: \$1.00

125 Carolina Forest Road
Chapel Hill, N.C. 27516



...WE SHIP ALMOST ANYWHERE...

Hardy Heaths and Heathers
For All-Year Garden Color!

Heaths and Heathers
Box 850 Elma, Wash. 98541

Send stamp or SASE for free
list of 100 cultivars.

Nursery visitors welcome!
62 Elma-Monte Road (206) 482 3258

Rock Spray Nursery inc.

P.O. Box 693 Truro MA 02666
Garden Shop on Depot Rd.

New England grown Heather

We grow the hardy cultivars of Calluna and Erica in 4", 5 1/2" and 1 gallon pots. Excellent availability of cultivars selected for their unique foliage and flower color. Visit our garden shop April-Oct. We ship UPS the year-round! Wholesale-Retail

Color catalog loaded with all the information you will need in selecting plants for your garden only \$1.00. (508) 349-6769

EXCITING PLANTS
FROM AROUND
THE WORLD

TREES, SHRUBS,
PERENNIALS,
& VINES

MAIL
ORDER
CATALOG
\$1.00

BILL JANSEN
DIANA REECK

1602 NE 162nd AVE.
VANCOUVER, WA 98684

COLLECTOR'S NURSERY

ALL PLANTS NURSERY PROPAGATED

Wildflowers of the Southern Appalachians

Choice, hardy, reliable, showy.
FROM OUR NURSERY TO YOUR GARDEN.
be it woodland, rock, moist or dry.

Send \$2 for 44 pp. illustrated descriptive catalog or SASE for list of wildflowers, hardy ferns and perennials.

Sunlight Gardens

Rt 1 Box 600-R4
Andersonville, Tenn. 37705

Alpine, Primula and Auricula Seed.

Field House Alpines

Leake Road, Gotham, Nottinghamshire, NG11 0JN
England

Sole Agent for the United States and Canada:

June M. Skidmore
6730 West Mercer Way
Mercer Island, WA 98040

Send \$1.00 for List

Foxborough Nursery, Inc.



Growers of: **Dwarf and Unusual Conifers, Broadleaves and Trees**
Custom Grafting & Liners Available

LANDSCAPE DESIGN & INSTALLATION

W. David Thompson
Street, Maryland 21154

CONIFER & ROCK GARDENS

By Appointment Only
(410) 836-7023

Retail & Wholesale

PERENNIALS, WILDFLOWERS, ROCK GARDEN PLANTS, CONIFERS, FLOWERING SHRUBS

SEND \$3.00 FOR OUR
PERENNIAL REFERENCE GUIDE
SORRY, NO SHIPPING

Sam Bridge
Nursery N' Greenhouses

437 North Street, Greenwich, Conn. 06830
(203) 869-3418

Homeplace Garden

Exceptional List of Rhododendrons,
includes Dwarf Species and Hybrids,
Azaleas, Dwarf Conifers, Maples,
and Choice Natives



Write for Catalog, \$2

Rt. 1 PO Box 300
Commerce, GA 30529
Phone (706) 335-2892

COLLECTORS DWARF BULBS

Our 1992 catalogue contains many old favorites for Garden and Alpine House.
In addition, we offer numerous rare and new introductions.

Full and Descriptive Catalogue \$3.00

POTTERTON & MARTIN
Nettleton, Nr. Caistor, North Lincs.
LN7 6HX, ENGLAND
tel 472-851792

LIFE FORM REPLICATORS

Write for Seed List with 2000 kinds
of perennials and rock plants
\$2.00

PO Box 857
Fowlerville, Michigan 48836

Also wanted: Seed collectors and
growers—let us know what you can supply.

Rocky Mountain Rare Plants

Wild Collected and Cultivated Seed of Cushion and Saxatile Plants
Send \$1 for November catalog to PO Box 200483, Denver, Colorado 80220.

CHADWELL SEEDS (Est. 1984)

Offers selection of wild seed from the Himalaya and Japan suitable for rockery and woodland garden.

2 \$ bills for lists:

Chris Chadwell, 81 Parlount Road, Slough, Berks.
SL3 8BE, ENGLAND.

Northwest Native Seed

Wild collected seed from the Pacific Coast to the Northern Rockies of Montana. Offered will be an eclectic selection of alpine, perennial, and woody species from *Talinum okanoganense* to *Larix lyallii*. *Astragalus*, *Calochortus*, *Douglasia*, *Eriogonum*, *Lewisia*, *Lupinus*, *Penstemon*, *Phlox*, *Viola* spp., etc. will be well represented in this year's list. For a catalog send \$1.00 (credited on orders).

Northwest Native Seed

Ron Ratko
915 Davis Pl. S.
Seattle, WA 98144

WOODLAND ROCKERY

6210 KLAM ROAD
OTTER LAKE, MI 48464

Offering my favorite
wild flowers / rock garden plants
reminiscent of forest floors and mountain meadows.

Shipping within USA only

All wildings nursery propagated

Mail order catalog \$1.00

SCREAMING HEAD NURSERY

Offering a wide variety of expertly gathered, cleaned and labeled seeds of southeastern United States wildflowers, shrubs and trees, as well as other plants suitable for rock gardens or the alpine house.
Sorry, no foreign orders at this time - Pricelist \$1.00.

2184 Ambergate Lane #E West Palm Beach, FL 33415-7269
(407) 964-8829

Hi-Mountain Farm

Wildflowers, Ferns, Prairie Wildflowers

Wholesale Catalog, 50¢
We ship UPS 12 months

Rt. 2 Box 293
Galena, MO 65656
(417) 538-4574

Pacific Horticulture Gardens and Wildflowers in **SPAIN**

with Christopher Brickell, VMH
April 18 - May 9, 1993

For details of this extraordinary tour contact

Harry Andersen, Andersen Tours
23 Orinda Way, Orinda, CA 94563
510/254/8433

Seed Germination Theory and Practice

by Dr. Norman C. Deno

First ed. SOLD OUT; 2nd ed. available May '93.
Precise data on 3000 species and extensive information on stimulating germination with gibberelic acid. \$12 if you bought 1st ed.; \$20 for first-time buyers. Order by May to insure copy. Postage free in USA and Canada and via surface mail overseas.

Write Dr. Norman Deno, 139 Lenor Dr., State College, PA 16801



Box 74
70800-Ostrava-8
Czechoslovakia

We provide all year for your Alpine Garden:

1. Seed of Alpine Plants
2. Alpine Plants
3. Orchids for Garden or Pot Culture
4. Cactus and Succulents, Seed or Plants
5. Bulbs and Rhizomes
6. Grasses and Ferns

Please write us
for Catalog and Details.
Enclose \$US 2 in bills.

WOODLANDERS

NURSERY GROWN TREES, SHRUBS,
PERENNIALS,
SOUTHERN NATIVES & EXOTICS

Please send \$2.00 for mail-order list or
\$3.50 to include Descriptive Catalog #2.

WOODLANDERS, DEPT. RG
1128 COLLETON AVENUE
AIKEN, SC 29801



EARTHWORKS

presents . . .

- Handcast Geometric & Oval Containers for Rock/Patio Gardeners
- Choose from Granite, Chalk, Brownstone
- Lightweight & Porous - or New Water-resistant Troughs for Moisture-loving Plants!
- Shipped Throughout the U. S. and Canada

Send SASE for
Descriptive Price List

. . . the
Tradition and Fun
of

**HYPERTUFA
TROUGHs**

P. O. BOX 67 • HYATTVILLE, WY 82428

UNIQUE, RARE, FRESH SEEDS!

Collected in High Mountains of
Turkey, Turkish Kurdistan, Greece,
Bulgaria, and the Alps.
\$1.75-\$4.00 per packet. Descriptive
price list, \$2, credited on orders.

**Josef Jurásek, Lamacova 861
15200 Praha 5, Czechoslovakia**



A • R • G • S BOOKSTORE

New Offerings

Alliums*—NEW, by D. Davies	\$24.00
Alpines '91 Conference Report	\$22.00
Alpines in Color, by W. Ingwersen.....	\$10.00
Book of the Scottish Garden, by F. Young.....	\$24.00
Conifers—2nd Edition*, by van Gelderen &van Hoey Smith....	\$52.00
Flora of the Great Plains*, by Great Plains Flora Assoc.	\$50.00
✓ Hellebores, by B. Mathew,	\$45.00
Himalayan Cobra-lilies (Arisaema)*, by U. C. Pradham.....	\$24.00
The Genus Hosta, by W. G. Schmid	\$48.00
The Hosta Book*, by Aden.....	\$24.00
* The Iris of China*, by Waddick & Yu-tang	\$23.00
The Genus Primula, by J. Halda.....	\$36.50
* Manual of Alpine Plants 2nd Ed.*, by W. Ingwersen.....	\$24.00
Manual of Cultivated Conifers, by Krussmann.....	\$52.00

Additional Titles

The Alpine House*, by R. Rolfe.....	\$22.00
Alpines*, by W. Ingwersen	\$45.00
Alpines in the Open Garden*, by Jack Elliott.....	\$23.00
The Bernard Harkness Seedlist Handbook, by Harkness et al.....	\$23.00
Bulbs*, by J. Byran.....	\$90.00
Campanulas*, by P. Lewis & M. Lynch	\$22.00
Cuttings from a Rock Garden*, by H. Linc Foster & L.L. Foster ..	\$23.00
Daffodils*, by D. Barnes	\$18.00
Gardening with Native Wildflowers*, by James & Foote.....	\$25.00
The Genus Lewisia*, by B. Mathew	\$23.00
Manual of Saxifrages*, by D. A. Webb & R.J. Gornall	\$40.00
Rock Gardening, by H. Linc. Foster.....	\$18.00
Rock Gardens through the Year*, by Foerster	\$21.00
Rocky Mountain Alpines*, by Alpines 86 Int'l Conference.....	\$30.00
Synoptic Guide to the Genus Primula*, by G. K. Fenderson	\$32.00
Alpine Wildflowers of the Rocky Mountains*, by Duft & Moseley....	\$7.00
Auriculas*, by B. Hyatt	\$14.00
Australian Plants*, by Elliott	\$15.00
Botany for Gardeners*, by B. Capon	\$23.00



A • R • G • S BOOKSTORE

Conifers for your Garden, by A. Bloom.....	\$15.00
Creative Propagation*, by P. Thompson.....	\$26.00
The Cultivated Hemlock*, by J. C. Swartley	\$23.00
Dictionary of Plant Names*, by A. J. Coombes	\$8.00
Dionysias, by C. Grey-Wilson.....	\$38.00
The Dolomites, by R. Farrer.....	\$8.00
Flowers of Wyoming's Big Horn Mts & Big Horn Basin, by Jensen	\$13.00
Garden Plants for Connoisseurs*, by R. Lancaster	\$23.00
Gentians*, by F. Kohlein	\$23.00
The Genus Cyclamen*, by C. Grey-Wilson	\$22.00
The Genus Pleione*, by P. Cribb & I. Butterfield	\$25.00
Hardy Orchids*, by P. Cribbs & C. Bailes	\$38.00

Used Books

Pleasures and Problems of a Rock Garden*, by L. B. Wilder.....	\$35.00
The Rock Garden*, by E. H. Jenkins.....	\$20.00
Rock Garden & Alpine Plants*, by H. Correvon	\$30.00
Rock Garden & Alpine Plants*, by T. W. Sanders.....	\$25.00

* denotes a hard cover

Back issues of the ARGS Bulletin are available: 1990-1992 issues\$4.50 each, 1970-1989, \$2 each, or \$5 per year; 1943-1969 (many not available), \$4 each; Shipping, First Issue, \$.75, each additional, \$.25. Following items are postage paid: ARGS Dodedcatheon Decal, \$1.25; Decal pins; \$3.25; "Seeds—methods," \$2.50; "Troughs—construction and plants," \$3.50; Library Binders, \$6, \$7 overseas.

Please mail inquiries and orders to:

Ken Nitschke (517) 835-4325

American Rock Garden Society Bookstore

1071 South Acaule Lane, Midland, MI 48640 USA

Please print name and address clearly. Country of origin and postal code must be included. Allow 8-12 weeks for overseas shipment. Orders must be prepaid in US dollars by check on a US bank or by intl. money order (VISA and MC accepted—include signature, date of exp., and full acct. #). Add postage and handling

First Book, US.....	\$3.00
Outside US	\$4.00
Each Additional Book	\$1.50

Order Now for Christmas

Chapter Chairpersons

Adirondack	William Dress, 716 Elm Street Ext., Ithaca, NY 14850
Allegheny	Al Deurbrouck, 6915 Hilldale Drive, Pittsburgh, PA 15236
Berkshire	Rowland Redington, 1169 Mohawk Rd., Schenectady, NY 12309
Columbia-Willamette	Richard Wagner, 2047 SE 20th, Portland, OR 97214
Connecticut	Richard Redfield, 379 Brook Rd., Box 324, Scotland, CT 06264
Delaware Valley	Morris West, PO Box 75, Brogue, PA 17309
Emerald	Virginia Sebring, 463 Lindley Lane, Eugene, OR 97401
Gateway	June Hutson, 10601 Knollside Circle, St. Louis, MO 62123
Great Lakes	Tony Reznicek, 890 Wickfield Court, Ann Arbor, MI 48105
Hudson Valley	Thomas Stuart, PO Box 517, Croton Falls, NY 10519
Long Island	Shelley Herlich, 43 Greenfield Lane, Commack, NY 11725
	Fred Knapp, 58 Kaintuck Lane, Locust Valley, NY 11560
Manhattan	Lawrence Thomas, 340 E. 74th, #11G, New York, NY 10021
Minnesota	David Vesall, 9850 Heron Ave. N., White Bear Lake, MN 55110
Mt. Tahoma	George Dusek, 26121 150th Ave. East, Graham, WA 98338
New England	Jennifer Quigley, 21 Worley St., West Roxbury, MA 02132
Newfoundland	Bodil Larsen, Box 50517, SS#3, St. John's, Newfoundland A1B 4M2
Northwestern	Evelyn Douglas, 11907 Nevers Rd., Snohomish, WA 98290
Ohio Valley	Grazyna Grauer, 1081 Blind Brook Drive, Columbus, OH 43235
Ontario	Trevor Ashbee, 57 Winston Cr., Guelph, Ontario, N1E 2K1, Canada
Piedmont	Bobby Wilder, 1213 Dixie Trail, Raleigh, NC 27607
Potomac Valley	Stephen Gable, 10946 Mission Ridge Dr., Manassus, VA 22110
Rocky Mountain	Dick and Ann Bartlett, 1569 S. Holland Ct., Lakewood, CO 80232
Shasta	Jeanette Axton, PO Box 177, Etna, CA 96027
Siskiyou	Vanca Lumsden, 625 Gibbon Rd., Central Point, OR 97502
Southern Appalachian	Jude Gregg, 6917 Cresthill Drive, Knoxville, TN, 37919
Watnong	Barry Yinger, PO Box 565, Far Hills, NJ 07931
Western	Jana Olson Dobrinsky, 917 Avis Dr., El Cerrito, CA 94530
Wisconsin-Illinois	Tom Horner, 25706 Malchine Rd., Waterford, WI 53185

Bulletin Staff

Editor	Gwen Kelaidis (303) 322-1410 1410 Eudora Street, Denver, Colorado 80220
Advertising Manager	Al Deurbrouck (412) 653-0281 6915 Hilldale Drive, Pittsburgh, Pennsylvania 15236
Editorial Advisors	Brian Bixley, Toronto, Canada Margery Edgren, Woodside, California Grazyna Grauer, Columbus, Ohio
Guest Artists	Rob Proctor Ned Lowry Libor Slatiska Marnie Flook Josef Slégl Louise Roloff Loraine Yeatts Dick Bartlett Ann Bartlett Panayoti Kelaidis Brent Heath Don Jacobs Will McLewin Linda Evans Sandy Snyder Elisabeth Sheldon Irma Gourley Cindy Nelson-Nold J. S. DeSanto Joan Schwarz Linda Evans

Officers

President	Norman Singer	(413) 258-4486 HC 66 Box 114, Sandisfield, MA 01255
Vice President	James L. Jones	(617) 862-9506 45 Middle St., Lexington, MA 02173
Recording Secretary	Alice Lauber	(206) 546-5310 18922 45th Place NE, Seattle, WA 98155
Treasurer	Robert Mills	(609) 924-5003 150 Prospect Avenue, Princeton, NJ 08540
Administrative Member-at-Large	Ernest O'Byrne	(503) 935-3915 86813 Central Road, Eugene, OR 97402
Immediate Past President	Sandra Ladendorf, Chapel Hill, North Carolina	
President Emeritus	Harold Epstein, Larchmont, New York	

Directors of the Board

1990—1993	David Vesall, White Bear Lake, Minnesota Morris West, Brogue, Pennsylvania Barrie Porteous, Agincourt, Ontario
1991—1994	Stephen Doonan, Issaquah, Washington Phyllis Gustafson, Central Point, Oregon Ernest O'Byrne, Eugene, Oregon
1992—1995	Panayoti Kelaidis, Denver, Colorado Margery Edgren, Woodside, California Ev Whittemore, Penrose, North Carolina

Managers

Executive Secretary	Jacques Mommens	(914) 762-2948 PO Box 67, Millwood, NY 10546
Seed Exchange	Pat and John Bender	(206) 364-1561 4123 NE 186th Street, Seattle, WA 98155
Bookstore	Kenneth Nitschke	(517) 835-4325 1071 South Acaule Lane, Midland, MI 48640
Archivist	Marnie Flook	(301) 778-4038 23746 Lovely Lane, Chestertown, MD 21620
Slide Collection	William Plummer	(607) 962-2640 10 Fox Lane East, Painted Post, NY 14870
Library	Janet Evans, c/o Pennsylvania Horticultural Society, 325 Walnut Street, Philadelphia, PA 19106	

You are invited to join the American Rock Garden Society. Membership includes a subscription to the *Bulletin* and participation in the seed exchange, as well as other benefits. Annual dues: US \$25; UK £17; Canada \$32. Payment by check on a US bank, International Money Order, VISA, MC, or check in appropriate currency from country listed above. General Membership, \$25 (domestic or foreign, single or joint); Patron, \$75; Life Member, 40-59 years old, \$500; over 60 years old, \$450. Membership inquiries and dues should be sent to Executive Secretary, ARGS, PO Box 67, Millwood, NY 10546.

Address editorial matters pertaining to the *Bulletin* to the Editor. Advertising matters should be addressed to the Advertising Manager, 6915 Hilldale Dr., Pittsburgh, PA 15236. The *Bulletin* is published quarterly by the American Rock Garden Society, a tax-exempt, non-profit organization incorporated under the laws of the State of New Jersey. Second Class postage is paid in Millwood, New York and additional offices. Postmaster: Send address changes to *Bulletin of the American Rock Garden Society*, (ISSN 0003 0864), PO Box 67, Millwood, NY 10546.