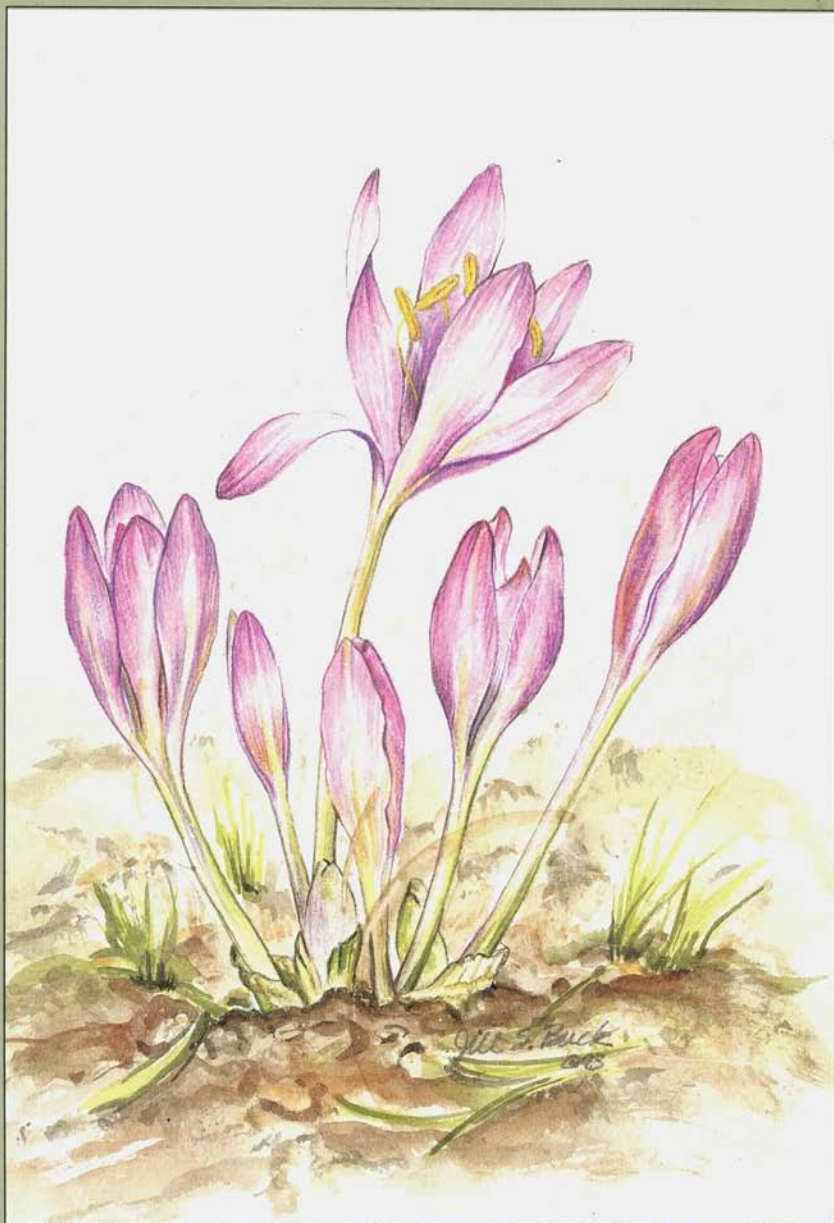


Bulletin of the American Rock Garden Society



Volume 51 Number 4

Fall 1993

Cover: *Colchicum autumnale*

by Jill S. Buck of Westminster, Colorado

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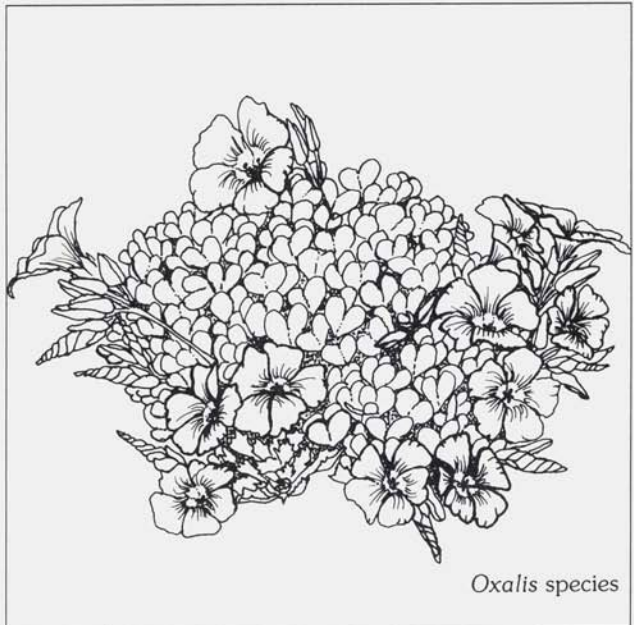
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Malvastrum species



Oxalis species

Mountain Plants of Ecuador and Peru

by Betty J. Lowry

Ever since I acquired a copy of Sampson Clay's *The Present Day Rock Garden* years ago, the Andes have fascinated me more than any other area. John Watson's exciting accounts and photographs only fanned the flames. The diversity of Andean plants includes some bearing close resemblance to those of our gardens, but it is the many unusual plants, either South American specialties or weird and wonderful adaptations of familiar families, which can whet the most jaded appetite. So, when David and Donna Hale invited us to accompany them to Ecuador, Chile, and Peru, we accepted with alacrity. I would like to describe here some of the tropical mountain plants of Ecuador and Peru. The choice of subjects is strictly a personal one, and difficult in view of the many marvelous plants that we saw.

Plant names are based on *Flora of Peru* and *Flora of Ecuador*, both of which are incomplete. In addition, I have adopted some of the names given by Robert Rolfe for Ecuadorian plants. Many of the names are tentative, and there are some for which I can give no name at all. I would be pleased to have

input from readers familiar with these areas regarding identities of any of the plants discussed. The taxonomy of South American plants seems to be in great flux, and the names of Peruvian plants in particular are likely to be obsolete as the publication of the *Flora* commenced nearly 60 years ago.

Most of the plants described below came from elevations of 3500-4600 meters (10,500'-15,000'). The major areas visited in Ecuador were Volcan Cotopaxi, Volcan Chimborazo, Volcan Cayambe, and Cajas NRA, and in Peru, Cordillera Blanca (Ancash) and the area east of Lima across the Andean divide in Junin Province, a limestone region that was particularly promising in view of the high concentration of choice species listed in the *Flora* for that area.

The Asteraceae of Peru and Ecuador are abundant and have some specialized genera that are especially interesting. *Wernerias* are paramount among these. Most conspicuous is *Werneria nubigena*, a huge, glistening white daisy backed with red. This spectacular daisy is essentially stemless and has grayish-green, strap-like foliage that reminds one of a patch of *Narcissus*

foliage. It grows in various habitats, with tussock-formers or in moisture-loving plant communities. Very much different is *Werneria humilis*, one of the finest cushion daisies I have seen (photo, p. 304). The smooth, green cushions are composed of minute, tightly packed leaves, and the 20-mm white daisies are stemless on the plant. The cushions can attain well over 30cm in diameter. It is truly a plant to be desired. It seems to prefer raised, hummocky areas. At Cajas in close proximity to *Werneria humilis* was a pink-flowered werneria (photo, p. 304). This plant was larger in all its parts than the first, with stiff, 8-mm leaves forming a firm, compact cushion. Its rose-pink, stemless heads were a full 3cm broad. Though only a stone's throw away from *W. humilis*, this species preferred moister depressions, where it made smaller cushions than the former. On high, bleak, rocky areas there resided another werneria with large, almost hemispheric domes, whose stemless, white flowers were backed pink. I found tiny *W. pygmaea*, described as white with a violet center, fascinating if not showy. I had never seen a deep violet pappus before!

One of the most extraordinary daisies is one to which I can put no definite name (photo, p. 303). Absolutely sessile on a flat rosette of rhomboid, much-veined, crinkled leaves sits a huge, golden-yellow daisy with narrow rays. The flower heads varied from 6.5-7.5cm in diameter. The bullate leaves are shiny green backed white. Could it be *Liabum bullatum*? There is a stunning variation in one area of the Cordillera Blanca whose veined and crinkled leaves were totally gray with hairs.

The tribe Cichoriae is well represented in Ecuador. There are many charming, dwarf, rosette-forming "dandelions" with large, stemless heads of

white or yellow. But my favorite is *Hypochoeris sessiliflora*, which in gritty open areas forms large, firm cushions composed of the rosetted, slightly toothed foliage. On this mound the stemless, golden dandelions perch.

Apart from these, there were many other interesting composites. There were several high elevation species that form mats and cushions, some with discoid heads, others whose flowers were not seen. Some plants definitely had a New Zealand flavor. Several looked very much like celmisias, and another bewitching, small mat-former was reminiscent of *Raoulia eximia*. Neither of the floras is complete for Asteraceae, so attempts to identify members of this group were particularly frustrating.

The Gentianaceae of Peru and Ecuador are numerous and often exciting, and most of those we saw are well worth description here. Nowadays, only plicate species are classified as *Gentiana*, and those without plicae fall into *Gentianella*. This leaves *Gentiana sedifolia* as the only true gentian in these countries. It follows the family tradition in being a bright, sky-blue. The flowers are often brushed with darker violet externally, giving a distinctly striped bud. It is extremely variable, some plants having tiny flowers of bright, deep blue, others much larger flowered, often pale blue or even white. Amongst wet cushion communities, plants sometimes formed considerable tight patches of small foliage, but in drier habitats the plants, though often larger-flowered, were frequently quite small.

Gentianella rupicola is widely distributed in Ecuador. It is a dwarf plant with very compact mats of small, rosetted foliage. The satiny flowers vary from rather crocus-like to starry and are large for the plant, up to 2.5cm long. There is but a single flower per stem,

and the overall height is only 5cm. The color varies mainly through lavender to pink, with an occasional white. Sometimes the exterior of the flower is purple with a lighter interior. It is a very choice species. On the great volcanoes (which make their own weather), it can be found in sandy open areas and sparsely vegetated flats. Elsewhere it occurs in turfy situations, even growing in cushion vegetation.

Bizarre and beautiful might be a description of a southern Ecuador specialty, *Gentianella hirculus*. Its 2-cm yellow globes are externally striped scarlet and do not open. It is quite a neat plant, the small basal foliage forming a compact mat. In open situations the entire plant is only about 7cm in height with only one flower per stem. It usually occurs in turfy places, but sometimes occurs on lightly vegetated, rocky slopes. In shady places the plant becomes much taller and carries several flowers per stem.

Yes, we did see red gentianellas in Peru! The first and showiest of these was *Gentianella weberbaueri* (photo, p. 280). This, the largest *Gentianella* we saw, was up to 40 cm tall, the largest specimens forming a pyramidal fountain of satiny, nodding, red, salverform flowers. These were up to 3.5cm in length. The texture, color and form were exquisite. The stem of this species was stout and the leaves fleshy. The plant appeared short-lived, though it is listed as a perennial. It grew in the Cordillera Blanca at 4400 m on slopes and benches. For those who especially love the tiny, well-proportioned plants of the hills, *Gentianella saxicola* and *G. vaginalis* must take pride of place. Because these two species are superficially very similar, and my identifications less than certain, I will discuss them together. The plants are pulvinate-caespitose, forming tight, little mats of 6mm leaves. The 12mm, ovoid, red

flowers occur singly on short, leafy stems, the whole being little more than 4cm tall. Both species are plants of open limestone slopes of the Junin region, often growing in humus-filled crevices of limestone pavements.

A rather unprepossessing-looking, coarse-foliaged plant out of flower, *Gentianella incurva* makes up for it with its clusters of 2.5cm bright yellow globe flowers. As the flowers age, they assume lovely apricot tints. This, a plant only about 10cm tall, grows on open, vegetated slopes, a stone's throw from opuntias and dwarf *Ephedra*. Yet another distinct species is *G. tristicha*, which looks like a little clump of grass until the inflorescence of 18-mm, purple flowers bursts forth on 10cm stems. *Gentianella peruviana*, a plant of Junin limestones, is a nice, small plant with good-sized, blush-pink flowers. Before leaving Gentianaceae, I would like to call attention to the unusual genus *Halenia*. The most attractive of these was *Halenia weddeliana*, a tidy little plant of about 10cm with several long-spurred, greenish-yellow flowers that look more like columbines than gentians. It grew along with *Gentianella rupicola* in open, sandy areas as well as in denser plant communities.

Onto Malvaceae, home of prestigious *Nototriche*. Since the days of Miss Stafford, this pulvinate hollyhock with its crocus-like flowers of many colors has become one of the ultimate challenges both to acquire and to grow. Our first sight of *Nototriche jamesonii* on the dark volcanic sands of Chimborazo was a great thrill. This species (syn. *N. chimborazoensis*, *N. hartwegii*, photo, p. 282) bears sumptuous, satiny, lavender goblets on its dense cushions of gray-fingered leaves. Immense cushions of *Nototriche* were also seen on Volcan Cayambe, likewise with large, lustrous, light violet flowers

(photo, p. 283). This may have been *N. jamesonii* or the similar *N. phyllanthos*. The delicate texture, coloration, and sheen of these nototriches is similar enough to that of *Gentianella rupicola* to be confused in a photograph in one book! The nototriches of Peru encompass a broad range of colors, including the legendary reds. The two we found were in the lavender to purple range. *Nototriche macleanii* (photo, p. 283) has luminous, lavender cups even larger than those of *N. jamesonii*. Its habit is entirely different, however. Rather than being a cushion-forming plant, this species forms small, rosetted clumps of crowded, tiny (5mm), gray, flabellate leaves at the surface of the soil. Though coming from a limestone area, it is not a saxatile or scree plant but nestles down in a rather loamy soil. The third species that appeared to be a *Nototriche* was a tiny plant that tended to grow in cushion vegetation. Its flowers were only about a third the length of those of *N. macleanii*, lavender with darker purple outside. It was different from the others we had seen also in its greener, pinnate leaves.

Other Malvaceae that I found interesting were the acaulescent malvas-trums. One very attractive species made a flat rosette of stalked, hairy leaves and purple, stemless flowers. A similar, smaller, white-flowered one was also seen. Quite different was *Malvastrum weberbaueri*, a handsome, yellow-flowered species with cut, gray leaves. We found it in a small area of decomposed granite on a shoulder of the Cordillera Negra (photo, p. 302).

Sharing the spotlight with nototriches as the prima donnas of the Andean plant world are those unusual adaptations of *Viola*, the rosulate violets. Here I include those which look rosulate to the eye or are listed in a flora as rosulate. Robert Rolfe tells us that *Viola*

bangii is not in the rosulate group, but its lovely rosettes of glossy, green foliage are certainly unusual (photos, p. 277). The quite large, white flowers are variably lined and backed with violet. It is interesting and perhaps even encouraging, from a horticultural standpoint, that this plant is at home in a variety of habitats from open, gritty, volcanic areas and rocky slopes to moister, turfy situations. An unidentified little, gray-rosetted species on the sands of Chimborazo was more typically rosulate. Its loose clumps of small, gray rosettes blended into the background of the dark grit. The tiny, blackish-violet-and-yellow flowers are evident only on close examination. In Peru, the only rosulate *Viola* we saw looked even less rosulate than *V. bangii*! This was *V. weibelii*, a little treasure from limestone crevices and detritus near Cerro de Pasco (photo, p. 280). It is the foliage that makes this species so unrosulate-like. Its green leaves are long and serrated, the serrations attenuating to almost hair-like acuminate points. But it is the flowers that are so endearing. They are cozy, little, white violets, very fat and round, the lower petal small with a large yellow spot. The plant was only about 2.5cm tall and quite floriferous. This was one of the most exquisite miniatures of the trip.

Geranium is well-represented in the Andes. We encountered quite a spectrum of types: low loose mounds to pulvinate mats and cushions; leaves green to silver, large to minute; flowers pink to white, starry or full-petalled, large or small. It is the dense mats and cushions that Clay calls the Andina group that compose our primary interest: names like *G. nivale*, *G. muscoideum*, *G. minimum*, and *G. sericeum*, plants to die for as described by Farrer and Clay. Regretfully, all will have to remain nameless here. On Chimborazo there grows a superb,

silvery, cushion species. Its crowded little silky leaves are less than 4mm broad, and the white to pink flowers (usually white with rose veins) are stemless on the cushion. It inhabits sandy and gritty slopes, and any interstices of the cushions are filled with blowing sand. In windy locations the plant assumes hemispherical to nearly spherical forms of considerable size. In Peru the best geraniums were found in the high limestones of Junin. One of the most sumptuous of these was a gorgeous mat-forming species with brilliant, shining, silver leaves and large, white flowers, with larger leaves than those following. Another silvery species with equally large flowers formed the tightest mats of crowded, minute leaves (under 4mm). A third was similar to the last, but had small, white flowers. It's possible that these were all variations within one species, but this is an area rich in pulvinate-caespitose species. They were all saxatile plants, inhabiting horizontal or vertical limestone crevices.

The small verbenas are enchanting plants. Two in Peru particularly caught my fancy. One was a totally prostrate, loosely mat-forming species with shiny, dark green, tripinnate leaves, and 1-cm., deep blue-violet flowers that were basically stemless and superficially phlox-like. *Verbena villifolia* was very different with its gray-green mat of trifid leaves and near-capitate heads of small, pink flowers on short stems. It looked especially appealing when splayed out on limestone rocks.

Cacti were a considerable source of pleasure in our travels through Peru. Foremost among these was *Opuntia floccosa* and its allies, all low, clump-forming species with long, gray hair. There was a great deal of variation in the plants we saw; possibly more than one species was involved. Those seen on the northern leg of our trip were only moderately hairy and bore spectac-

ular, scarlet flowers. Elsewhere the flowers were bright yellow. Other than flower color, the variation in woolliness and size was considerable. It is my recollection that some of the highest elevation plants were the most shaggy and had the largest pads. They grew on vegetated slopes, the gray-white clumps earning a nickname of Andean vegetable sheep. It is my impression that these cacti are not highly xerophytic.

Valerianaceae is another family exhibiting unusual habits. For instance, *Valeriana microphylla* is very Hebelike. But an oft-repeated theme was again a rosulate structure. *Valeriana rigida* is a most striking example of this. Here the rosette is formed by narrow, wickedly sharp-pointed leaves centered by numerous, small, white flowers. This species is found in open sandy areas or in tussock or other vegetation. Another interesting rosetted species is *Stangea rhizantha*, whose dark green rosette leaves are strongly bullate, again with many tiny, central, white flowers. This one grew amongst limestone rocks.

We saw a few very nice, small buttercups, of the yellow most familiar to us, but there are red species in the Andes as well. We were fortunate to see two of these. The first one was a quite large, orangey-red, rather primitive looking and coarse, but decidedly interesting. But this didn't hold a candle to *Krapfia lechleri*, which we found near Cerro de Pasco in Peru (photo, p. 280). This ugly name belongs to a delightful, dwarf, red species. To me, it was a *Ranunculus*, but there were no red-flowered species of *Ranunculus* in the *Flora*. Hopefully, it will be called *Ranunculus* again as it was in Clay's time (as *Ranunculus haemanthus*). This little species has solitary, 2-cm., bright red flowers on short stems that elongate to 6cm in seed. The leaves are small, greenish, and divided. It is a

plant of limestone crevices at high elevations.

One of our best finds on Volcan Cayambe in Ecuador was the elegant *Ourisia chamaedryfolia* var. *chamaedryfolia* (Scrophulariaceae, photo, p. 279). This is a miniature compared to the more southerly var. *elegans*. The tubular, red flowers are 1.5cm long and are held on 7cm stems above the small, scalloped, green foliage. A cool, moist location on moss or rocks was crucial for this plant. Ecuador also had its own versions of scarlet castillejas, some very much like ours. *Castilleja pumila* was quite irresistible at only about 2-3cm, a pixie paintbrush (photo, p. 281). It grew huddled in communities of other small plants. I've never paid much attention to the genus *Eryngium*, as most are large plants. But an Andean twist on this genus gives us a delightful species in *Eryngium humile*. It is truly dwarf at about 5cm. The glossy, faintly scalloped foliage is topped by a flower consisting of shining white bracts with a near-black center. It occurs amongst sparse to thick vegetation. Another miniature I admired greatly was an unidentified *Lysipomia* species (Lobeliaceae), whose stemless, little, white flowers are reminiscent of *Pratia* species. These tiny plants favored moist locations in the open.

I have a great love for polsters, mats, and cushions, whether the flowers are significant or not. My wish to see azorellas in the Andes was almost instantly gratified, and we saw a variety of these interesting members of the parsley family. I especially enjoyed the large, tight-hummock types. Out of flower they were difficult to identify. A nice one to which I can put a name is *Azorella multifida*, which formed hard, medium-sized cushions of little cleft leaves. It is another Peruvian limestone plant. Though a rich group, we did not see many of the mat-forming

Caryophyllaceae. Most of the arenarias we saw were less than exciting, except for one that spread its mats widely over the rocks, exuding a heady, honey perfume from its many white flowers. Several tight mats and cushions may have been the closely related *Pycnophyllum*, but in the absence of flowers or fruit even the family could not be determined with certainty. *Draba* comes to mind when thinking of fine buns and cushions. The best we saw was scree-dwelling *Draba aretioides*, at its best capable of forming wonderful, large, soft gray cushions of fairly large rosettes. The flowers were rather disappointing, which was also true of the other few drabas which we saw. The best of the Brassicaceae in my estimation was an outstanding hard cushion composed of 16-mm rosettes of glossy, narrow leaves. These cushions exceeded 30 cm in diameter in the largest specimens. The plant bore stemless, good light-yellow flowers 6mm across (photo, p. 301). This plant shared Chimborazo's volcanic ash with the likes of *Nototriche* and rosulate *Viola*. One rubiaceaceous dwarf is particularly delightful. It is a densely needled dark green prostrate shrublet which I believe to be *Arctophyllum filiforme*. The mat is quietly and beautifully adorned with little, white, four-pointed stars that burst forth from pink buds. It dwells in sparse, mixed vegetation or open, sandy places.

Two ericaceous shrubs stood out among a number of nice species. They appear to be species of *Gaultheria*, and I would dearly like to know their identities. The first made small mats of tiny (6mm), green leaves, only about 12cm tall. On this mat were borne glowing red urns 8mm in length. The mature fruits were a translucent greenish-gray. This plant grew on thinly vegetated, sandy soils or in heavier soils in denser plant communities up to

4100m. The second species grew with the first in mixed plant communities at fairly low elevations (ca. 3200m). This dwarf shrub owes much of its charm to its crisp, glossy appearance. The leaves are very small, slightly serrate, and intricately veined. The flowers were not seen, but the fruit was bright red.

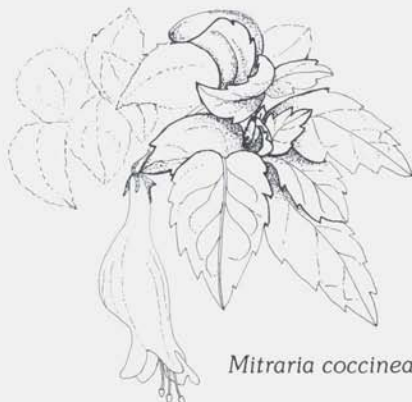
There was so much more, including a wide variety of small ferns. Another important group so far not mentioned is monocotyledonous plants. Irids were the biggest family of these. There were some very nice dwarf *Sisyrinchium*, wee yellows difficult to identify, and little blue *Sisyrinchium porphyreum*. The gem of all was what I now believe to be *Symphyostemon album*, which looked very much like a nearly stemless, large-flowered *Sisyrinchium* with a sumptuously full, white flower. This grew in moist, rich soil at about 4600m. *Alstroemeria pygmaea* was an outstanding representative of the Liliaceae, with stemless, yellow flowers. *Stenomesson humile*, an amaryllid, bore its narrow, scarlet-red flowers at ground level, quite a captivating species. And though I have up to now avoided mentioning more tropical vegetation, I must mention the outstanding red orchid *Masdevallia coccinea* (photo, p. 279). This was fairly plentiful at about 2700m in a narrow gorge that had quite a tropical microclimate. The color of this elegant beauty varied somewhat from coral and orangey-reds to cooler reds. It was undeniably one of the most memorable and most photographed plants of our trip.

When told we were seed-collecting in the tropical mountains of Ecuador and Peru, people often asked, "Can you grow them in your garden?" Well, certainly most of them will not be garden plants, for reasons of winter hardness and other climatic differences. Many would be a real challenge even as alpine house plants, and those

that do grow will often grow out of character. I believe it is commonly found by those who have had a chance to try rosulate violets and nototriches, for instance, that the stem elongates to great proportions (*Nototriche macleanii* seems to be resisting this tendency so far). I think it will be difficult to keep the small Gentianaceae in character, except for some of the less-exciting, non-mat-forming types. Tolerance to winter cold is expected to be limited, but this will be affected by rainfall and temperature patterns. So far, it seems that high summer temperatures may be equally deadly to some of these species. After all, in these tropical mountains, it is never extremely hot nor extremely cold. The more constant day length through the year is yet another major factor that can't be controlled in cultivation. We were unable to get seeds of many of the plants which I have described, but we did collect many other kinds. The optimist in me believes that there will be some among them that will survive with protection, maybe a few even without. Only time will tell. Successful or not, the fun will be in the trying.

Drawings by Lynn Janicki.

Betty Lowry lives and gardens in Renton, Washington.



Mitraria coccinea



High Places in the Andes

by David Hale

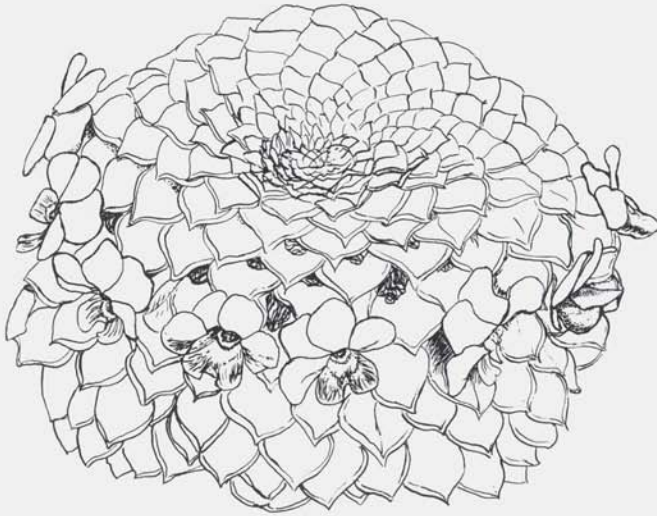
In 1981 I made my first trip to the Andes of Chile, following many of John Watson's guidelines published in 1974 in the *Quarterly Bulletin of the Alpine Garden Society* of Great Britain. Four of us spent three weeks hiking, driving, and camping, and what began as a flower expedition turned out to be a cultural experience beyond my wildest imagination. In the next 12 years, I was able to visit Argentina, Perú, and Ecuador, returning ten times to the Andes. My years of training in the Spanish language allowed me to make many long-lasting friendships where I traveled.

The Andes is the longest mountain range in the world, approximately 4500 miles in length, spanning 65° of latitude from 55° south to 10° north. As the range blocks the east-to-west flow of winds, it acts as a moisture barrier, making the eastern side much drier than the western. The greatest sun exposure is from the north, making the south side of the rocks the cool side, opposite to the Northern Hemisphere. A myriad of different ecological niches exists as we progress from near sea level at 55° south latitude on the

wind-blown steppe through a variety of geological and altitudinal changes. These are coupled with great variation in moisture, sun exposure, and winds.

I would like to begin our journey in the far south of Patagonia, a most picturesque area possessing a very colorful history. Here Indians mixed with English explorers and pioneers, and even our own Butch Cassidy may have paid a visit.

While plants abound in all districts, I always make my headquarters in the small *hosteria* on an island in Lake Pehoe in the Park of the Paine Mountains (photo, p. 281). This dramatic range pops out of the lake at 1700' and soars vertically to nearly 10,000'. Guanacos, the most beautiful of the four members of the camel tribe in South America, roam the park. Condors are a frequent sight, as are numerous other birds; Magellan penguins are nearby on the coast. Plants here are legion. Just a few are multicolored *Oxalis laciniata*, *Calceolaria darwinii*, with flowers like comic human faces, *Primula magellanica*, the dwarf *Alstroemeria patagonica*,



Viola portulacacea

and *Gaultheria antarctica* (prostrate, the blue fruit being the highest part of the plant). Most of the park may be seen by rented auto or on foot.

On about the 41st Parallel in Chile is a wonderful adventure awaiting us. Here the climate is maritime, moist with mild winters. The seafood is delicious, and it is served in a luau style, first cooked in a pit with pork, beef, and multiple vegetables. This is washed down with German-style beer brewed by descendants of the Germans who immigrated here in the mid 1800s. *Fuchsia magellanica*, *Philesia magellanica* (a smaller version of *Lapageria rosea*, the Chilean national flower), *Mitraria coccinea* (a scrambling shrub with luminescent, tubular, red flowers), *Desfontania spinosa* (a shrub with holly-like leaves and candy-corn flowers), and *Mutisia latifolia* (a climber with 3"-diameter pink daisies) are just a few of the attractions.

By crossing through the narrow lake region, known as the Switzerland of South America, you reach Bariloche on the Argentine side. The trip is by

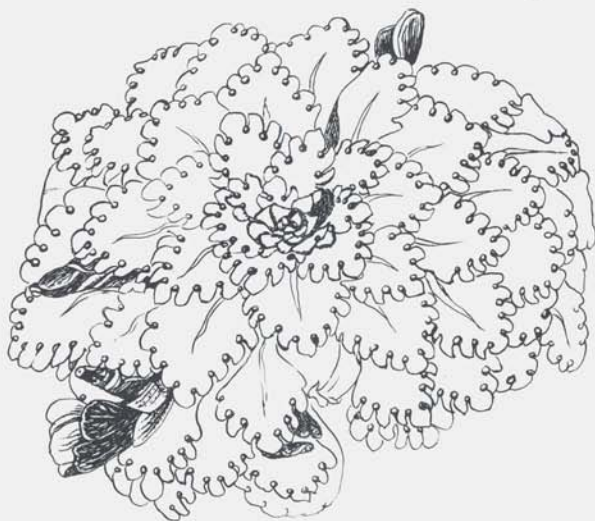
boat-bus-boat-bus through a chain of lakes surrounded by towering, cone-shaped volcanoes.

Bariloche is a European-style resort city on the shores of Lake Nahuel Huapi offering summer hiking and winter skiing. The tundra slopes above, reached by lift, offer what for me is the most memorable wealth of alpine flowers on the continent. Here side by side are over a hundred choice species, many garden-worthy. They include miniature, mat-forming *Calceolaria tenella*, *Ourisia racemosa* (with velvety crimson flowers, growing protected under dripping rocks), *Empetrum rubrum* (a red-berried version of our *E. nigrum*), *Loasa acanthifolia* (with decorative, cork-screw seed capsules), many species of *Senecio*, and the scree-dwelling *Ranunculus semiverticularis*. Below nearer the lake are fields of *Alstroemeria aurantica* of many color variations. Back in the city the introduced Scotch brooms line many streets of Bariloche and are smothered in February with the large, 4"-diameter, electric-orange flowers of *Mutisia decurrens*, another climbing daisy (photo, p. 301).

The central valley of Chile is easily accessible by Highway 5 and has many side roads penetrating the Andes. As we move north the range is a massive uplift minus the conic volcanoes that are characteristic farther south. This valley is quite comparable to the central valley of California and is the bread basket of Chile. Some very fine wines are being produced here, also.

The coastal mountains arising to the west at this latitude assure us of a drier climate even on the Chilean side of the Andes. There are many rosulate violas in this stretch of mountains from about 42° to 32° latitude, a stretch of about 700 miles. These violets are fascinating, mostly mat-forming, with complicated geometric patterns of reticulations on the leaves. Often they are dotted with tiny droplets of golden oil. The capital, Santiago, is at 32° latitude, and nearby are some of the most accessible areas. John Watson, without exaggerating, said that he could have done much of his botanizing by taxi from the capital, so close are the snow-capped mountains to the suburbs of Santiago.

In this section of mountains are found *Ourisia microphylla* (minute buns, and surprisingly saxatile, but don't try it on your scree; it likes moisture), *Viola congesta*, *V. cotyledon*, *V. portulacacea*, *V. phillipii*, *V. atropurpurea*, *Oreopolus glacialis* (a mat just topped with a sheet of yellow-orange flowers), *Calandrinia affinis* (appearing as drifts of snow in wet mountain turf), *C. rupestre*, *C. sericea* (magenta flowers over silky leaves), *Tropaeolum polyphyllum* (yellow-flowered, a true nasturtium with blue-silver leaves), *Schizanthus gilliesii* (with multicolored, orchid-like flowers), *Alstroemeria spathulata* (very *Echeveria*-like foliage; photo p. 301), *Naussauvia revoluta* (the leaves are another geometric miracle), *Chlorea chrysantha* (6" stem, large bright yellow flowers Orchidaceae), *Oxalis geminata* (a red-flowered bun), *Mutisia linearifolia* (with bright red flowers), *Malvastrum humile* (a dwarf with orange, mallow-type flowers), *Hippeastrum* spp., *Cruickshanksia hymenodon* (here the large lavender bracts surround bright orange-red flow-



Viola congesta

ers), *Oxalis microphylla*, and many *Azorella* species.

It is just north of Santiago that Chile shares Volcan Aconcagua with Argentina. At about 23,300', it is the highest point in both the Western and Southern Hemispheres. (This uplift began to rise about 50 million years ago, about the time the European Alps were beginning to be formed.) There are about 75 peaks over 20,000' in the Andes, the tallest all from this point north.

The 1,500 miles from here to the Peruvian border comprise the driest desert in the world. Rain has not fallen in some areas for 400 years. Except in the "wetter" areas in early spring, there are few or no plants. Bulbs and annuals comprise the majority until you are again high in the Andes, usually at 12,000'-14,000'. At high altitudes a variety of wet meadows (*paramos*) and steppe-like regions (*punas*) occur and, of course, the inevitable adjacent screes. Access can be very difficult and tedious. Temperatures can be quite hot, and supplies of food and gasoline not available for hundreds of miles.

The southernmost regions of the desert (the Atacama) nearer Santiago are rewarding in the spring (October-December), and there is a lovely, remote national park, Lauca Park, on the Chilean-Bolivian-Peruvian border at 14,000' that is quite hospitable. It is a wonderland of animals (all four members of the camel tribe), birds, and plants. Here an *azorella* relative (*Laretia compacta*, photo, p. 284) with woody stems grows to monstrous size. People seated upon its cushions appear to be swallowed up. Such plants must be hundreds of years old. The scenery is spectacular, too; a view of Volcan Parinacota reflected in Lake Chungara will be long remembered.

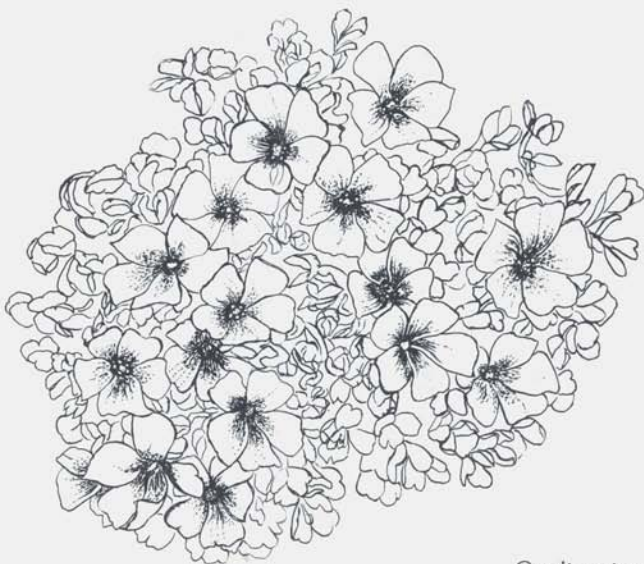
In tropical South America the habitats, weather patterns, and altitudinal variations are multiplied many times. It

is very difficult just to discover when rainy periods occur, as there are innumerable rain shadows, and the climate is often the opposite in Peru from the Andes to the coast. When it is summer on the coast, it is wintry in the Andes. You must remember that summer in the Andes means the dry period, that is, the dry-cold period. Yet no matter where, January-February-March are the best months for flowers in the mountains. The quantity of flowers in bloom improves with each month, but with each week you are closer to the rainiest (and warmest) period. Access in these tropical climes is limited to those areas with decent roads.

The jewel of the Peruvian Andes is the Cordillera Blanca, one of the most famous climbing destinations in the world. It is a miniature of the Himalaya in the sense that it is a compact area of many high peaks. In a 15 mile by 30 mile area there are 30 peaks over 19,000', and half of these are over 20,000'. This part of the range is indented by a number of valleys giving access to the lower parts of the peaks from 12,000'-16,000'—just right for our needs. Mt. Hascaran is here, and at 22,250' is the highest mountain in the tropics. Mt. Alpamayo was voted the most beautiful mountain in the world by an international mountaineering group—which I guess is one way of saying it is *very* beautiful.

Here we are getting into the geographic range of red gentians (gentianellas) and of other Gentianaceae apparently designed by Dr. Seuss, the forms and sizes so unusual as to be unimagined in other alpine areas of the world. Botanizing here is adventure. The plants are poorly known—all the better for plant explorers, as any amazing flower may appear at the next moment.

Of course, where the flora is poorly known, identification of plants was



Oxalis microphylla

difficult, but we are sure we found *Opuntia floccosa* (a woolly, old-man-of-the-mountains-type cactus, which is a low mound, photo, p. 278), *Puya raimondii* (a monocarpic plant with the largest inflorescence in the world), *Liabum* sp., (a 4", yellow daisy acaulescent on a mat of woolly foliage), *Alstroemeria* aff. *pygmaea* (yellow flowered and only 1" high), *Arctophyl-lum filiforme* (a shrubby mat with tiny red buds opening to gleaming white flowers), *Eriosorus* sp. (fern with leaf-like fronds), a bright-red-flowered *Ranunculus* species (dwarf, 3" stems), a fuzzy, mat-forming *Geranium* with sessile flowers, and *Nototriche* species with giant, crocus-like flowers over fuzzy mats of foliage.

No trip to Peru is complete without a visit to the imperial Incan city of Cuzco and the archeological city of Machu Picchu, enshrined on an 8,000' peak overlooking a 180° bend in the mighty Urubamba River with surrounding peaks soaring to 18,000'.

Argentina and Chile are mostly peopled by Europeans, other South American countries by pre-Columbian peoples. This fact, along with the success of the economies, governs the atmosphere of the countries. Chile has the most European feel and the most successful economy; it and Argentina are perhaps the easiest for travel by Americans. Ecuador is probably next easiest.

North of Peru in Ecuador the Andes are split into two separate ranges (as indeed they are in parts of Peru). The main north-south highway passes between two parallel rows of massive, snow-capped volcanoes. Appropriately, it is called the Avenue of the Volcanoes. Occasionally roads lead up into these mountains; elsewhere, several days walking is required to reach them from the highway.

Chimborazo, once thought to be the highest mountain in the world, is 20,800' high, and the summit still retains title to the point farthest from the center of the earth, the added distance due to the earth's bulge at the

equator. You can drive to 16,500' on an excellent gravel road through meadows rich with huge patches of several species of *Nototriche* adorned with large, purple-blue goblets of crocus-like flowers; *Valeriana rigida*, sharp-edged rosettes to 8" in diameter, each with a flat, 2-4" head of white flowers in the center; a *Geranium* species that forms huge, footstool-sized, woolly hummocks on the *arenals* (sand flats) and is covered with white, starry, sessile flowers; the rosulate violet, *Viola bungii*, which actually has a pretty flower; and the enormous buns of *Hypochoeris sessiliflora* with (of course) sessile, bright yellow, 2.5" diameter daisies peppered over its surface.

Farther to the south lies Cuenca, cultural center of Ecuador, a city of beautiful churches. From there you can reach Cajas Park to the west at 12,000'. Here the genus *Werneria* does its best. All species are mats. They tend to have shiny, awl-shaped leaves in their best forms with—you guessed it—sessile flowers of intensely white daisies with yellow discs. The tightest of all is *W. humilis* (photo, p. 304). Occasionally a species with bright pink rays or white rays with pink reverses is seen. Here the plants intertwine to form enormous mats of turf containing many genera. The prize is *Gentianella hirculus*.

Cotopaxi, the highest active volcano in the world at 19,400', is in the center of Ecuador and has a nice access road. Many plants in this area occur elsewhere, but many we saw only on this mountain. In the latter class is the unusual and very decorative *Chuquiraga jussieui*, appearing to be a member of the Proteaceae family. Actually it is a composite growing to 2' (these plants must be many decades old)

with orange-red, *Castilleja*-like flowers.

Mats of multiple species occur here, too, including dwarf species of *Gaultheria* with huge fruits, *Pernettya*, *Castilleja*, *Werneria*, *Senecio*, *Halenia*, as well as many other composites. The prize goes to mats of *Gentianella rupicola* in its many color forms.

Leaving behind Cotopaxi, perhaps the most picturesque mountain in Ecuador, our last stop will be Cayambe Volcano, the highest point on the equator at 19,100'. The only *Penstemon* in South America, *Penstemon hidalgoensis*, is found here at about 10,000'. A beautiful, diminutive *Ourisia*, *O. chamaedryfolia*, at 14,000' is only 4" high with tiny, velvet, red, tubular flowers. Here also are two species of *Azorella*, forming large mats with sessile, yellow flowers. Despite the very decorative foliage of many of these species of *Azorella*, most are not in cultivation. As elsewhere, a *Gaultheria* species occurs here, a mat with bright crimson flowers and pale green, translucent fruits.

After passing through Colombia, the Andes end in a Y-shaped terminus in the western part of Venezuela. This will be the destination of my next trip. The flora has many similarities to other parts of the Andes, but there are ever so many new, unusual plants to look forward to seeing.

Drawings by Rebecca Day-Skowron

David Hale lives and gardens in Portland, Oregon, and the nearby coastal town of Arch Cave. His passion is discovering and re-discovering choice plants in mountains all over the world.



Ephedra aff. *andina* (p. 265)

Ourisia coccinea, Baraloché, Río Negro, Argentina (p. 265)

photos by Sean Hogan



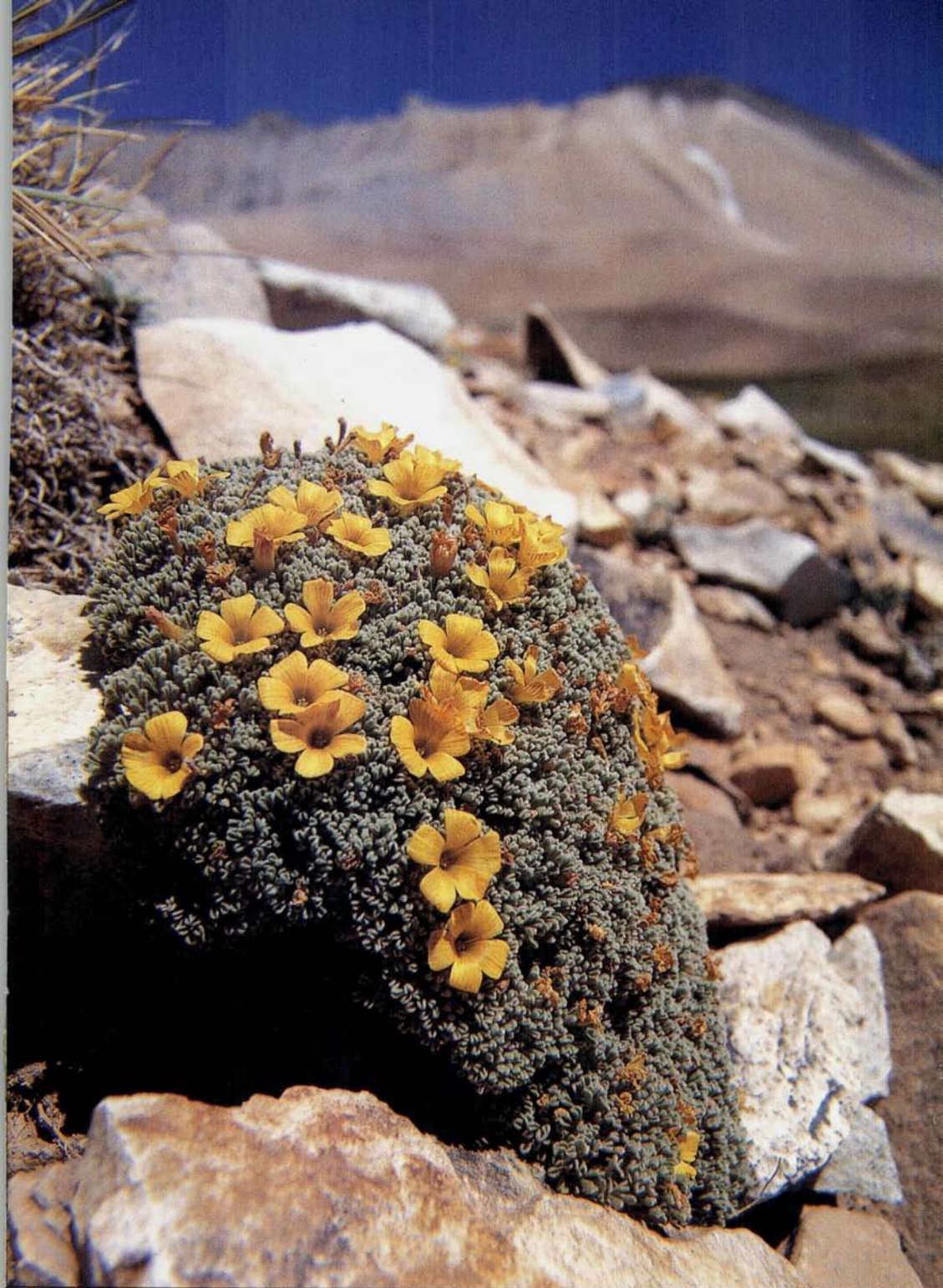


Bolax species (p. 263)

Viola saccaulus above Baraloche, Rio Negro, Argentina (p. 265)

photos by Sean Hogan

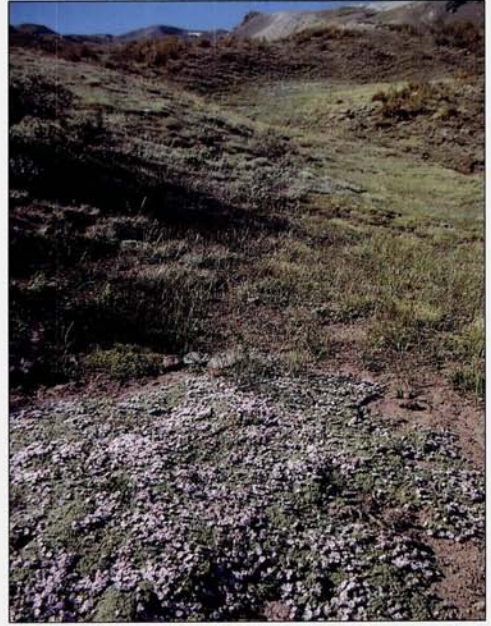




Oxalis microphylla (p. 265)



Baccharis magellanicus (p. 263)



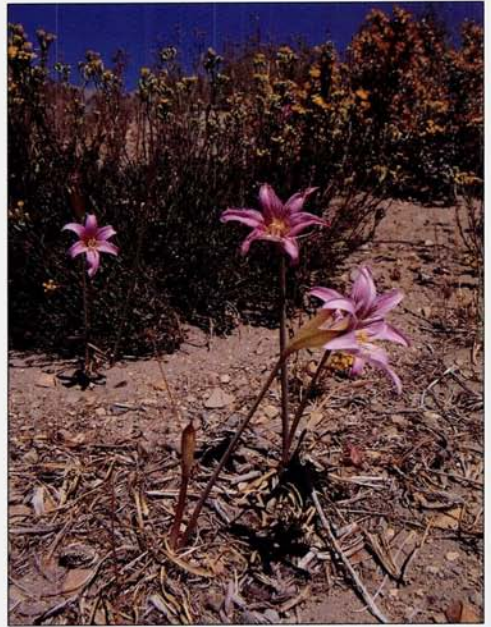
Junella species, La Leñas (p. 264)

photos by Sean Hogan

Rhodophiala rhodolirion (pp. 264-5)



Rhodophiala rhodolirion



Argentinian Plants You Can Grow

by *Sean Hogan*

With increasing frequency, expeditions to the high country of South America bring back enticing pictures of Andean gems. One must wonder just how hardy these plants might be in temperate North American gardens. Trials have shown some are perfectly happy in the coldest of climes, while others freeze even though native closer to the pole.

The desire to have a plant in our garden often seems to be in inverse proportion to our ability to grow it. Yet this does not always hold true, and you can judge which may survive by taking just a few factors into consideration. If one looks at the geography and weather patterns where a given species grows, guessing the conditions it requires in cultivation becomes fun rather than frustrating.

Plants growing at over 50° south latitude in Patagonia do not have a large continental land mass to their south, as North America and Europe do to their north. Large areas of land facilitate the movement of polar air south without the moderating influence of water. Ocean currents also tend to pull weather systems eastward in both hemi-

spheres, allowing fewer weather systems originating near the poles to penetrate toward the equator in the Southern Hemisphere.

Large mountain ranges on a continent can also slow the movement of cold, dense air, because the air tends to pool in the valleys of the range. In addition, mountains can deflect cold air to one side, preventing heavier air from spilling into adjacent areas. The cities of Amarillo, Texas and Albuquerque, New Mexico, for example, are at exactly the same latitude, but Albuquerque can be basking in warm sunshine while snow falls on Amarillo only a few hours drive to the east. Amarillo is in the path of storms moving south from Canada. Albuquerque, protected by the southern Rockies and at a higher elevation, is often missed by the storms completely. Although weather records are sparse, it can be assumed that the same happens in the southern interior Andean valleys, a very high desert or grassland called the puna. The much higher peaks on both sides of the puna regions protect it from both the storms entering Chile from the Pacific and from Atlantic moisture blown in from the east, and

often Antarctic storms as well. Unfortunately for northern gardeners, very little puna exists in the far south where the Andes lose altitude and width and are marked by east-west valleys cut by glaciers, rather than the long north-south interior valley farther north. Only isolated peaks in the far south are vegetated with true alpine. Most of the puna therefore lies in subtropical or even equatorial areas that seldom or never experience extremely cold temperatures. Yet in the puna frost can occur any time of the year, because of the high elevation and dry air. Plants from this area have only begun to be tried but are proving to be surprisingly hardy.

Land mass surrounding an area is also an important factor in local climate. While driving along Ruta 40 in Argentina on the dry eastern side of the Andes, the plains, especially to the south in Patagonia, resemble the Great Basin of western North America in the rain shadow of the Sierra Nevada and Cascade Mountains. One could easily imagine being on Highway 395 somewhere in Nevada or Oregon, and one could assume the area is subject to the same great diurnal temperature extremes. The distance to the ocean, however, is much shorter. Driving east in central or southern Patagonia would bring the Atlantic Ocean into view in only an hour or two, whereas in the Great Basin you would only reach Winnemucca-by-the-sea! So it can be seen that the climate in Argentina is generally moderated by maritime influence with moister air and fewer temperature fluctuations than on the North American continent.

With southern Chile bathed by moderate Pacific storms and even the harshest areas of southern Argentina somewhat modified by the Atlantic, cultivation of the wonderful plant material now becoming available might seem

difficult except in warmer areas or in the alpine house. Although it is certainly true that some plants require cultivation with little frost, others either grow at high elevations that are windblown and not protected by snow in winter, or in high valleys such as the puna, or better yet, in the few but floristically rich high valleys farther south, where cold air settles and frost can occur even in summer months. Also, certain plants in this region may be descended from the Antarctic flora and have residual frost- and cold-hardiness, a hidden ability to withstand lower temperatures than those to which they are now subject. Residual hardiness must be discovered by experimentation. Wild seed collected in harsh-winter areas of course has the best chance for survival in cultivation in cold-winter zones. The following are some examples of colder areas with exceptionally beautiful plants. Some of these plants have been grown with success in northerly areas but are not yet widely cultivated; others have not been tested.

The smaller cacti are gaining ground in the world of rock gardens, especially in dry gardens. They can be quite interesting, and many could be called "bun plants." *Austrocactus hibernus* is one of the better examples and is probably one of the hardiest cacti, rivaling *Opuntia fragilis* in North America. It ranges from central Argentina and Chile south to southern Patagonia. It often grows in rocky, mountainous areas, sometimes above timberline. In Neuquén, Argentina, it persists among other scree plants at the ski resort Las Leñas, at nearly 3000m elevation where snow lies on the ground for over half the year. *Austrocactus australis* forms mats of nearly a meter across but only 6- 20cm high and spreads by rhizomes. The very dark-colored stems are adorned with rather thick spines,

often gray in color but ranging to brown, red, black, and golden. Flowers are produced only sporadically and are a satiny yellow. Cultivation is difficult in the greenhouse but easy outside from USDA zone 9 down to at least zone 5 or 6. This plant is thriving at the University of California Botanical Garden in Berkeley and in the high desert of eastern Oregon, where it withstood -19°C . in December 1990. Gritty soil with little organic matter is a must, and even moisture in the summer followed by winter dryness is preferable. Las Leñas is the source of a lot of worthy plant material, not just because one can drive there, but because it is a very high valley that traps cold air and is far enough south to be affected by some Antarctic cold. It also has strong radiational cooling, as it is somewhat less subject to maritime influence because of the high Andean peaks to the west and the pre-Andean ranges to the east.

Baccharis magellanicus is a small shrub or groundcover that needs trial. It can be over 40cm tall or a dense mat of only 6cm in height (photo, p. 260). The leaves are evergreen, small, and a glossy dark green. The flowers are whitish, not particularly showy, producing clusters of seedheads typical of the Asteraceae. These give the plant the appearance of being in flower longer. Its habitat ranges from mid-elevations in the southern Andes to the coast at Tierra del Fuego, 56° south latitude. This plant has presented no cultural problems and has proven hardy to at least -12°C , and because of its wide native range, it is probably hardy to much lower temperatures. Some of the most prostrate forms occur along the coast at the Straight of Magellan where, although snow occurs, temperatures seldom fall far below freezing. Therefore some individuals are not reliably

hardy even in relatively mild areas, so look for *B. magellanicus* collected farther north and more inland. It should not be subjected to drying winds during cold weather. Most precipitation falls in winter in its native range, so this plant should succeed especially well on the West Coast of the USA, and also in the East if not allowed to remain in wet ground when temperatures are high in summer. It is worth experimentation in the interior down to zone 6 with protection.

Bolax species also need more experimentation. Native to the high puna and alpine areas from equatorial areas of the Andes to the southern tip of Patagonia, these unique members of the Apiaceae, or carrot family, form dense mats or mounds over 2m wide and a meter tall and are nearly as solid as a rock (photo, p. 258). The tiny leaves can be green and shiny or covered with fine wool. The whole mound can turn yellow when the minuscule flowers appear just above the foliage. The common name "vegetable sheep" seems appropriate when a "herd" is seen on a high scree with little else around but small bunch grasses. *Bolax* can also be seen on the dry Patagonian plains in lava or limestone, associating with such plants as *Verberna* species that look like they were just deposited by a bird, and a myriad of tiny shrubs that have been grazed or windblown into dense mounds. Although seeds are sometimes difficult to collect (or find), several species are available. Even those from the northern puna have been proven quite hardy and are easily grown if given a mineral mix and constant moisture. Some are already in cultivation, while others have yet to be garden tested; at their slow growth rate they should stay small for many years.

The small dryland ferns are just now becoming popular. Of those brought

into cultivation, *Cheilanthes pruinosa* is one of the most beautiful. Its 8-10cm fronds are dark green and very fine-textured, resembling small conifers peeking out from a home of boulders and scree. Although its southern range is uncertain, it grows at least to middle elevations in the central Andes of Argentina and has tolerated -8°C with little damage. The fronds are long-lasting, and plants three years old from spore have grown into 30-cm clumps in the desert garden at the UC Botanical Garden. This, like other drought-adapted ferns, should be given a gritty, mineral soil mix that doesn't remain soggy but never completely dries out. A generous area in which to grow or "over-potting" is helpful. As they are drought adapted, they often spread their roots deep into the soil between the rocks, obtaining some moisture even when apparently very dry. Especially in containers, complete drying means a quick demise. In the garden, very well-drained soil or a crevice to drain excess winter moisture could extend the hardiness to zone 7 on the coasts and possibly lower inland.

Ephedras also warrant more attention. A unique family of one genus, they are native to dry areas worldwide with several attractive species in South America. *Ephedra andina* is one of the most variable, with some forms reaching 1.5m high and others remaining as tiny mounds of only a few centimeters (photo, p. 257). The smallest forms often are grazed or windblown to within an inch of their life! *Ephedra andina* has fine, rush-like foliage that gives a soft look to its surrounds, and if several clones are about, the females will cover themselves with translucent red berries. Native throughout the southern Andes to sometimes quite high elevations, they have proven hardy to well below -15°C (worth trying to possibly zone 5 or below) and adaptable to a wide

range of moisture and soil types. It is worth trying both in the dry interior and in wetter coastal areas, as neither drought nor generous garden watering seems to bother it. *Ephedra andina* stays more compact, however, with bright exposure and infrequent watering.

The genus *Junella* (sometimes placed in *Verbena*; photo, p. 260) is another resident of the high talus slopes of the Andes. The mats of tiny leaves produce abundant lavender-to-white flowers that smell almost of lilac. The pass above Las Leñas is home to a large colony, most not reaching a thumb nail in height while spreading to over a meter. Although bright light is a must, the plants can suffer if the soil remains warm for extended periods. At the UC Botanical Garden, this has done best on the north side of rocks in deep, well-drained soil of pumice, scoria, and crushed rock. Here the diameter of each plant increases by about 3cm a year. Because the plant's natural habitat reaches over 3000m elevation, it should do well with some of the high elevation eriogonums, especially if there is a cover of snow in the cold season. It would not be unreasonable to find *Junella* hardy at least to zone 5. On the East and West Coast, it might be best to protect *Junella* from excess moisture by providing a vertical crevice for extra drainage.

Another plant that can be found at Las Leñas, but in deep sandy soil where snow lingers late into spring, is *Rhodophiala rhodolirion* (photo, p. 260). A member of the amaryllis family, it resembles a small *Amaryllis belladonna*. The leaves appear as the snow disappears, then dry to nothing by late summer. Then stalks bearing one or more pink trumpets emerge. The bulbs are usually well below the surface but in nature can be exposed due to erosion or frost-heaving with no

loss of vigor. In the garden, a bright exposure with sharp drainage is important. Unlike some other bulbs, it has perennial roots and should not completely dry out. This is especially important if grown in containers, where a large, deep pot is beneficial, preferably buried or double potted to keep the soil cool and the soil humidity stable. *Rhodophiala rhodolirion* seems to require winter chill, barely persisting at the UC garden. Where there is snow cover, or at least no excess winter rain, it should be hardy to zone 6 or lower if the ground has some insulation. An extra-porous soil mix or the protection of an overhanging rock might make life easier in the Northeast where alternating freezing and wetness is a problem. Although not a typical rock garden plant, it is a beautiful addition to any planting. Unfortunately, it is rare on seed lists.

Oxalis microphylla is another gem to be found over a fairly wide range in the southern Andes, and it can also be seen above Las Leñas. The dense, woolly mounds of 1mm-long leaves seldom exceed 15 cm in width and adhere to the ground as if they were glued (photo, p. 259). It's amazing how fast the effects of elevation disappear when, after hiking over steep, rocky terrain, well above the upper limit of most other plants, one comes upon these bright yellow flowers looking as if they were emerging from a little patch of lichen. Happily, the plant has been successfully grown in the Northwest, and, at least in pots, in California. There is no reason this choice oxalis shouldn't be hardy in areas subject to quite cold temperatures, as it often grows on exposed slopes and ridges where snow is blown off. Drainage, bright light, and cool soil of pumice, coarse sand, and only a small amount of loam and humus should keep it happy. The one drawback is availabili-

ty. Plants in habitat produce sparse seed, and as the plants are very slow growing it will be some time before *Oxalis microphylla* will be produced in cultivation in any quantity. Watch seed lists and—try to be patient!

The last two plants are natives of Patagonia and can be found in the mountains above Bariloche, Rio Negro, in Argentina. The first, *Ourisia coccinea* (photo, p. 257), is found in bogs and near streams, often associated with the tiny *Gunnera magellanica*. It is a member of the Scrophulariaceae and is as at home with its feet in the water as its cousins in the genus *Mimulus*. It is a small perennial reaching about 10cm in height and has deep green leaves topped by dark red flowers that last most of the summer season. The plant is reduced to a small rosette during its winter rest, usually buried deep in snow. In cultivation, it can be somewhat short-lived, especially in warm climates, but it reseeds readily. *Ourisia coccinea* has been grown in Britain and to some degree in the Northwest, but it should be much more widely used in damp or poorly drained places in the garden.

Viola saccaulus (photo, p. 258), one of many rosulate violets to be found in the southern Andes, grows just a few meters away from the *Ourisia*, but on drier talus slopes that are always moving slowly downhill. There it is sympatric with another *Viola*; *V. cotyledon*. The rosulate violas have always been somewhat of a holy grail, often nearly...or completely impossible to grow. With mineral soil and careful attention paid to drainage and keeping them cool, however, success can be had. *Viola saccaulus* might be one of the easiest to grow and one of the most beautiful. It is quick to offset, and in early spring white flowers accented with

lavender and yellow adorn the red-tinted plants. Because its southerly mountain habitat receives generous rainfall and deep winter snows, and it is adapted to grow quickly while the sliding scree covers its base, the plants are less subject to rot from excess moisture than other rosulate species; they set down roots rapidly along the new stem. Artificial propagation, therefore, is easier, or at least possible. At the UC Botanical Garden, two clones have been increased to eight plants by taking current season offsets, removing the lower leaves, treating them with Hormonex No. 3, and double potting them in 8cm terra cotta pots of medium to fine pumice. The cuttings were placed in an open lath house of 50% shade. Except for one mishap with a mouse, all rooted, and one will soon be tried in the outdoor garden.

Many South American plants are still hard to procure. Those most likely to be cold hardy are often in isolated areas not easily accessed. Most seed collections have been made at lower, more convenient locations, leaving many possibly hardier species still out of reach. There is also a myriad of plants of specialized habitats whose seeds are not easy to collect or difficult to germinate. This doesn't mean the mouth-watering beauties we see in print will never be in horticulture, but it may take some time. Many botanical and horticultural groups are now bringing back seed, and gardens such as Ezeiza Botanic Garden near Buenos Aires are selecting and introducing new material. Right now seems to be a good time to start comparing notes and learning to grow and reproduce these treasures. So many habitats are fragile and seed cannot be repeatedly harvested. If we study the habitats in which plants new to horticulture grow wild, if we can learn to grow and propagate them well,

we might create further interest in them, not only for the gardeners' enjoyment at home, but also for increased protection for these beautiful plants in the wild.

Sean Hogan gardens at University of California Botanical Garden at Berkeley and has a desert garden near Christmas Valley, Oregon. He has been growing plants since he was three years old. His special passions are western American plants, especially dryland plants, cacti, and Portulacaceae.

A Brief History with Primroses

by Geoffrey Charlesworth

This is not a history of the genus *Primula* (would that be possible?) nor of the Vernales section, which you could loosely describe as primroses and cowslips (though this would be very interesting, and bits and pieces of it appear from time to time in the *Bulletin of the American Primrose Society*). It is a list of happenings from about 1600 until now which places the rather homely interaction of people and primulas alongside more celebrated cultural landmarks. And since I am doing the writing, it will focus heavily on England and the US, not France or China. You, of course, would select different milestones.

Shakespeare, Spenser, and Francis Bacon mention primroses and/or cowslips in their writing, and in 1597, the year Shakespeare wrote *Henry IV* and bought his house in Stratford-on-Avon, Gerard's *Herbal* was published. This included Primrose for its supposed medical properties. England was moving away from internal strife so that rich and comfortably off people started to live in houses rather than fortresses. These houses had rather ostentatious

gardens. Writers on gardens are usually concerned with rich men's gardens even today, though what went on at Hampton Court has little relevance to present-day gardeners. Cottages might well have had a plot for food growing and might well have introduced *Primula vulgaris* from the local woods, especially double forms, along with *P. elatior* and *P. veris*. Primroses are still quite common in Kent, for instance. This is pre-history as far as primroses are concerned, but it was the time of the Italian Renaissance painters Michaelangelo, Tintoretto, Caravaggio, with Breughel and El Greco also active. Music was polyphonic: in churches people sang Byrd and Monteverdi, and at home rich people played lutes and virginals. Poor people were already doing Morris dancing, and music was passed on by oral tradition without notation. "Greensleeves" was mentioned in 1580. There were outbreaks of the plague, and trade brought coffee to Italy, sweet potatoes and tobacco to England. Explorers, adventurers, and map-makers were changing the world for Europeans, and wars were being fought to grab the benefits.

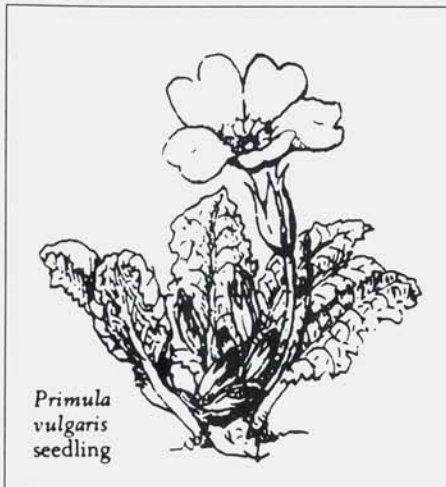
1600-1650:

In 1601 Clusius, a professor at Leyden University, published a description of a hybrid between *P. elatior* and *P. veris* with illustration. Gerard had also described what is probably the same plant. This year also Jesuit missionaries were admitted to China. They were the precursors of the later Delavay. Shakespeare was followed by Ben Jonson, Cervantes, Moliere, Donne, and Milton. Rich people sang the madrigals of Dowland and Monteverdi and played the virginals at home; poor people did country dancing if they had spare time. The recently invented Italian opera was performed in Paris. The King James Bible was published. Tea came from China, coffee drinking spread north to Paris. Tobacco was planted in Virginia, the Dutch invented bank checks, and there was a great flurry of philosophers: Pascal, Descartes, Galileo. Pocohontas lived then, and John Dryden. *Primula sibthorpii* reached England sometime between 1600 and 1603. This is a "colored" primrose (red and not yellow) from the Levant, and it was soon crossed with *P. vulgaris* to give many new colors. Religion played havoc with peoples' lives. Catholic Guy Fawkes

was sentenced to death in 1606, and the Protestant Plymouth Fathers left for America in 1620. In 1629 Parkinson's gardening book *Paradisus* does not mention polyanthus so there were probably no crosses yet made involving *P. elatior* (the oxlip) and *P. veris* (the cowslip) to yield the multi-headed primroses. But he does mention the abnormal primroses: "hose-in-hose" with a second corolla, "Jack-in-the-green" with a leafy calyx, jackanapes with partly petaloid calyx and colored striping, and other anomalies which had to have been in gardens many years. The Dutch, alas, were suffering from tulip mania, and in 1637 the market collapsed.

1650-1700:

In 1650 Harvard was founded, and persecuted Puritans left Virginia to live in Maryland. By 1665 the polyanthus had emerged—a red-flowered cross between *P. elatior* or *P. veris*, which both have many flowers at the end of the stem, and *P. sibthorpii* or some red hybrid with *P. acaulis*. Or else red cowslips had been found in the wild and hybridized with yellow *P. acaulis*. There must in any case have been many garden crosses and selections, because garden writer John Rea describes 20 different red polyanthus; this shows a real horticultural interest in the crosses. Rea was writing in 1665, which was also the year of the Great Plague. It was the height of French dramatic literature if you can call Racine dramatic. Public music meant Schütz, who wrote German oratorios, Lully, who wrote French operas, Purcell, and ultimately Buxtehude, Vivaldi, Telemann, and Bach, though Bach was only 15 in 1700. At home people played the spinet, and in 1672 concerts were invented. Polyphony gave way to harmony and modulation. Coffee houses reached England, and by 1688



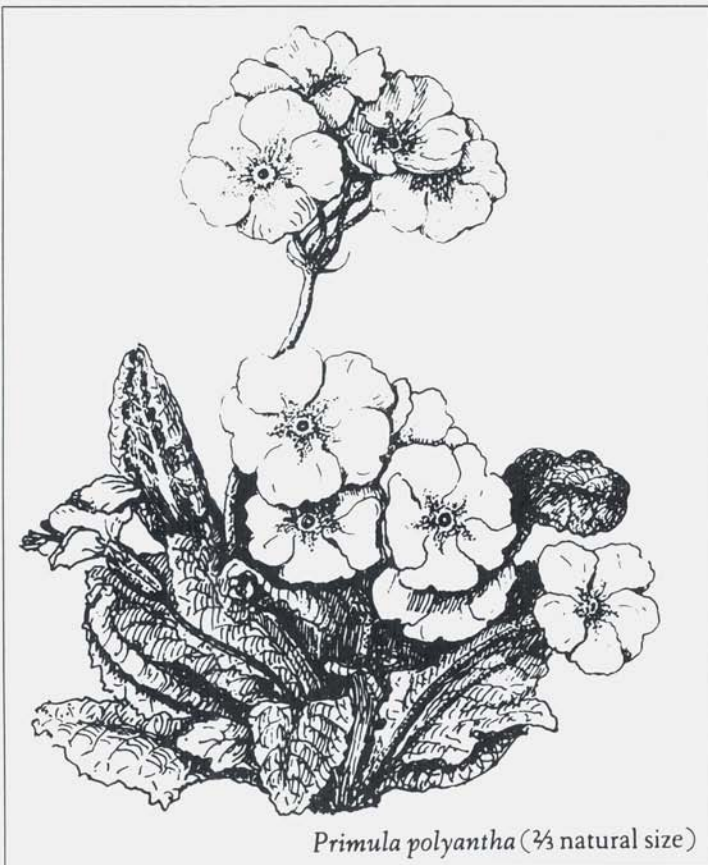
Lloyd's coffee house was the meeting place of London underwriters. 1688 was the year that a polyanthus primrose was first illustrated. This period saw an explosion of Science and Mathematics with Pascal, Fermat, Hooke, Huygens, Newton, and Leibniz leading the way. In 1697 Daniel Defoe recommended Income Tax. Dutch, Spanish, and French painters were Velasquez, Poussin, Rembrandt, Hals, Vermeer, Watteau and Murillo. Bernini worked in stone, and Wren designed buildings.

In 1687, the year Leyden Botanic Garden was founded, the diarist John Evelyn, who wrote about gardening, especially arboriculture, and translated French horticulture books, mentioned the polyanthus as being widely grown.

In 1688 Leyden published its catalog, which illustrated polyanthus, apparently an abnormal form with the cluster of flower stalks emerging from a ruff of narrow leaves. It was red of course—all polyanthus had red flowers with a yellow eye. That same year a double purple cowslip was recorded and an orange-edged with crimson. This interest in polyanthus forms would develop into a consuming passion over the next 50 years.

1700-1750:

In 1704 Bach wrote his first cantata, and Handel wrote a St. John Passion. They continued to churn out masterpieces until they both died in 1750. In 1719 Defoe wrote *Robinson Crusoe*, ushering in the age of the novel. Meanwhile, the primrose craze gained momentum, culminating in the institution of Florist's Feasts certainly by 1740. These were the ancestors of all plant shows and featured only horticultural forms (never species) of a few "Florists' flowers": primrose, auricula, pinks, pansies, tulips, and a few others. Forms of primrose proliferated: double green, single green, jackanapes, and tufted forms were grown by 1702. In 1730 a gold-laced hose-in-hose was



Primula polyantha (2/3 natural size)

illustrated. In 1728 there was a first mention of polyanthus in a poem (though it is not a very poetic word). In 1731 someone wrote the first Latin description, and three years later the earliest colored pictures of polyanthus were published. In 1707 Linnaeus was born. Newton had just published *Optics*, and Halley had predicted the return of his comet. Linnaeus produced the binomial system of plant names, giving botanists and gardeners a universal language that has brought with it its own frustrations. He also founded Uppsala Botanic Garden in 1741. The anti-slavery movement started, the Spanish inquisition suppressed Freemasons, 10 Downing Street was built, and camellias were introduced into Europe. Ben Franklin was publishing magazines in Philadelphia, and the age of Euclidean geometry peaked.

1750-1800:

This was the hey-day of Florists' Feasts; they were more organized and less contentious. By 1759 the number of polyanthus varieties was almost equal to the number of auriculas—the most favored of the florists' flowers. Some of them cost a guinea a root to buy. This doesn't compare to the price of a tulip bulb in 17th Century Holland, but it was certainly excessive. By 1766 the polyanthus had a separate feast from the auriculas. These two remained the favorite flowers of the florists (amateur growers, not cut flower dealers!). Laced polyanthus were already known by 1771 and were being given names. In 1754 Mme. Pompadour had her portrait painted by Boucher. She also had a double primrose named in her honor (or else in honor of a regiment named in her honor). She died in 1764. In 1750 Capability Brown designed the gardens at Warwick Castle, and by 1785 the landscape

movement had transformed the idea of a rich man's garden into an imitation of "natural" but "civilized" landscape that excluded flowers (this meant large expanses of grass, copses, streams, bridges, "views," no flower beds. Olmstead must have been thinking Capability Brown when he did New York's Central Park). Flower gardens were then sheepishly out of style, or flowers were grown with the vegetables. "Cottage" gardens, which by now included gardens of middle-class as well as poor people, and might well include vicarage gardens, still persevered with primroses, but the species and old-fashioned doubles were despised both by the show fanatics and the trendy rich.

Probability theory arrived, calculus went wild, two revolutions undermined monarchy and inherited uncaring authority. Haydn and Mozart left Baroque music behind and the Classical style took over. Middle-class people went to concerts and played string quartets and clavichord or harpsichord at home. Poor people were still folk singing and doing Morris dances. The English novel struggled to become respectable. Wordsworth at 20 went to the Alps in the middle of the French Revolution and returned a Romantic. It must have been around this time that mountains changed from being mysterious and hostile to being mysterious and beautiful. Today's rock gardeners find them both. Cook arrived in Australia and discovered Hawaii, Bruce explored the Nile, Mungo Park the Niger. None of these places have primroses, but their exploration signalled that the world was finite and accessible and gave the illusion that all plant life would eventually be discovered, described and cataloged. Now we know that some plant species have become extinct before they were known.

1800-1850:

In 1800 Beethoven composed his third piano concerto, Schubert was 3, Rossini was 12, and the National Botanic Garden of Ireland at Glasnevin created a raised bed to house alpine plants. Jane Austen had already written *Pride and Prejudice* but hadn't yet got it published. Haydn was between *The Creation* and *The Seasons*, and Goethe was going full blast. This Romantic age brought the waltz, the anti-slavery movement, the Grand National, the Cunard Line, postage stamps, and railroads and ended in revolutions and the gold rush. In 1803 when Liverpool Botanic Garden opened, it also had a rock garden. Douglas botanized the US West, and he had to go around South America to get there. The Botanical Garden at Kew, which had been the private property of George III since 1760 and contained all the plants brought back by countless travellers as well as the library and herbarium of Linnaeus, finally went public in 1840 and became the National Botanic Garden under Hooker. Horticultural societies were being formed in many English towns and put on their own shows competing with the florists shows for the attention of a broader audience. For instance, the Royal Horticultural Society put on its first exhibition in 1827. As tender plants from tropical regions poured in, glasshouses figured heavily in the rich man's garden. The skillful head gardeners had interests far from the gentlemanly competition between primroses in a pub. But the florists carried on codifying their stultifying rules governing the appearance of the ideal gold-laced primrose. The polyanthus was reduced for show purposes to mean gold-laced primroses. Today these beautiful plants are still grown and loved by specialist growers who carry on the florist tradition in spite of the

whims of the fickle public. Meanwhile many double primroses were growing in gardens in England and Ireland; some of these are still being propagated today and could be called antiques. Many others have become extinct. Throughout this period books were being written about gardening with alpines, and this type of gardening continues alongside all other fads until today. After 1850 gardening for the rich, the middle class, and prosperous municipalities was engulfed by bedding plants, and presumably poorer people sometimes tried less ambitious imitations. It was left to cottage gardeners and the old-fashioned to preserve precious perennials for posterity. Bedding meant annuals in vast numbers, which required labor-intensive, impermanent plantings of mostly tender plants raised under glass (calceolarias, pelargoniums, begonias, marigolds, and fuchsias).

1850-1900:

The 1850s saw Wagner, Verdi, and Gounod taking over the opera houses of Europe as literature burgeoned in the US: Emerson, Hawthorne, Melville, Longfellow, Stowe. Florence Nightingale started the clean-up of hospitals, and Queen Victoria made chloroform respectable when it helped her bear her seventh child. The Maryland Horticultural Garden Club opened in 1860. Rock gardening was to begin in earnest: In 1870 the Royal Botanic Garden at Edinburgh had one, in 1872 Kew was growing alpines, and in 1893 Birmingham Botanic Garden also put in a rock garden. William Robinson was a very influential, if controversial and opinionated, gardener and garden writer, and his *Alpine Flowers for English Gardens* must have had some effect in 1870. In the early 1880s there was a rock garden built near Boston, Massachusetts. This was the decade of

the first skyscraper, the Orient Express, and Brooklyn Bridge. Spectator sports were becoming big business, and the Foundations of Arithmetic were the big news in mathematics. In 1880 the first yellow polyanthus appeared in the garden of Miss Gertrude Jekyll. From this she developed the Munstead strain of garden polyanthus. We are used to thinking of "ordinary" polyanthus as yellow, but in fact until this strain appeared they were always red. This was the year Bingo was invented, canned goods were sold in stores, and the "Pirates of Penzance" was first performed. In 1891 the Georgia Ladies Garden Club was formed. There were women gardeners and US gardens long before 1850, but the existence of organizations has to indicate something. It was a busy time for the French Impressionists, and you could buy frozen meat from Australia. In 1889 Barnum and Bailey Circus was formed, and Charlie Chaplin was born. Also a blue polyanthus was exhibited for the first time. In 1892 *Primula japonica* arrived in gardens along with *P. amoena*. In 1895 the primrose 'Appleblossom' was discovered at a nursery in Garryarde, Ireland. It had bronze leaves. This character was passed on to a number of hybrids, including a cross with *P. sibthorpii*. It was named 'Guinevere'. This one has survived until now. By 1896 the blue polyanthus had become quite rare, but we are so accustomed to seeing blue primroses by now that it obviously survived or else the right crosses were made again around 1930. 1896 was the year the Nobel prizes were established and the first performance of *La Bohème* took place. As the century ended polyanthus and auricula shows were as popular as they were before 1850 when their decline seemed inevitable.

1900-1920:

On May 20th, 1900, *Primula juliae* was discovered in the Caucasus. By 1911 it had arrived in Oxford, 1912 at Kew, and in 1913 it flowered in Germany. Crosses were made with *P. elatior* and *P. vulgaris* in England, Ireland, Germany, and Czechoslovakia in 1916, 1917, and 1918, so that by 1920 many *P. juliae* hybrids existed, including the Irish 'Kinlough Beauty' and 'Lady Greer', which are still available. But for rock gardeners, this is Reginald Farrer's period. *My Rock Garden* was published in 1907, and his *magnum opus*, *The English Rock Garden*, was already written in 1913 but not published until 1918. Reginald Farrer died in 1920 at the age of 40. This was the year I was born, so I can no longer write about "history," as I am somehow involved.

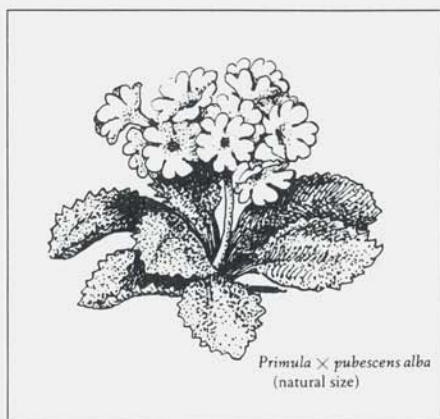
1920-present:

You look back over your life and remember with nostalgia or disgust the things that became obsolete and try to recollect when the novelties arrived. Gone completely or almost never used for their original purpose are outhouses, middens, milk delivery, gaslight, crystal sets, train journeys, English farthings, shillings and other coins, silent movies, transatlantic liners, slide rules, Communism, pince-nez, lorgnettes, monocles, whalebone stays, shirts with starched, detachable collars, moleskin, pocket watches, and most of the map of Africa. Among the novelties are zippers, tank top underwear, plastic raincoats, paper plates, velcro, bandaids, and everything electric, such as vacuum cleaners, refrigerators, air conditioners, tape recorders, and computers.

The things whose entire life-span I have lived through are remarkably numerous: black-and-white snapshots, wet batteries, fountain pens, French

knitting, spy novels, galoshes, spats, typewriters, USSR, calculating machines, long-playing records, thorn phonograph needles and sharpeners, "the New Math," Czechoslovakia, and hopefully Nazi Germany. Some revivals include suspenders and Fascism. In 1925 I saw "The Gold Rush." In 1927 I saw a talking film, "The Wedding of the Painted Doll" (just a short). In 1929, the year of the Wall Street crash, Hemingway's *A Farewell to Arms*, and the St. Valentine's Day massacre, the Alpine Garden Society was founded. This is a British organization; as with British postage stamps the name includes no national identification. In 1930 the blue polyanthus reappeared. In 1933 the Scottish Rock Garden Club was founded as Hitler became dictator in Germany, and concentration camps were erected. Everybody was singing "Stormy Weather" and "Smoke Gets in your Eyes." Every night I did my homework with the new radio going full blast. In 1934 Hitler became *Führer*, and the American Rock Garden Society was formed. The Normandie and the Queen Mary were launched. In every small town, movie houses were showing three different shows a week, and there was a whirl of activity in the primrose world in the 1930s. Florence Bellis began her creation of the Barnhaven primroses, starting with seed from various sources, including Sutton's and Jekyll's Munstead strain. In 1940 the Cowichan primrose, without the usual yellow eye, was discovered in the Pacific Northwest. This was also used to create more varieties which then had success commercially. In 1941 the American Primrose Society was formed, and in 1942 'Kwan Yin' was selected from Sutton's seed and became the parent of Pacific hybrids. It was another three years before Europe could pay attention to primroses again; meanwhile the US kept polyanthus

going until 1945. Florence Bellis spent the next several years producing the rest of her line of primroses and in 1965 introduced Barnhaven doubles. She died in 1987. In 1965 the whole Northeast US lost power at rush hour one evening; I was living on 78th Street in Manhattan, where I had my first garden in the back yard. In 1968 I moved to Hempstead, where I grew primroses and woodland plants, and, for the first time, alpines. In 1971 cigarette ads were banned from television. Science had degenerated into space travel, and we bought a summer place in South Sandisfield, Massachusetts. History had degenerated into gardening. If only all history could be written without needing to mention wars and famines. If only natural disasters meant not quite enough rain or deer eating rhododendrons. But then we would surely be unable to appreciate the tranquility of gardening.



Drawings by Doretta Klaber, from her book *Primroses and Spring*. M. Barrows & Company, Inc. New York. 1966.

Geoffrey Charlesworth has been growing primulas for many years. His garden is in South Sandisfield, Massachusetts. If you have extra seed of some primula you feel he should grow, do send it along.

Gardens

A New Alpine House: One Weekend and \$250.00

We have a curious habit here at Fort Courage of working almost to exhaustion and then fleeing out West to rest and recover. Without fail we arrive back home inspired to work harder: some people never learn! Our August 1990 trip included a stop at Rick Lupp's nursery in Graham, Washington. Rick grows plants in polyethylene hoop houses, and their wonderful root systems match their vigorous top growth. We admired the hoop houses and decided it might be nice to have one. When Rick told us he could erect one in a weekend for around \$250, we became even more serious. Not too much work and a very reasonable price. We decided to construct a 10' by 14' alpine house.

Rick's part of Washington State is level. Our part of North Carolina is not. Six days of mattocking and hauling away clay to make a level spot convinced us we were not going to get the project done in a weekend.

We ordered 135 concrete blocks, using some to construct a level foundation on our sloping property. Since this grower is an over-waterer, and we like to travel, the rest of the blocks were set aside as an inside foundation for a floor garden. I filled the holes in the foundation blocks to keep out little critters before we laid a wooden sill of preserved 4" by 4" wooden timbers for a base. Eight 20' PVC pipes were attached securely to the sill to hold the polyethylene covering, while the ends were framed in preserved wood. Throwing the poly from north to south was a snap, but securing it all to the wood and pipe ends was frustrating and difficult. We sweated, struggled, and swore, and eventually this step was completed.

Although the alpine house faces south, I planned on omitting summer shading. We've noticed the full sun beating down on plants in the high mountains; there air movement keeps the plants from burning while natural rock mulch keeps the roots cool. For our miniature alpine environment in North Carolina, we designed the house for lots of air movement and a rock mulch.

Two inexpensive automatic vents that open at 70°F and close at 40°F are on the west side, with an oscillating fan immediately in front of each. Two more vents are on the opposite east, so that air is drawn from the west, pushed over the plant beds, and expelled through the east vents. We devised a method of closing off the vents by installing grooves over the exterior, so we could slide sections of plexiglas across the openings. If we want the vents closed in winter before the inside temperature reaches 40°F, or just want a bit of air, we slide the vent covers.

The east and west plexiglas doors have a panel on each side which can be removed during the warmer seasons. A center exhaust fan removes air at ceiling level when the temperature reaches 75°F.

While I wheelbarrowed four yards of creek sand from the driveway into the alpine house for drainage, Bruce went to work on electrical necessities. We have a light inside that can be turned on from the garage, electricity for the fans, and plugs for two heaters if temperatures are predicted to be below 20°F. I don't think

Bruce was too happy to break through the garage wall and dig a trench through clay for the electric line, but frequently there is no choice for do-it-yourselfers.

Nothing makes me happier than watering plants with a hose, so we devised a simple watering system that could be used by our teenage neighbor/caretaker when we travel. There is a center PVC pipe near the ceiling. Two more pipes from this main water supply reach over each planting bed. Attached to these are four hose nozzles that deliver one gallon per minute each. This works because our private well delivers over five gallons per minute. The watering system is activated by attaching a garden hose to the center pipe and turning it on from an outside faucet. Five minutes of "rain" from the hose nozzles will supply a good watering.

Originally, the growing area was constructed with two side beds and a center walk. Part of the sides were low rock walls and the rest tufa slopes—which proved impractical for watering. They were far too steep, even with a mulch there was too much run-off. I recovered some matching rocks from a 30' rock wall I had removed along the orchard, and some were used to replace all of the rock and tufa slopes except in one area.

At the same time I decided to enrich the soil in most of the beds, keeping some the original scree. Plants and mulch were removed, top soil added and mixed in, then plants and mulch replaced. This has made a great improvement in plant growth and watering.

I love the alpine house because it gives me more control over the weather. North Carolina has abundant rain. Our native rhododendrons and kalmias can grow to 30' and become a nuisance by reseeding. We pull rhododendron seedlings



as weeds. In summer, the temperature can easily run to above 90°F with a brutal sun immediately after a shower. The hot sun is the means for keeping tight buns, but I would hesitate to plant out *Arabis bryoides*, *Draba polytricha*, and *Eritrichium nanum* unless I had a large enough supply to risk plant loss. Non-hardy cyclamen like *C. africanum* and *Lithops* species enjoy the alpine house. *Rhodohypoxis baurii* bulbs are there, although one of our chapter members grows these successfully outside. *Daphne petraea* and other dwarf shrubs give a larger contrast to small treasures. *Talinum* can be kept a bit drier than outside. *Schizanthus* 'Sunrise' lives in the hole of a concrete block and flowers from October well into November. One *Phlox austromontana* var. *diapensioides*, *Hymenoxys lapidicola*, *Phlox bryoides*, and *Shoshonea pulvinata* stay in the alpine house as insurance, while their fellows take their chances outside. *Gypsophila aretioides* becomes a rock-hard mat in the hoop house. *Centaurea achtarovii* sits waiting to flower, and yellow *Cyananthus canus* is secure. *Raoulias* become small ground covers.

Dionysias will grow and flower in the alpine house while seedpot-mates succumb outside. There is *Dionysia involucrata*, *D. hissarica*, *D. aretioides*, and recently acquired *D. tapetodes*. These plants are not yet widely available in the USA, so one must acquire them by luck or craft. We visited Sonia and Jim Collins in Arizona, and as we were saying goodbye, I spotted a saxifrage packed in the back of the truck. Since there were several, I offered, and it was accepted, leaving an empty place in the box. Nothing is more annoying than turning a sharp corner and hearing gravel mulch spill as pots shift and fall, due to a loosely packed box. Sonia kindly offered to fill the space with paper towels. Now as the old saying goes, "My mother didn't raise no fools." I refused to swap for the paper. Sonia whipped into the greenhouse and selected *Dionysia tapetodes* from her many treasures. I graciously accepted.

The adjusted slope of the tufa in the alpine house faces north, so saxifrages are tucked in along with a few dwarf ferns. Seeds of *Eritrichium nanum* and *E. howardii* are germinating. *Aquilegia jonesii* was seeded in, too, although this is one plant that grows better outside. The landscape keeps changing as other plants are incorporated. In the winter frame among seedlings waiting to be pricked out are *Celmisia armstrongii*, *C. verbascifolia*, *C. semicordata*, *Ranunculus insignis*, *Gentiana clusii* 'Alba', and *Craspedia lanata*. I'll move some of each into the alpine house while the rest go outside. A number of plants grow in the alpine house only because I admire them in some way. I enjoy the precise leaf placement on *Hebe raoulii*. *Tanacetum haradjani*, *Geranium argenteum*, and *Convolvulus boissieri* ssp. *compacta* please me by having such beautiful silver-gray leaves. *Cyathodes colensoi* is lovely at every stage of growth. Tight mounds of drabas are always a pleasure, but especially in early spring.

The alpine house project took a month of work and almost equal time for reconstructing the planting beds later. With the foundation, PVC pipes, treated wood, polyethylene covering, plexiglas, concrete blocks, automatic vents, exhaust fan and casing, circulating fans, electrical material, preserved timbers, sand, soil, rock mulch, and lots of miscellaneous, "one weekend and \$250" were proved to be just a fraction of the actual cost.

—Ev Whittemore



Viola bangii (p. 246)

photos by Ned Lowry

Viola species, from Ecuador





Opuntia floccosa with *Ephedra americana* (p. 255)

Opuntia floccosa in habitat

photos by Ned Lowry





Masdevallia coccinea (p. 249)

Ned Lowry

Ourisia chamaedryfolia var. *chamaedryfolia* (p. 248)

Ned Lowry





Krapfia lechleri (p. 247)



Gentianella weberbaueri (p. 245)

photos by Ned Lowry.

Viola weibelii (p. 246)



Ranunculus species, in Ecuador





Cuernos Paine, Patagonia (p. 251)

David Hale

Castilleja pumila (p. 248)

Ned Lowry





Nototriche sp., in Peru

Nototriche jamesonii (p. 245)

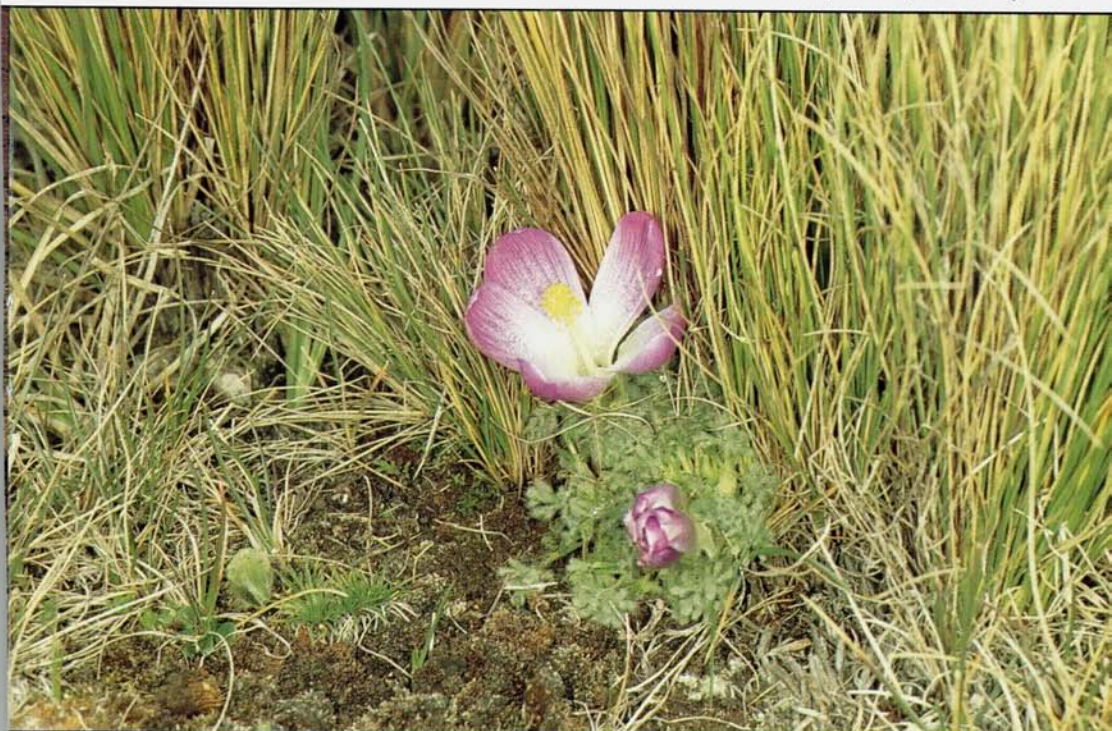




Nototriche species, from Volcan Cayambe

Nototriche macleanii (pp. 246, 249)

photos by Ned Lowry

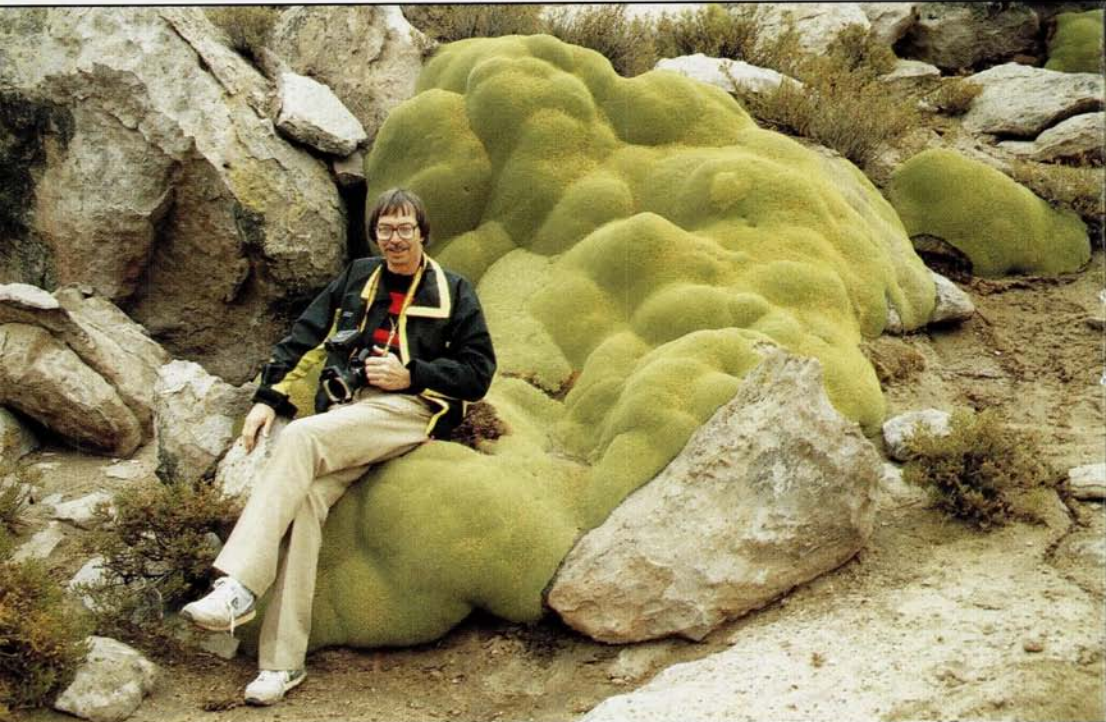




Laretia compacta (p. 254)

Ned Lowry sitting on *Laretia compacta*

photos by David Hale



50 Years of the ARGS Bulletin: The Authors

by Marnie Flook

More than 650 individuals have written for the *Bulletin of the American Rock Garden Society* since its inception in 1943. Most contributions have been articles about rock garden plants and other aspects of rock gardening, but there have also been book reviews, award citations, committee reports, obituaries, editorials, and brief comments on various subjects. Most people have authored fewer than four pieces, but over 25 people have been prolific contributors. A few of these are discussed below.

Bulletin Editors

Some of the most productive authors have been the *Bulletin* editors, already discussed in an earlier article in this series. Carl Worth wrote 96 separate articles and notes, a total of 237 pages, of which 22 were his one-to-two-page "Salama-gundi" columns. Edgar Wherry's 91 short articles, comments and notes covered 148 pages; Merle Sutton's 20 articles and 65 three-to-four-page "Omnium-Gatherum" columns filled 227 pages. Timmy Foster's 40 articles and "Cabbages and Kings" editorials totaled 145 pages and Guy Nearing's 40 editorials totaled 105 pages. (All these numbers are approximate.)

Byard Leroy Davidson, Seattle, Washington

Other than the editors, Roy Davidson's articles have filled the most pages in the *Bulletin*. During the last 30 years, his 65 contributions have included 6-11-page treatises on *Lewisia*, *Penstemon*, *Iris*, *Erythronium*, *Eritrichium*, *Synthyris* and *Bergenia*; a study of the Diapensiaceae; a 20-page, three-part series on the Great Basin, plus other articles on travel; and numerous notes on nomenclature and taxonomic changes—a total of 193 pages.

Roy received a degree in Ornamental Horticulture and Landscape Design at Washington State University. His interest in native plants started long before this time and has continued throughout his life. For many years he has explored the western mountains, studying and observing the plants and writing about them for the *Bulletin* and for other horticultural publications. He received the Marcel

LePiniec Award in 1972. The last sentence of the citation: "We hereby acknowledge our indebtedness for service in research, both technical and practical, for generosity in sharing knowledge articulately; and for continuing endeavor in horticultural pursuits as we present..." this award to Roy Davidson (Vol.30[3]).

In addition to his contributions to the *Bulletin*, Roy has also been generous in his efforts for the Northwest Chapter. He has been involved with every western study weekend hosted by that group and was responsible for much of the organization of the 1976 International Rock Plant Conference. He received the Marvin Black Award in 1992. That citation contains more details about this talented member of ARGS (Vol.50[4]).

H. Lincoln Foster, Falls Village, Connecticut

Linc Foster's first article, "A Scree in Connecticut," appeared in the *Bulletin* in 1945. During the next 43 years he wrote over 65 articles, filling 167 pages. Besides articles on rock gardening and propagation, his writings included detailed plant portraits, essays, reports, award citations, and book reviews, plus a ten-page biography of Dwight Ripley.

As president of ARGS (1964-1968), Linc was responsible for many important changes in the society. He began the awards program, started the Bulletin Board, and as John Osborne wrote "brought to the office many new ideas and, possibly of more importance, he brought renewed vitality to many of the Society's existing activities...Linc is a fine plantsman and a great rock gardener and has lectured extensively. All of these talents he brought to the Society. He was a truly fine president..." (Vol.26[4];1968).

In 1968, his book "Rock Gardening, A Guide to Growing Alpines and Other Wildflowers in the American Garden" was published and quickly became the "bible" for many North American rock gardeners. Many of Linc's articles for the *Bulletin* were about these wildflowers, especially those native in the eastern United States. He thought more attention should be paid to our native plants and even suggested that the society change its name from ARGS to "The American Rock Garden and Native Plant Society"(Notes from HLF; Vol.23[2];1965).

One of his most valuable articles was "Keep Cool," in which he suggested a moisture-holding soil around the rootlets and a thick layer of stone chips under the foliage to help plants survive the "mugs" of summer. "Mugs—that awful combination of heat and humidity that drains the human spirit and devastates the cushion plants of mountain elevation and pure air" (Vol.21[2];1963). Another important contribution was "Seed Collecting and Seed Cleaning," a thorough treatment of both of these subjects (Vol.26[3];1968).

Linc received the Award of Merit in 1970, the Marcel LePiniec Award in 1977, and shared the Edgar T. Wherry Award with Timmy Foster in 1988. Many more pages could be written about this exceptional man and his equally exceptional wife and their garden at Millstream. Highly recommended is the fine book, "Cuttings from a Rock Garden," which contains many of their *Bulletin* articles, along with Timmy's drawings (edited by Norman Singer; Atlantic Monthly Press. 1990). H. Lincoln Foster died in 1989.

The following contributors are listed in alphabetical order.

Grace (Babb) Dowbridge, Portland, Maine

Grace Babb joined ARG S in 1937; besides her many articles for the *Bulletin*, she wrote often for the "Gardeners' Chronicle of America," including an account of her first wildflower garden, "One Square Mile of Wildflowers." She was active in the Maine Unit of the New England Region of ARG S and was especially interested in New England native plants. She remarried in 1959, so wrote her last few articles as Grace Dowbridge. She received the ARG S Award of Merit in 1967.

The New England Region often went on expeditions to mountains in New Hampshire and Vermont. The leader of these trips was James Mitchell, a nurseryman from Vermont whose five-part series, "On Eastern Cliffs" appeared in the *Bulletin* between 1959 and 1962. Grace wrote about these trips, describing New England alpin es and their habitats. She also wrote articles about wildflowers for a Portland newspaper.

She was active in several Round Robins, and explained how they worked in a *Bulletin* article (Vol.11[3];1953). According to her award citation, one small *Penstemon* Round Robin grew to become the present American *Penstemon* Society, and Grace served as its Secretary for 15 years. The last article she wrote for the *Bulletin* was a long and delightful account of her garden in Maine, "Rock Gardener's Paradise" (Vol.20[1 & 3];1962). Her award citation ended: "...Grace's knowledge and experience and observations made from plants growing in her own garden have added greatly to our appreciation of gardening in New England. Her friendliness and enthusiasm have encouraged plant lovers throughout the country. We are fortunate to have such a person in our Society, and are very happy that we can show our appreciation and respect with this award."

Grace Dowbridge died in 1969.

Claude A. Barr, Smithwick, South Dakota

Claude Barr wrote about Great Plains plants for the *Gardener's Chronicle of America* as well as for the *Bulletin* and other horticultural magazines. His interest in growing native plants started after he became a homesteader in southwestern South Dakota. Despite the discouraging soil and climate, he learned to appreciate and study the prairie plants and started a wildflower nursery, Prairie Gem Ranch, publishing his first catalogue in 1932. More than 80 species of plants were introduced through his articles and nursery. His *Bulletin* articles included descriptions of species of *Astragalus*, *Oxytropis*, cactus, *Penstemon*, *Aster* and *Erigeron*; suggestions on how to grow Great Plains plants; and notes about plants seen on his travels in that area.

In 1965, he was one of the first members to receive an Award of Merit: "To have achieved world-wide acquaintance with scientists, and national recognition from a prairie homestead and a one-acre wild flower nursery on gumbo soil, is sufficient proof that Claude Barr has made the best of his opportunities to the enrichment of all our gardens, and is a worthy recipient of the ARG S Citation" (Vol.23[4]).

An even greater honor was achieved in 1973 when he received the first Edgar T. Wherry Award. The citation, written by Norman Deno, described his home and garden, then continued: "But it is not as a gardener that we honor Claude Barr, but as a plantsman who on every opportunity, traveled this vast prairie searching and selecting ornamental dwarf plants of decorative foliage and pleasing flowers...he saw the potential in these plants, a potential that has as yet been only faintly realized by alpine gardeners.

"Claude Barr is the plant explorer of the Great Plains. These explorations have culminated in a book, *Jewels of the Plains*, which will bring this undeveloped treasure trove to every alpine gardener's doorstep" (Vol.31[4]). Claude Barr died in 1982 just before his 95th birthday. After incredible delays, his book was finally published one year later.

Francis H. Cabot, Cold Spring, New York

Frank Cabot was treasurer of ARGs 1977-84. He was chairman of the memorable 50th Anniversary meeting in Asheville, NC, where besides making most of the arrangements, he was the main speaker at the Awards Dinner. His lecture, "As It Was in the Beginning," later printed in the *Bulletin*, has already been mentioned. No one attending that meeting will forget Frank's singing the ARGs Hymn, complete with background harmony by his barbershop quartet.

Frank was on the Board of The New York Botanical Garden for a number of years. He started Stonecrop Nursery which specialized in rock and alpine plants from 1959-1964 and 1978-1983. His article, "Stonecrop in the Nineties" traces the development of the gardens since 1959, with descriptions of the various areas of the garden (Vol.49[1];1991). This magnificent garden is now open to the public, and Frank continues to garden at his summer home in Quebec.

Other contributions to the *Bulletin* include three book reviews, an entertaining essay on rock gardening, "Why Do We Do It?" (Vol.39[3];1981), and an equally entertaining and thorough treatment of raised beds, "a practical solution for growing alpinists" (Vol.37[1];1979). The award citation he received in 1982, written by Lincoln Foster, ended: "to Francis H. Cabot—dirt gardener, collector, nurseryman, superb plantsman, lecturer, author and acute financial manager...a well-earned Award of Merit" (Vol.40[4]).

Geoffrey Charlesworth, Sandisfield, Massachusetts

Since 1983, Geoffrey Charlesworth has contributed almost 100 pages of informative and entertaining material to the *Bulletin*. There have been essays, book reviews, a five-part series on composites, a four-part series describing his rock garden at each season, and one of the few articles about computers and how a database program can help a gardener. His article, "Paths for the Ordinary Gardener," was not only full of information but also very enjoyable to read (Vol.50[2];1992).

Born in England and educated as a mathematician, Geoffrey taught math for many years and became Professor Emeritus of Hofstra University. His enthusiasm for growing thousands of alpine plants from seed each year is well known and well documented by him. He received the Award of Merit in 1987 for "his expert plantsmanship, for his unselfish contributions at every level of the ARGs establishment, and for his eloquent and informative writing about a tremendous range of plants and gardening..." (HLF, Vol.45[4]).

In 1988, his book, *The Opinionated Gardener—Random Offshoots from an Alpine Garden*, was published, based mainly on essays he had contributed to the newsletter of the Connecticut Chapter (David R. Godine, Boston). Because of his "elegant and erudite" book and his "lucid and witty" articles, Geoffrey was presented with the Carleton Worth Award in 1990 (Citation by Sydney Eddison, Vol.48[4]).

Norman C. Deno, State College, Pennsylvania

Norman Deno's first contribution to the *Bulletin* was the citation he wrote when Claude Barr received the Wherry Award in 1973. He then wrote a series of articles about some desirable and difficult plants and how to grow them. He described how he built his sand beds, which he felt were: "one of the simplest and most satisfying ways to grow a wide variety of rock and alpine plants...since the sand provides well aerated soil, allows roots to run, there is no frost heave, no bacteria or fungi" (Vol.38[2];1980). In a later issue he described how he grew plants in wet sand beds, explaining that what is critical to the plant is oxygen at its roots (Vol.44[3];1986).

Norman is Professor Emeritus of Chemistry, Pennsylvania State University, where he specialized in organic and inorganic chemistry. The scientific approach is evident in all his writings. Most of his later articles for the *Bulletin* have been about seed germination, which he has studied for years. In 1978 he received the Award of Merit for his "innovative research in growing" rock garden plants and in "sharing the information with ARGS members," and for "service to the Society on various committees..." (Vol.36[3]).

His dedicated research and experiments with the seeds of over 2,000 species of plants has recently resulted in the publication of his book, *Seed Germination: Theory and Practice* (Norman C. Deno,1991).

Bernard E. Harkness, Geneva, New York

Bernard Harkness joined ARGS in 1940; his first article appeared the year the *Bulletin* began. "The Prairie Blue-Eyed Grass," written while he was in the Air Force, was the first of many contributions during the next 30 years. (Vol.1[5],1943). In addition to writing for the *Bulletin*, he was Seed Exchange Director for 12 years and then served as ARGS President from 1968-1972.

Bernard received a degree in Ornamental Horticulture from Cornell University in 1929, and then studied Landscape Architecture at Harvard for a year. While he was in college, he spent his summers working in wildflower nurseries in Wisconsin and became familiar with prairie flora. He learned about rock gardens and alpine plants when working on Long Island. He travelled across the US during the summer of 1931, visiting native plant nurserymen, and later writing a fascinating story about them for the *Bulletin* (Vol.24[4]).

During World War II, Bernard was a weather observer and cryptographer in Szechuan Province (China) and described the fine collection of miniature tray landscapes he had seen there (Vol.5[4],1947). He worked as a taxonomist for the Department of Parks and Recreation in Rochester, New York, retiring to Geneva in 1967. He was deeply involved with many horticultural organizations in addition to ARGS and was a past president of the American Association of Botanic Gardens and Arboreta

He became equally involved with seeds while he was in charge of the ARGS Seed Exchange and did a tremendous amount of research, which in 1974 resulted in his publishing *The Seedlist Handbook*, an invaluable guide to selecting seed from the seed lists of the three major alpine and rock garden societies. That same year he received the Award of Merit. The citation, written by Harry Butler, who followed Bernard as President of ARGS, began: "There are few who have had a longer love affair with rock garden plants and been more faithful to the ARGS than Bernard Harkness" (Vol.32[3]).

In 1976 and 1980, revised editions of *The Seedlist Handbook* were published. Bernard had begun working on his next project, a history of the American Rock Garden Society, when he died in 1980. His friend Bill Hamilton wrote a touching obituary about him in the Winter 1981 *Bulletin* (Vol.39[1]). The fourth edition of his book, now called *The Bernard E. Harkness Seedlist Handbook*, was dedicated to him. It was compiled and updated by his wife, Mabel G. Harkness and by Deborah D'Angelo (Timber Press. 1986).

Panayoti Kelaidis, Denver, Colorado

Panayoti Kelaidis has been writing for the *Bulletin* since 1977. His articles include plant portraits of some of his favorite western alpinists and descriptions of private gardens and the Denver Botanic Garden's Rock Alpine Garden, where he has been curator since 1980. He has also written about his plant explorations. "Sandstone Barrens of Uncompaghe Plateau" is a wonderful description of being on a remote tableland in western Colorado whose summit he called "one of the grandest rock gardens in America" (Vol.40[1];1982). "Dryland Bunneries: Persian Carpets of the West" is partly an essay and partly a description of plants found in two places in particular, the Laramie Plains of Wyoming and Eureka County, Nevada (Vol.44[2],1986).

He received the Award of Merit in 1982. According to his friend Andrew Pierce, who wrote the citation: "He has been growing and hunting plants from an early age and even though his college education, in linguistics, did not portend to horticulture, today one might consider him a walking encyclopedia of rock garden plants" (Vol.40[4]). Panayoti has written for numerous horticultural publications, often illustrating his articles with handsome line drawings of plants.

Panayoti helped found the Rocky Mountain Chapter and was chairman for several years. He played an active part in helping the Chapter run the ARGS annual meetings in Boulder (1982) and Vail (1993) and the Second International Rock Plant Conference in Boulder (1986). At the 1986 meeting he was given the Edgar T. Wherry Award for "what he has already accomplished in Denver and in the rock gardening world and especially for the promise of his future..." (H. Lincoln Foster, Vol.44[4]).

Note: Panayoti wrote for the *Bulletin* as Panayoti Callas between 1977 and 1982, changing his surname back to the original Greek spelling in 1984. All his articles are listed in the Index under Kelaidis.

Doretta Klaber, Quakertown, Pennsylvania

Doretta Klaber wrote about plants she grew in her garden, reporting on her successes, failures, and new discoveries in a series of articles for the *Bulletin* between 1951 and 1961. She loved growing plants from seed and described her methods in the *Bulletin*. She thought alpine plants did not always need a rock garden but could also be grown in gritty soil in walks, edgings, walls, and terraces (Vol.16[3],1958).

She attended art school and later studied Landscape Architecture at Cornell. She designed and built rock gardens for several years. In 1944, she and her husband moved to an old farmhouse near Quakertown, which they called Cloud Hill. She ran a rock garden nursery there for many years; her customers were the people Lee Raden contacted when he started the Delaware Valley Chapter in 1966. It was particularly fitting that Doretta Klaber was presented with the Award

of Merit the next year, when the Chapter sponsored the annual ARGs meeting at Longwood Gardens.

Doretta wrote with enthusiasm and feeling about her garden and its plants. Her descriptions of the garden in spring and winter are particularly nice and her thoughts on her summer garden are worth repeating. After referring to the despair she feels in July, she begins to take heart in August and as the month advances "we begin to think of spring in September as we work outside in these lovely autumn days...but there is not the urgency of early spring...We know that a garden is never finished, which is one of its joys and blessings" (Vol.25[2],1967).

Doretta Klaber wrote four books: *Rock Garden Plants—New Ways to Use Them Around Your House* (1959), *Gentians for Your Garden* (1964), *Primroses and Spring* (1965), and *Violets* (1976). As Gertrude Wister wrote in Doretta's Award citation, "they are written by one who has grown her own plants, many rare and difficult, from seed, and cared for them herself...all in a pleasant, easy style, and accompanied by her own drawings and water colors" (Vol.25[3],1967). Doretta Klaber died in 1974.

Frances Kinne Roberson, Seattle, Washington

Frances Roberson is a charter member of ARGs and wrote often for the *Gardeners' Chronicle of America*. Her first article for the *Bulletin*, describing a trip to the Wenatchee Mountains, appeared in the first issue. The next was a five-page study of the genus *Helleborus* (Vol.4[3],1946). Most of her articles have been about growing native western plants, or searching for them in the wild.

For many years Frances and her husband ran an alpine and rock garden plant nursery in Seattle. She has always been active in both the national ARGs and in the Northwestern Chapter, where she twice served as chairman and held many other offices, including that of archivist. She was Secretary of the Planning Committee for the First Interim International Rock Plant Conference, held in 1976, and Director of the Seed Exchange from 1976-1978.

Frances received the Award of Merit in 1977. The citation read in part: "Her sensitivity to the interests and capacities of colleagues has been an important factor in the successful accomplishment of each task that she has undertaken" (Vol.35[3]). The Northwestern Chapter awarded her the ARGs Service Award in May, 1992. The citation for this award was written by Alice Lauber and published in the Summer 1992 *Bulletin* Board. It further elaborates on the accomplishments of this outstanding and much loved and respected member of the American Rock Garden Society. Frances Roberson is an honorary member of the Archives Committee.

Robert M. Senior, Cincinnati, Ohio

Robert Senior was a charter member of ARGs, but he was also a charter member and first president of the Rock Garden Society of Ohio, which he helped organize in 1929, five years before the ARGs was founded. His main horticultural interest was the Campanulaceae, particularly the genus *Campanula*, and most of the 42 articles he wrote for the *Bulletin* concerned these plants. Much as he admired the genus, he did not like *Campanula rapunculoides*, which he nominated for Dr. Wherry's "Keep Out" column in his first *Bulletin* article (Vol.1[4], 1943).

Robert Senior received a Master's Degree from Harvard University. He worked

with Clifford Crook on some of the nomenclature of the *Campanula* family in preparation for Crook's book *Campanulas*. His articles about these plants and about his botanizing trips in the Rockies appeared in many horticultural magazines, illustrated by his own photographs. Besides the many learned articles he wrote for the *Bulletin* on campanulas and related genera—*Phyteuma*, *Edraianthus*, and *Symphyanthra*, he discussed eight genera in the Labiatae, giving details of the family characteristics, a subject rarely encountered in the *Bulletin* (Vol.18[3],1960).

He described the miniature garden he had built in his alpine house (Vol.13;No.3;1955) and wrote several articles concerning ARGS history: "Reminiscences of a Charter Member" for the 25th anniversary issue (Vol.17[2],1959), and a longer, fascinating article about his memories of early days and fellow ARGS members, "Reminiscences of an Old Member," at the time he received the Award of Merit in 1969. The citation ended: "In his 87th year, Mr. Senior has adjusted his pursuit of gardening to fit a quieter pace. His rock garden is most compact. The x-raying of seed to explore possible chromosome changes is his newest interest...this is an honor he well deserves" (Vol.27[4]). Robert Senior died four years later in 1973, one of the oldest members of ARGS.

There were many other major contributors to the *Bulletin*, but space limitations prevent listing them all. However, because of their extra efforts for the *Bulletin* and ARGS, two members deserve special mention: Harold Epstein and Anita Kistler.

Harold Epstein and *The Rock Gardener's Hand Book*

Harold Epstein should have been included in the profiles of *Bulletin* contributors, but because of his involvement with the *Rock Gardener's Hand Book*, he is discussed here. Harold joined ARGS several years after it began in 1934 and immediately became involved with the Society. In 1948 he was elected president, and held that office for the next 16 years.

As mentioned in an earlier article, Harold was responsible for Volume 1, Number 1 of the ARGS *Bulletin*, published in 1943. Through his efforts Edgar T. Wherry became the first official editor of the *Bulletin*. Harold worked closely with all the early editors to ensure that the *Bulletin* would be a success. At the same time he contributed articles on *Epimedium* and *Vancouveria*, on his visits to Japan, on book reviews, and a long discussion of shade plants, concentrating on 30 genera common to both Japan and the eastern United States. (Vol.28[3];1972).

Harold has been involved with the Hortus Club of New York, serving as president for fourteen years, and with the Orchid Society and the Horticultural Society of New York. He represented the ARGS at the International Meetings in Great Britain held in 1951 and 1961.

In 1964 a group of officers of ARGS met and decided that because there were so many articles of interest among those printed in the *Bulletin*, a special edition of articles should be printed, to be called *The Rock Gardener's Hand Book*. As President Emeritus, Harold was appointed chairman of the committee formed to produce this book. As he explained in his introduction to the *Hand Book*, his committee felt they had material for a handbook five times the size of the one they planned to publish, but gradually they were able to reduce the contents to a workable amount.

The articles in this handbook were written for the *Bulletin* by some of the most talented members of ARGS. The table of contents reads like a *Who's Who* of rock gardening. The 36 articles cover almost every rock garden plant group, such as Phlox, by Wherry; Heath Family, by Preece; Epimedium & Vancouveria, by Epstein; Foam Flowers, by Wherry; Trilliums, by Henry; Houstonias, by Hansell; Primulas, by Baylor; Penstemons, by Bennett; Gentians, by Klaber; Campanulas, by Senior; Columbines, by Regan; Pulsatillas, by Hayward.

Other subjects covered in the handbook are: Native Plants; Rhododendrons; Ferns; Growing Plants from Seed; Sempervivums; the Christmas Rose; Lewisias; Dwarf Conifers; and Using an Alpine Frame. This last article, by Kurt Baasch, originally appeared in the "Gardeners' Chronicle of America" in March 1937.

Although many copies of the *Handbook* were sold, it eventually went out of print. Recently a group of Hudson Valley Chapter members, led by Thomas Stuart and encouraged by Harold, have decided to publish a new version of the *Handbook*. They are obtaining information and making decisions on what material to re-publish and hope to be able to offer their publication or publications for sale by 1994.

At the same time that he was involved with ARGS and organizing trips to many parts of the world, Harold was also building a beautiful garden around his home in Larchmont, New York. It has been visited and appreciated by innumerable people in the last fifty years. Recently he described this garden for the *Bulletin*: "Saga of a Woodland Garden" (Vol.49[1];1991). Harold received the Award of Merit in 1966; the citation by Dorothy Hansell concluded: "In presenting this award the ARGS especially honors him as its past president, as an outstanding horticulturist, and in particular as a keen rock gardener" (Vol.24[3];1966).

Anita Kistler and the Index

Most of the early editors made up their own indices, which were published with the *Bulletin* every two years. Guy Nearing started to work on a special 10-year index but had to stop due to eye problems. Mr. and Mrs. Henry S. Fleming volunteered to complete Guy's work, and the Index for Vols 1-10 was distributed with the Index for Vol.11-12 in 1956. (Carl Worth notes; Vol.14[2]). Despite the popularity of this special 10-year Index, which was arranged by subjects, the tradition of issuing an index every other year continued, and these were issued on schedule for many years.

In 1974, Anita Kistler and two friends, Helen Lauer and Charlotte Slack, members of the Delaware Valley Chapter and of the national ARGS, began to work on organizing an index for the first 32 years of the *Bulletin*. The result of their dedicated efforts is the Cumulative Index, published in 1975. The Index was divided into three sections: Titles of all *Bulletin* articles; Authors; and Subjects, which included both plant names and rock gardening topics. Plant names were only listed if several lines of information were included with them. In her preface to the Index, Anita wrote: "There may be errors, but we tried to avoid them. Sometimes we did forget to index in our enthusiastic reading of a favorite subject. We do hope the users get as much information as we, the compilers, gleaned from reading all the American Rock Garden Society Bulletins" (ARGS Index:Vol.1-32;1943-1974).

Besides being active in the Delaware Valley Chapter, Anita has been involved with national and local meetings and eastern study weekends. Her gardening abili-

ties are well-known; her garden and unusual alpine house have been visited by hundreds of gardeners; her plants have won many awards both at ARGs Plant Shows and at the Pennsylvania Horticultural Society's Flower Shows. It was mainly through her efforts that the PHS-ARGs Library Service was established. In 1976 she received the Award of Merit (citation by Lee Raden; Vol.34[4]). In 1987, she began working on a second cumulative index for the next 13 volumes of the *Bulletin*. She completed this one in 1988 on her own. (ARGs Index:Vol.33-45;1988).

Anita has written for the PHS "Green Scene" and for the *Bulletin*. Her articles include a report on the Wherry garden in Philadelphia, notes about seeds and shrubs, two book reviews, and a fine article on plants that bloom over a long period. She was the first Business Manager for the *Bulletin*, serving for 14 years. She retired from this arduous job in 1990 but has continued to be involved with ARGs affairs. In 1991 she received a Certificate of Merit from the Pennsylvania Horticultural Society. The long and appreciative citation was reproduced in the Winter 1991 *Bulletin* Board; it begins: "Your contributions to the gardening world in the Delaware Valley are innumerable. You are a premier amateur horticulturist, who through your enthusiasm, generosity, and expertise have brought the joys of rock gardening to thousands of people."

Marnie Flook is Archivist of the American Rock Garden Society. She has read the entire run of ARGs bulletins and many, many papers in preparing these articles. She is also a keen and skilled gardener, who now lives in Chestertown, Maryland.

The Color Rosy-Purple

As October gives way to November, the dominant hue in my garden becomes the rosy-purple of *Allium thunbergii*. It is really now very pleasant that there is such a plant, giving not only color, but sweeps of color at this tag end of the year.

And yet, isn't the essence of gardening the contrast and harmony of flower colors? Can a monotone truly provide a satisfactory garden experience? I mulled over these questions for several years without a practical answer, until, lo and behold, a white form of *A. thunbergii* appeared at a late October show-and-tell. The possibility of contrast did indeed exist! Now, how to gain it for myself?

The obvious way was to beg a piece. I did. Too subtly. Rather than press my suit, I sat back and thought a bit. When all is said and done, *A. thunbergii* is an allium. Why isn't it seeding about wildly like so many of its relatives? Because, I concluded, it blooms so late that the seeds are aborted by winter cold. (Not so, others have stated, but I will let the facts speak for at least my own garden.)

I promptly put my theory to the test, digging up a plant and bringing it into the shelter of an alpine house. Seeds did in fact develop, were sown December 1988, and duly germinated the next spring. The seedlings made their way from nursery bed to open garden, where they began blooming in October 1992. Yes, there was rosy-purple; and yes, there was white. My craving for a great late-autumn garden experience was satisfied. Now, oh, wouldn't a touch of yellow look good?

—James L. Jones

50 Years of the ARGS Bulletin: The Subjects

by Marnie Flook

The *Bulletin* of 1943 was vastly different from the one of 1992. Besides many attractive physical changes, the articles have become increasingly professional. However, much of the subject matter written about years ago is just as fascinating to read today. Until 1965, when the Bulletin Board was started, all ARGS business and meetings had to be reported in the *Bulletin*. The reports, editorials, letters to the editor, and short notes and requests from members all combined to add a more personal feeling—more give and take—to each issue. Some of those early issues now seem more like some of today's chapter newsletters.

The articles in the 219 issues of the ARGS *Bulletin* have been about every possible rock gardening subject and much more. In order to analyze the subjects and determine which were the most popular, a list of categories was drawn up and as each article was read, it was placed in one of these. The bulletins were analyzed by decades, and listed in a database in the computer under ARGS1 (1943-1952), ARGS2 (1953-1962), etc. When all fifty volumes had been read and catego-

rized, the five databases were searched and the number of articles in each category was counted.

As was fairly obvious, over half of the articles in the *Bulletin* were in the Plant Genus and Plant Exploration categories; fewer articles about finding plants in the wild and more about specific plants were written in later decades. In the early days of the Society, collecting plants was considered to be perfectly legitimate, and often the word "collecting" was used in article titles. That word is seldom used now.

Bulbs and Planting Techniques seemed to be equally popular throughout the 50 years, as were Garden Descriptions. Propagation was rarely mentioned in the first ten years, but was especially popular during the second decade (1953-1962), as were articles about Seeds and the Seed Exchange. Both subjects have remained popular ever since.

Construction was rarely mentioned in the first ten years, 14 articles appeared in the next decade; then there was almost no mention of the subject until the last ten years when 15 articles have appeared. There were

fewer than 15 articles about Design and even fewer on Maintenance in the entire 50 years. (Numbers are approximate.)

Ferns, dwarf conifers, troughs and bog gardens were each the subject of over 20 articles, while the categories of annuals, rhododendrons, shrubs and trees, wall gardens, and alpine house received very little coverage.

Nomenclature was usually discussed a few times each decade, but the least written about subject was Botany. Five articles strictly about botany have appeared in the last 30 years. Articles on a specific Plant Family averaged four or five each ten years, but rarely covered the botanical aspects of the genera. Understandably, Conservation has received more attention recently; of the 11 articles, five were written in the

last ten years. Another category which was rarely mentioned in the first three decades is History, but 20 articles on the subject have appeared since then. More on both of these subjects is to be expected in the future.

Many thoughtful and entertaining essays were written for the *Bulletin*. The Essay category was best represented during the first and last decades, with over 13 written in each period. Since so many articles have already been described in the article "Fifty Years of the ARGS Bulletin: The Authors," elsewhere in this issue, no more will be discussed here. Further information about the *Bulletin* will be found in the answers to the Trivia Quiz which originally appeared in the Winter, 1993 *Bulletin*.

ANSWERS TO THE ARGS BULLETIN TRIVIA QUIZ (Vol.1-Vol.50; 1943-1992)

1. How many issues? 219 (6 ea. V.1-9; 4 ea. V.10-50 and V.42[5]).
2. How many editors? 10.
3. Longest term? Merle Sutton, 14 years, 52 issues.
4. Editors who were professors? Wherry, Worth, and Porter.
Women editors? Hansell, Foster, S. Sutton, Kelaidis.
5. Longest article? 28 pages: Frank Cabot (V.42[5];1984);
21 pages: Carl Worth (V.18[1];1960), and Timmy Foster (V.45[1];1987).
6. Color first on cover? 1985—*Dodecatheon alpinum*, Phil Pearson.
7. Color first inside? 1979—*Phlox lutea*, *Phlox purpurea* x *P. lutea* (V.37[2]).
8. Emblem first discussed? 1943 (E.T.Wherry:V.1[3]).
9. Special issues? *Phlox*, *Penstemon*, *Viola* (V.4[.2,4,6]).
10. Other special issues? Beginners (V.5[2];1947); Propagation (V.16[1];1958); Series on Native Plants (V.17[.2,3,4]; V.18[2];1959-60); Rockies (V.44[1];1986); California Natives (V.48:[1]1990).
11. Separate Seed List? Earliest list in archives: single sheet (4/1/44) sent with bulletin; first sent as separate publication, 1954.
12. Most articles written? Editors: Worth, Wherry, Sutton; Members: Roy Davidson, Lincoln Foster.
13. Longest series? in number of pages: 47, Mark McDonough's 4-part series, "Allium Notes" (V.42-43); in number of parts: James Mitchell's 5 articles "On Eastern Cliffs" (V.17-20) and Carl Worth's 6 articles on "Chilean Plants" (V.14-17).
14. Exotic places? Swat (V.21[1]); Mongolia (V.26-28); Sakkalin Island and the

- Susunai Mts. (V.30[1-2]); Ulu Dag, the Turkish Olympus (V.36[1]); Tasmania (V.32[4]); Atacama Desert in Chile (V.32[1]).
15. Plants written about the most? *Aquilegia jonesii* and *Arctostaphylos uva-ursi*; then *Lewisia rediviva*, *Aster linarifolius* and *Kalmiopsis leachiana*; also *Pyxidantha barbulata*, *Shortia galacifolia* and *Phlox adsurgens*.
Genera? *Primula*, *Penstemon* and *Saxifraga*; next *Campanula*, *Phlox*, *Iris* and *Viola*.
- Plant Families? Plants in Liliaceae, then those in Primulaceae, Ranunculaceae, and Saxifragaceae. A specific plant family? Cactaceae and Compositae; then Araceae; also Campanulaceae, Ericaceae, Diapensiaceae and Cruciferae.
- NOTE: Answers to the next four questions depend on the individual reader's point of view; the suggested answers were not mentioned in the bulletin articles.
16. Humorous? Burr Bronson's article about cyclamen, "Which Side is Up?," illustrated with Virginia Howie's cartoon (V.24[2]) and Linc Foster's on where to put the new plant, with cartoon by B.G.F. (V.35[.2]). Also Laura Jezik's "The Bush Salesman" (V.19[1]); C. Post on Latin names (V.41[1]); Norman Singer on Plant Sales (V.40[1]), and several by Judy Glattstein including "Compulsion" (V.42[4]).
17. Erudite? Studious treatments of Saxifragas by Czech authors: Hans Honcik: "Engleria Saxifragas" (V.27-28) and Drs. Horny et al: "Taxonomic Study of Kabschia Saxifragas" (V.33[4]); Nick Nickou: "An Abbreviated Phytographic Review" (V.32[2]); Arthur Kruckeberg: "Rocks and Plants—An Episode in Montane Ecology" (V.23[3]); William Van Dersal: "New Plants for the Rock Garden," a study of plant growth regions (V.32[1]).
18. Irritating? Misnamed seeds sent to the Seed Exchange, described by J.P.Zollinger in "Imposters in the Seed Lists". Knowing this was a controversial subject, Editor Merle Sutton asked the Seed Exchange Director, Bernard Harkness, to comment. His reply, "Abandon Neither Hope nor the Seed Exchange" was printed in "Omnium-Gatherum" following Mr. Zollinger's article. (Vol.22[4];1964). The article did produce angry reactions from several members who wrote defending the Seed Exchange: "I Protest," by Robert E. Stuart and "I Was Irritated," by Madalene Modic. (Vol.23[1];1965).
19. Saddest line? Grace Butcher's opening sentence in "A Collector's Garden": "A bulldozer took the garden without warning, plants, seedlings, rocks and soil. A clean sweep!" (V.18[1];1960). Since she then describes her new garden which contains plants from New England mountains, the situation wasn't as disastrous as it first seemed.
- Saddest stories? Elsie Frye's "Day is Done," which described the tragic death of E.L. Reber, the first regional chairman of the Northwest Chapter (V.7[5]), and Lawrence Crocker's equally tragic story about John Heckner of Oregon and his sad death (V.23[2]).
20. Least written about horticultural subject? Botany.
21. Cumulative index for Volumes 1-32? Anita Kistler, assisted by Helen Lauer and Charlotte Slack. Index for 33-45? Anita Kistler. Note: Index for 46-49 and for 50, Jacques Mommens.
- ADDENDA: Thoughtful and challenging? "Responsible Rock Gardening," by Ronald Bowen, an article advocating growing native plants and reminding members that non-native seeds or plants have the potential to become invasive pests and should be confined to gardens. (Vol.32[2];1974)

Awards

Carleton R. Worth Award: Norman C. Deno

The Worth Award was established nine years ago, initiated and funded by the Adirondack Chapter of the American Rock Garden Society. It was given in honor of Dr. Carleton R. Worth, an exemplary plantsman and former editor of the ARGs Bulletin. The purpose of the award is to recognize an author of distinguished writings about rock gardening and rock plants. It has no annual mandate, and while the recipient need not be an ARGs member, special preference is given to material published in the ARGs Bulletin.

The recipient this year is Norman C. Deno of State College, Pennsylvania. For a period spanning several decades, he has written articles for the ARGs *Bulletin* on a broad array of subjects, ranging from the identity of *Lilium tenuifolium* to his experiments on growing plants in wet and dry sand beds. He writes in a clear and lively style that is not trivial but easily grasped. In some cases his writings have challenged us and changed the way we garden, but even more importantly, they have shown to amateur gardeners that scientific experimentation and rigor need not be dull and may even enhance our appreciation and understanding of the plants we love.

In writing about the results of his many plant experiments, Norman Deno could have relied on jargon, charts, and graphs (he is, after all, Professor Emeritus of Chemistry at Pennsylvania State University). Instead, he has used a minimum of carefully defined technical terms enhanced by colorful anecdotes where appropriate. All this means that the beginning and experienced gardener alike feel able to debate his conclusions, which so often seem to challenge conventional wisdom. A consummate teacher who through his writings has shared his "Aha"s as well as lengthy research, Norman Deno's enthusiasm and scholarship are compelling.

Perhaps none of Norman Deno's writing has inspired more debate than *Seed Germination: Theory and Practice*, a book, now in its second printing, which has attracted attention nationally and overseas, from amateurs and professionals in our world of plants. In this soft-cover effort that he published himself after years of research conducted mostly in his kitchen, Deno uses his scientific discipline and knowledge of organic chemistry to challenge some of our seed sowing practices. Is he right about everything? Probably not, but he has defined some problems and proposed a methodology on which we can all build. Most of all, he has made us



think about what we do, and why we do it: reason enough for him to be the worthy recipient of the Carleton R. Worth Award.

—Robert L. Means

Marvin Black Award: Margaret Williams

The 1993 Marvin Black Award is aptly given to Margaret Williams, long-time member of ARGS and past recipient of the LePiniec Award. Margaret has been engaged not only in the introduction of new plants but also in the introduction of gardeners from around the world to the plants in their native habitat. She has been especially active in organizing tours, both private and public, that have brought members to the flora of Nevada and California. While her influence has been mostly through her involvement with the Northern Nevada Native Plant Society, she has also been closely associated with West Coast ARGS chapters, most recently as a guide and mentor at the ARGS Annual Meeting in Tahoe. There it was a great inspiration



to see her with her walking stick on Mount Rose, an area she knows well, not far from her native home. Margaret has been up and down the Sierra Nevada, encouraging, enlightening, educating.

She has been an enthusiastic and vibrant speaker at local, national, and international meetings, including the International Rock Garden Plant Conference in England in 1971 and the First Interim International in Seattle and Vancouver in 1976. She has also contributed many articles to the ARGS *Bulletin* and to the *Newsletter and Journal of the NNNPS*. She has been the driving force behind the NNNPS for many years as Executive Director, Editor of the *Newsletter* and of their periodic journal, *Mentzelia*, and director of the valuable seed exchange. Loring Williams has been a helpful coworker in all of this.

Margaret is especially conversant with eriogonums, one of which has been named for her: *Eriogonum ovalifolium* ssp. *williamsiae*. She has spearheaded movements to protect endangered plants and to conserve threatened habitats, among them Peavine Mountain near Reno.

For novice gardeners, Margaret has organized hikes and study sessions; for experienced horticulturalists, she has been instrumental in expanding their knowledge and their physical horizons by leading them to the unique flora of the Great Basin and central Sierra Nevada. Those of us who have been personally involved with Margaret Williams will heartily applaud this award. All ARGS members can rejoice that we have benefited from the exemplary exploits of this remarkable plantswoman. She well deserves this award and adds her prestige to the award itself.

Norman Singer

Edgar T. Wherry Award: Faith Mackaness

The 1993 Wherry Award for contributions to botanical and horticultural knowledge is awarded to Faith Mackaness. Faith has devoted a long life time to the study of native plants and mosses, publishing her findings in many journals and inspiring generations of gardeners around the world to appreciate and cultivate native plants, particularly those of the Columbia River Gorge. Her contribution to the dissemination of botanical and horticultural information about plants covers a wide spectrum.

Faith grew up in the South, mostly in Louisiana, where her mother is still an active gardener at 99. Faith studied at Sophie Newcomb College, an associate school of Tulane University, and at University of Texas at Austin. She has been described as an old-fashioned naturalist, one who is expert in geology and zoology as well as botany.



At the beginning of World War II, Faith moved to Haiti; there she identified several new species of moss, one of which was named for her. The postwar years brought her and her family to the Pacific Northwest, where Faith hoped to regain her less-than-robust health. The perfection of her one-acre garden at Corbett has been delineated in *The American Woman's Garden* (1986). Two years ago, Faith moved to a smaller home near Portland, Oregon, where she immediately began another garden, this time indulging her abiding passion for bulbs and rare conifers.

Faith's long passion for the flora of the Columbia Gorge takes diverse directions. She organized an annual spring wildflower show held for 21 years at Wakeena Falls. Here flower lovers, hikers, and tourists could view the flora and appreciate its diversity. The show, including, as nearly as possible, exhibits of every herb, tree, and shrub of the Gorge, has inspired emulation by the Native Plant Society of Oregon and its chapters. These groups have expanded the tradition, now offering the public a view of the state's spectacular floral heritage that teaches without trampling.

Faith's annual contributions of wild-collected seed, mostly from the Gorge, to seed exchanges (ARGS, Alpine Garden Society, Scottish Rock Garden Club, Alpine Garden Club of British Columbia, and Hardy Plant Society) are legendary and eagerly anticipated. Recipients of her largess have come to her door from around the world to "see the habitats where the seeds came from." All were welcomed with a generous guided tour. However, few of these visitors have recognized or understood just how extensive Faith's knowledge is of the distinctions between these flowers, of the specific needs of plants, and of her selection of the best clones.



Alstromeria spathulata (p. 253)

David Hale

Brassicaceae species (p. 248)

Ned Lowry





Malvastrum weberbaueri (p. 246)

Malvastrum species





Composite species (*Liabum?*)

Liabum bullatum? (p. 244)

photos by Ned Lowry





Werneria species (p. 244)

photos by Ned Lowry

Werneria humilis (pp. 244, 256)



Faith is a charter member and early president of the Columbia-Willamette Chapter of the ARGs, which began as the Miniature Plant Group. She is also a founding member of the Leach Botanical Garden in Portland. Faith served for 31 years on the board of the Federated Garden Clubs of Oregon, spearheading that group's efforts to set aside areas of original vegetation in state and federal lands for preservation. The most notable success of this long effort is a parcel of land encompassing Oneonta Falls in the Gorge. In more recent efforts, Faith has been an instigator in the founding of the Hardy Plant Society of Oregon.

Over the years, Faith has contributed innumerable articles to plant society bulletins, yearbooks, and newsletters, especially to the ARGs, the Hardy Plant Societies, and the American Penstemon Society.

The preeminent contribution of Faith Mackaness remains her boundless enthusiasm for knowing plants and inspiring joy in others. All who have chuckled through her witty presentations on bulbs, seeds, card file records, plant and seed collecting have been induced to try harder, to grow more, and to value the native flora around them. No greater example of the outstanding dissemination of horticultural and botanical information can exist than the generations of gardeners around the world who have shared Faith's seeds and words.

—Mary Hoffman

Award of Merit: Nan Ballard

Nan Ballard has ably served the American Rock Garden Society, both on the local and national level. Her enthusiasm and energy have been directed both through the function of the organization and the interchange of fellowship of members here and throughout the rock gardening world.

Nan has served on the Board of ARGs; locally she has served on the Ways and Means Committee, the Board of Directors, and the committee organizing the Western Study Weekend. In every case she participates effectively and positively.

Her special interest in the genus *Cyclamen* has led to informative, educational presentations and has broadened our appreciation and enjoyment of these marvelous plants. Nan's second love, books, has also been zealously shared with the ARGs membership; Nan has many old and rare books relating to plants and gardening that she has very humorously told us about. She has been instrumental in the Chapter's purchase and contribution of books on rock gardening to public libraries.

On many occasions, Nan has shared her home with rock gardeners from around the world. Her hospitality has made their stay in the Northwest more enjoyable and personally satisfying. When Chapter members are sick or have lost a loved one, Nan is always there with a card or phone call to offer her condolences, help, concern, and love. She goes out of her way to make new members and guests



welcome and encourages timid members to feel that they belong.

Nan is a special asset to the ARGS, bringing harmony and balance to our organization. It has been my pleasure to know Nan for more than three decades, and always she has shown her special qualities in all her associations and dealings.

Stephen Doonan

Award of Merit: Waid Vanderpoel

We are honored to present the ARGS Award of Merit to a rock gardener who has excelled in every facet of this horticultural art. Waid Vanderpoel, of Barrington, Illinois, has created a great garden, beautifully situated, incorporating water, naturalistic outcrops, and elegant walls. He has been a pioneer in recreating natural ecosystems in miniature in troughs. I remember how stunned I was in 1984 to see the tundras of Colorado, Idaho, and Wyoming so perfectly represented in his garden.

This gentleman is equally a pioneer in growing western American plants, and has taught me, as well as many others, that it is indeed possible to grow eriogonums, penstemons, and townsendias far below treeline—even in Illinois.

The very best forms of *Penstemon aridus*, *Linum lewisii*, and *Townsendia hookeri* that I grow came through this garden in the Midwest.

Waid has been an active participant in the ARGS at the national level, serving on the Board and on the Financial Advisory Committee, and at the local level, serving as President of the Wisconsin-Illinois Chapter. He has been a major contributor to chapter plant sales and has introduced many plants into cultivation in the Midwest.

I reiterate his role as a pioneer and promoter of native American plants: I know that the first time I ever saw *Claytonia megarhiza* blooming in cultivation was in his garden. His love of native plants has grown to a profound concern for preservation of native habitats and delicate ecosystems.

Waid epitomizes the successful rock gardener: an enthusiastic traveler, a superb gardener, a propagator, plantsman, conservationist. Please join me in applauding his accomplishments and thanking him for his contributions.

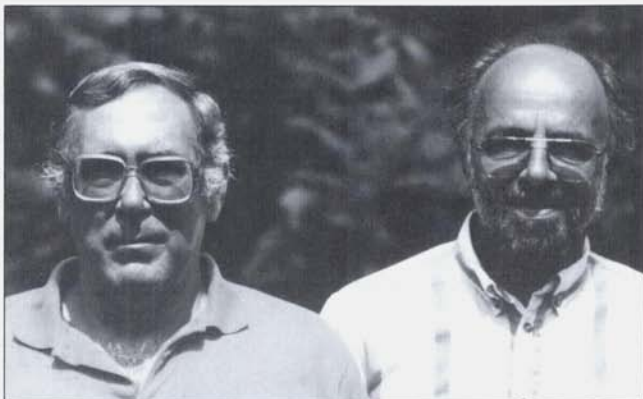


Panayoti Kelaidis

Marcel LePiniec Award: Rene Duvall and Richard Weaver

Iris typhifolia, *Sedum takesimense*, *Penstemon kunthii*, *Epimedium sagittatum*, *Pinellia tripartita*, the Bukko form of *Iris gracilipes* 'Alba', and *Thalictrum actaeifolium* are just a few of the several dozen choice plants that We-Du Nurseries has introduced to American gardeners during the past 12 years. This North Carolina nursery, operated by partners Richard E. Weaver and Rene A. Duval, focuses on propagating and disseminating rare and unusual rock and woodland plants. The emphasis is on nursery-propagated Southeastern native plants, but Dick and Rene also prize species iris, trilliums, ferns, epimediums, and hardy orchids from other corners of the world.

During the 1970s, Dick, the professional plantsman, and Rene, the ardent amateur, discovered their shared passion for plants, and an enduring friendship developed. Dick, then horticultural taxonomist at the Arnold Arboretum, spent his days immersed in the world of plants, and



Rene used his spare time to develop an outstanding collection of gesneriads and miniature orchids grown indoors under lights. He also built a beautiful rock garden at their home.

In 1981, they started We-Du Nurseries in their backyard in West Roxbury, Massachusetts. At that time, Dick was the Associate Editor of *Arnoldia* at the Arnold, and Rene worked as a shipping clerk and computer operator, exercising skills that have contributed much to the success of We-Du. Recognizing that the nursery could become a viable business, they began searching for acreage in a hospitable climate. They found their utopia in Polly Sprout, North Carolina, where during the past decade they have gardened on about 30 acres in the beautiful, rolling foothills of the Blue Ridge Mountains, an area with abundant water and one rich in native plants. Gardeners, choice plants, dogs, and a host of rare birds have made a comfortable home at We-Du.

While most of us are delighted to have an occasional phlox or columbine self sow, at We-Du the beds are inviting hosts to seedlings of calanthes and other rare plants. The partners grow things very well.

With his most recent article in our *ARGS Bulletin* (V. 51:107-116), Dick continues to share his experience and knowledge with fellow gardeners. In addition to his many nursery duties, he writes often, and he is a frequent and favorite lecturer throughout the country. The subject of the phylogeographic connections between Southeast Asia and Southeast North America is a topic that has interested Dick for years. The nursery itself features several of these plant cousin pairs found only in these two regions. Some examples are *Polemonium reptans* of the

US and *P. yezoense* of Japan; *Polygonatum biflorum* of the US and *P. humile*, a charming dwarf of Japan; the US *Carex plantaginea* and the Japanese *C. siderosticta*; and our Celandine poppy, *Stylophorum diphyllum* along with *S. lasiocarpum* from Chinese woodlands.

While Rene's primary responsibility is handling orders, packing, and shipping, he propagates ferns and most of the bulbous plants for the nursery. He always finds time to roam the woods looking for desirable and attractive forms of native wildflowers. Several of his selections are now under trial at the nursery, and we can hope to see some intriguing introductions in future catalogs.

—Sandra Ladendorf



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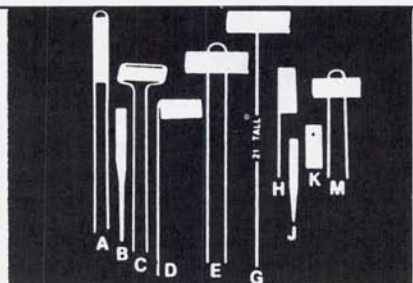
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